

STUDIES ON THE ORIENTAL AND PACIFIC CLUSIIDAE
(Diptera) PART 1. GENUS HETEROMERINGIA
CZERNY, WITH ONE NEW RELATED GENUS^{1,2}

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Abstract: This is the first in a series of papers on the Oriental and Pacific Clusiidae. It includes descriptions and illustrations of 23 new species of the genus *Heteromerlingia*: *me-laena* from Vietnam; *malayensis* from Malaya; *didyma* from N. Borneo; *apicalis*, *lyneborgi*, *mirabilis*, *nigricans* and *steyskali* from Philippines; *helicina* from Philippines and New Guinea; *nitobei* from Taiwan; *cornuta*, *flaviventris*, *gressitti*, *novaguinensis*, *papuensis*, *pristilepsis*, *stenygralis*, *stictica*, *strandtmannorum* and *sycophanta* from New Guinea; *opisthochracea* from New Guinea, Solomon Is. and Bismarck Archip.; *polynesiensis* from Samoa; *kondoii* from Fiji. A key is given to all species known at present. A closely related genus, *Tranomerlingia* with 2 species, *zosteriformis* from Borneo and Thailand, *melasoma* from New Guinea is described as new.

The Oriental and Pacific species of the Clusiidae are distributed in 12 genera—*Allometopon* (Kertész 1906; Frey 1928), *Czernyola* (Hendel 1913; Frey 1928 & 1960; Malloch 1929), *Isoclusia* (Malloch 1929; Hennig 1938), *Clusiodes* (Frey 1928 & 1960; Hennig 1938), *Xenoclusia* (Frey 1960), *Parahendelia* (McAlpine 1960), *Chaetoczernyola* (Soós 1963), *Prohendelia* (Soós 1963), *Phylloclusia* (Hendel 1913), *Heteromerlingia* (Czerny 1926; Malloch 1926 & 1930; Bezzi 1928; Frey 1928 & 1960), *Clusia* (Frey 1960) and *Tetramerlingia* (McAlpine 1960). Malloch placed two new Samoan species (*hyalipennis* and *samoensis*) in a new genus *Isoclusia*, with a main distinguishing character which is represented by the only two pairs of reclinate fronto-orbital bristles. However, I consider both species as belonging to a different family based on an examination of the genotype, in the Bishop Museum, which has the entire costa and the postvertical bristles crossing.

Heteromerlingia is one of the largest genera within the Clusiidae and contains eight described species which are widely scattered. In this paper 23 new species are described from Vietnam, Malaya, Borneo, Taiwan, Samoa, Fiji, Philippines, New Guinea, Solomon Is. and Bismarck Archipelago. A key to the species of the Oriental and Pacific *Heteromerlingia* is also included. The key is based largely upon color characteristics but the

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male terminalia seem to be the most reliable criterion for an accurate determination of species. The diagnostic characters are quoted for previously known species that I have not examined. Also, the description of a new genus which comes close to *Heteromeria* is included. It is represented by two new species.

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TERMINOLOGY

In general, the terms employed by Czerny (1928) have been followed in this study. Some exceptions are noted below.

Head (fig 12): The parafrontalia bears 2 upward-directed, upper fronto-orbital bristles and 1 to 3 upward- or inward-directed, lower fronto-orbitals. The number and direction of these bristles are important as a generic character. The frontalia bears a pair of frontal bristles in some genera. The gena is the same as that often designated as the cheeks and refers to the region ventrad of each eye.

Wing: The Comstock-Needham system of venation as modified by Tillyard for this family has been used by many modern Dipterists. The media is 2-branched: M_{1+2} and M_{3+4} (M and Cu of Czerny), and posterior cross-vein (tp of Czerny) is termed the medial cross-vein (m-m) because it connects M_{1+2} and M_{3+4} . The basal section of the 1st venal joins Cu and approaches the wing margin, where it is termed Cu_1+1A rather than the anal vein.

♂ *terminalia* (figs 1-2): The homologies of the parts of the terminalia of the Clusiidae have not been satisfactorily elaborated and the terminology used here is mainly as interpreted after van Emden & Hennig (1956).

The 9th segment is highly specialised. The tergite or epandrium is subcircular in outline. The proctiger derived from the anal segments is weakly sclerotized, and the 11th segment bears the cerci which are completely separated or united with each other. The surstyli (gonopods of Hennig) are the appendages of the epandrium, usually occurring on each ventral margin, separated from that by a suture or united with the proctiger only on inner side, rarely divided into 2 processes. The 9th sternite or hypandrium is cylindrical, U- or V-shaped, rarely with a short apodeme at base. Their shapes and number of minute spines on the surstylus are of considerable taxonomic value. Two lobes, praegonite and postgonite, are borne ventrally on the hypandrium. They are broadly united with the sidepieces of hypandrium and are of various forms. The praegonites are provided with a few strong bristles.

The phallus constitutes the whole copulatory organ except the phallopore and is composed of two parts termed the basiphallus and distiphallus. The former consists of two

sclerites of varying lengths and widths, and sometimes bears ventrally a projection or sclerite being called hypophallus. The membrane between these sclerites sometimes bears the spinulae. The paraphallus is rarely developed at the end of the basiphallus. The distiphallus also typically consists of a pair of sclerites which are usually united with each other at base. The phallophore is well differentiated from the basiphallus and variable in size. A pair of spine-like processes, epiphalli, are rarely formed on the dorsodistal end of the phallophore. The phallapodeme varies in length, pertains to the phallus, continues proximally to the ventral basal margin of phallophore. The ejaculatory duct is a very thin-walled tube and is dilated forming the bulb which carries an apodeme at end. The ejaculatory apodeme is rod-like or enlarged apically in a greater or lesser degree and extent.

MATERIAL

The material studied has been mostly collected by Dr J. L. Gressitt and staff members of Bishop Museum (BISHOP), Honolulu, during 1958-1962. Other material studied includes the collections of the U. S. National Museum (USNM), Washington, D. C. and the National Taiwan University (TU), Taipei, Taiwan, and a number of specimens from the Universitetets Zoologiske Museum (UZMD) København, Denmark, collected by scientists of The Noona Dan Expedition in 1961-1962.

MEASUREMENTS

The body length is measured from the anterior margin of the head to the tip of the abdomen. The front width is measured at level of an anterior ocellus between the margins of eyes when viewed in the dorsal aspect of head. The genal height between the ventral margin of eye and the peristome is measured midway between the vibrissal angle and the anteroventral margin of postgena when viewed in profile.

The number of rows of the acrostichals is counted at level of the anterior pair of the dorso-centrals. Wing length is measured from the base of the costa to the wing tip.

The eye ratio is obtained by dividing the widest distance by the highest distance. The M_{1+2} ratio is obtained by dividing the ultimate section by the penultimate.

TECHNIQUES

It is essential to clear and mount the specimens on the microscope slides for the study of the male terminalia.

Before the abdomen is cut off between the 4th and 5th segments, a little amount of pure liquid phenol is dropped on that area and left in this manner for ten to thirty minutes. The tip of the abdomen is removed and placed in 70% alcohol and then transferred into 30% solution of potassium hydroxide. This solution was brought to the boiling point and allowed to boil gently for about a minute. The abdomen is then placed into distilled water for a minute or two, and then transferred to glacial acetic acid for about another minute, then placed in distilled water and dissected by means of fine and sharp needles under a binocular microscope before transferred to pure liquid phenol. The terminalia is mounted on the slide in a drop of fifty-fifty mixture of liquid phenol and

balsam or Hoyer's media and a small cover slip is added. The slides are labeled and permitted to dry in an oven for several days.

Drawings were executed by myself, usually with aid of the Zeichenapparat.

DESCRIPTIONS AND NOTES

Genus *Heteromeriugia* Czerny

Heteromeriugia Czerny, 1903, Wien. Ent. Ztg. 12: 72.

Type species: *Heteroneura nigrimana* Loew, 1864, by orig. desig.

Head with 3 fronto-orbital bristles, the upper two directed upwards and the lower one inwards; postocellar and ocellar bristles rather short, the latter rarely minute. Arista plumose to minutely pubescent.

Mesonotum with 2 postsutural dorso-central bristles, sometimes an additional seta just before anterior dorso-central. Scutellum usually with 1 or 2 pairs of short subapical setae before apical bristles. Prescutellar and propleural bristles absent. Vein R_1 without distinct setula; M_{1+2} ratio 4-7.5. All tibiae without preapical bristle.

Male terminalia with surstylus spinose or setose; hypandrium U- or V-shaped, rarely with apodeme short, sidepiece narrow, rarely broad, praegonite with 2-4 strong bristles and postgonite hairy; phallapodeme longer than phallophore; phallus long, basi- and distiphallus usually well-developed; epiphallus rarely present; ejaculatory apodeme usually expanded terminally.

Distribution: *Heteromeriugia* is widely distributed in tropical and warm-temperate areas of the world. It is represented in the Palaearctic Region only by *nigrimana*; in the Nearctic Region by *annulipes*, *flavipes* and *nitida*; in the Neotropical Region by *czernyi*, *dimidiata*, *flavifrons*, *fuscata*, *fumipennis* and *nigrifrons*; in the Ethiopian Region by *nigriceps*, *nigricornis* and *plumicornis*. In the Oriental and Pacific areas the genus is variously represented by 31 species, of which 28 are endemic. It is assumed that Pacific species of *Heteromeriugia* are offshoots of those from the Oriental Region in the morphological relationship between the species. It seems obvious that many more species remain to be discovered in continental areas of the Oriental Region.

Phylogeny: Evolutionary development within the *Heteromeriugia* is readily seen in both the changes in color and in the structure of the ♂ terminalia. In primitive species, the body is entirely black, the wing is distinctly tinged with brown apically and the legs are darkened. Moreover, the arista is minutely pubescent in primitive species.

In the ♂ terminalia, developmental changes from the presumed primitive to modern type have been more conspicuous. In more ancient species, the cerci are separated from each other, the hypandrium is not provided with the apodeme at base, the epiphallus is conspicuously developed, the membrane of the basiphallus is bare and the hypophallus and paraphallus are not developed. In more recently evolved species, the cerci are united almost through its whole length, the hypandrial apodeme is short but distinct, and the basiphallus produces the hypophallus or paraphallus and is spinulose on the membranous part.

The subdivision for the genus has not been attempted although there may be quite well

marked groups. I have defined certain groups in the Oriental and Pacific species taking mainly the above mentioned characters into consideration. They are divided into 2 sections by the difference of coloration of the thorax.

The most primitive species is the endemic Vietnamese *melaena*, in which the body including antenna, palpus and knob of the halter is almost entirely black. In the ♂ terminalia, the cerci are separated and provided with apical setae, the hypandrium is U-shaped, the phallopore forms a pair of long epiphallus, the basiphallus is bare and simple being extended beyond tip of the distiphallus and the ejaculatory apodeme is not expanded apically.

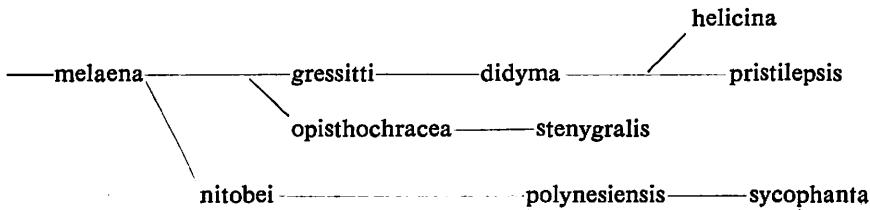
The *gressitti* and *opisthochracea* groups which are considered to be the presumably next more primitive clusters consist of 6 species. The ♂ terminalia are similar to that of *melaena*, but the surstylus is L-shaped or lobate, the epiphallus is not developed but the hypophallus and paraphallus are well developed, and the ejaculatory apodeme is strongly expanded.

Among species of the *helicina* and *pristilepsis* groups which have the united cerci, *H. didyma* from Borneo is primitive because the hypandrial apodeme is not developed and the basiphallus is bare on the membrane. The other members of these groups have distinct hypandrial apodeme. The phalli of *helicina* and *pristilepsis* show apparently the highly evolved structure. On the other hand, the *stenygralis* group, consisting of 4 species, is transitional between *didyma* and the *pristilepsis* group on the basis of the ♂ terminalia. The hypandrium is not provided with the apodeme but the basiphallus is distinctly spinulose on the membrane. It is recognized in having the partly yellow thorax from those groups.

The *nitobei* group consists of 3 species all of which are confined to South East Asia. *Heteromeringia nitobei* is the most primitive of this group and immediate relatives which show the pale coloring typical of island endemics. The phallopore and basiphallus are similar to those of *melaena* in having distinctly long epiphallus and in lacking the paraphallus and spinulae on membrane of the basiphallus, but the postgonite is divided into anterior and posterior lobes and the ejaculatory apodeme is weakly expanded.

The *polynesiensis* group is represented by only 2 species in the Pacific Ocean. It is more closely related to the *nitobei* group than to the *stenygralis*. The species of *sycophanta* group, consisting of 4 species, is much smaller and much paler than those of the *nitobei* and *polynesiensis* groups. The phalli of *strandmannorum* and *sycophanta* are the most highly characterized in the genus. The sclerite of the basiphallus is serrated and ventral membranous process at base of the paraphallus is spinulose.

A phylogenetic arrangement is shown here to indicate the group relationships mentioned above.



KEY TO SPECIES OF ORIENTAL AND PACIFIC HETEROMERINGIA

- ♂ 1
 ♀ 25
1. Thorax black... 2
 Thorax yellow, slightly tinged with red or brown, or pale brown 17
- 2 (1). Thorax entirely black 3
 Thorax partly yellow..... 12
- 3 (2). Gena brown to black. Cerci separated from each other..... 4
 Gena yellow. Cerci united with each other and narrowly incised on ventro-
 median part..... 8
- 4 (3). Halter with knob black. Surstylus subconical, bearing 5 spines; postgonite
 quadrate. Phallopore with epiphallus long, hypophallus absent; ejaculatory
 apodeme not expanded. (Vietnam) *melaena**
 Halter entirely yellow. Surstylus L-shaped, bearing 4 spines; postgonite elon-
 gate, minutely serrated along caudal margin. Phallopore without epiphal-
 lus, hypophallus distinct; ejaculatory apodeme expanded distally..... 5
- 5 (4). Wing more or less tinged with brown apically. All coxae yellow. Palpus black ... 6
 Wing hyaline. Middle coxa blackish proximally. Palpus yellow to brown 7
- 6 (5). All tibiae brown to black. Fore femur black on apical 1/2. (Burma).....
 *nigrotibialis* Frey
 Middle and hind tibiae yellow. Fore femur with black spot on inner apex.
 (Burma)..... *rufithorax* Czerny
- 7 (5). Face and palpus brown. Gena 1/9 height of eye. Phallus without spinulae.
 (NE New Guinea) *gressitti**
 Face and palpus yellow. Gena 1/12 height of eye. Basiphallus with a sharp
 spine before end; distiphallus spinulate at base. (SE New Guinea) ... *cornuta**
- 8 (3). Middle coxa blackish proximally 9
 Middle coxa yellow..... 11
- 9 (8). Arista minutely pubescent. Palpus yellow. Surstylus conical; distiphallus long..10
 Arista distinctly pubescent. Palpus black. Fore leg with apical 1/3 of fem-
 ur and tibia entirely black. Surstylus small, triangular, setose; hypan-
 drium with apodeme; phallus with a pair of spiral paraphallus at base of
 distiphallus. (Philippines)..... *helicina**
- 10 (9). Wing fuscous on apical 1/4, halter yellow. Hind coxa and fore femur yel-
 low, fore tibia brownish striated laterally. Surstylus with 4 spines; hypan-
 drium without apodeme. (Borneo)..... *didyma**
 Wing rather evenly fuscous excepting anteroproximal and posterior margins,
 halter with knob black. Hind coxa entirely brown; fore femur with api-
 cal ring, fore tibia entirely black. Surstylus with 12 spines; hypan-
 drium with short apodeme. (NE New Guinea) *novaguinensis**
- 11 (8). Fore leg with apical 1/2 of femur and tibia dark brown, tarsal segments 1-
 2 black, 4 brown, 5 yellow; hind tibia yellowish brown except for extre-
 mities. Bristles on head and thorax yellowish brown. Paraphallus small,
 paired. (Malaya) *malayensis**
 Fore femur with small apical ring, fore tibia and tarsus black; hind tibia

- dark brown excepting proximal 1/8 and distal 1/4. Bristles black. Basiphallus with distinct processes of hypophallus; paraphallus narrow, sinuate. (NE New Guinea)..... **pristilepsis***
- 12 (2). Mesonotum with yellow vittae. Cerci separated from each other 13
 Mesonotum without vitta. Cerci united 14
- 13 (12). Scutellum black. Middle coxa black basally. Antennal segment 3 without apical spot. Palpus fuscous. (Australia)..... **australiae** Mall.
 Scutellum yellow, with brown triangle laterally. Middle coxa yellow. Antennal segment 3 with pale brown apical spot. Palpus yellow. Surstylus with 8-9 spines. Basiphallus bare; hypophallus and paraphallus well developed. (NW New Guinea, Solomons, Bismarcks)..... **opisthochracea***
- 14 (12). Scutellum black. Sternopleura yellow on posterior 1/2..... 15
 Scutellum entirely or partly yellow. Sternopleura pale brown or narrowly yellow posteriorly.....16
- 15 (14). Humerus and hypopleura brown. Wing fuscous excepting margins. Surstylus conical, bearing 3 spines. Distiphallus long. (SE New Guinea)... **papuensis***
 Humerus and hypopleura yellow. Wing fuscous on apical 1/2. Surstylus lobate, bearing 4 spines. Distiphallus short. (NE & SE New Guinea).....
 **stenygralis***
- 16 (14). Scutellum with anterior 2/3 brown. Fore femur with only 1 large apical ring. Distiphallus almost tubular. (Philippines) **apicalis***
 Scutellum with anterior and lateral margins pale brown. Fore femur with 2 brown rings. Distiphallus broadly expanded distally. (Philippines)... **steyskali***
- 17 (1). Mesonotum vittate 18
 Mesonotum and abdomen entirely reddish yellow. (Philippines) ... **luzonica** Frey
- 18 (17). Mesonotum bi- or trivittate 19
 Mesonotum univittate or patched 23
- 19 (18). Frons reddish yellow. Mesonotum bivittate. Surstylus lobate, bearing about 10 spines; cerci separated; hypandrium without apodeme; phallus very long. (Philippines) **mirabilis***
 Frons brownish black to black, sometimes parafrontalia or orbit yellow. Mesonotum trivittate.....20
- 20 (19). Palpus black. Thoracic pleura entirely pale brown or reddish. Fore tarsus black. Halter yellow, with knob black 21
 Palpus yellow. Lower pleura pale yellow. Fore tarsal segments 4-5 whitish yellow. Halter brown. Cerci united. Basiphallus spinulose on membrane 22
- 21 (20). Gena brown. Mesonotum with lateral vitta bifurcated posteriorly. Fore femur with brown band distally. Cerci separated from each other. (Taiwan)..... **nitobei***
 Gena yellow. Mesonotum with lateral vitta often united with median one. Fore femur without band. (Burma)..... **malaisei** Frey
- 22 (20). Wing fuscous on apical 1/3. Fore tibia striated on outer and inner sides. Surstylus as long as height of cercus, bearing 6 spines. (Fiji) **kondoi***
 Wing almost entirely fuscous. Fore tibia except for knee black. Surstylus less than 1/2 height of cercus, densely setose. (Samoa) **polynesiensis***

- 23 (18). Bristles on head and thorax brown to black. Fore tibia blackish on inner side. (Fiji).....**veitchi** Bezzi
 Bristles on head and thorax yellow to brownish yellow. Fore tibia striated on inner and outer sides 24
- 24 (23). Scutellum yellow. Fore tarsal segment 5 brown. Hypandrium without apodeme. Distiphallus with numerous scale-like processes, paraphallus very short. (NW & W New Guinea).....**strandtmannorum***
 Scutellum blackish brown. Fore tarsal segment 5 yellow. Hypandrial apodeme distinct. Distiphallus bare on membrane, paraphallus longer than distiphallus. (NW New Guinea) **sycophanta***
25. Thorax black or mesonotum with yellow vittae.....26
 Thorax yellow or red-tinged to pale brown.....37
- 26 (25). Gena brown to black..... 27
 Gena yellow 33
- 27 (26). Mesonotum entirely black..... 28
 Mesonotum with white, broad postsutural patch extending to middle of scutellum. (Key I.)..... **leucosticta** Frey
- 28 (27). Middle or hind coxae entirely or partly black. Wing slightly brownish on apical part..... 29
 All coxae yellow. Wing fuscous on apical 1/2..... 31
- 29 (28). Only middle coxa black, femur with distal part brown to black. Arista pubescent30
 Middle and hind coxae black, all femora brown to black. Arista bare. (Burma) **nigrotibialis** Frey
- 30 (29). Winged tinged with brown on anteroapical part, halter yellow. Only fore femur brown on apical 1/2. (Philippines) **nigricans***
 Wing brown-tinged between veins R₄₊₅ and M₁₊₂, halter with knob black. All femora black on apical 1/2. (NW & SE New Guinea)**helicina***
- 31 (28). Lower pleura black, tinged with brown or partly yellow 32
 Lower pleura entirely yellow. All femora dark brown on apical 1/2; fore tarsal segments 4-5 yellow. (NW New Guinea)..... **flaviventris***
- 32 (31). Sternopleura and hypopleura black. Fore femur with spots on inner and outer apices, hind femur with spot on inner apex; fore tarsal segments 4-5 yellow. (Philippines) **lyneborgi***
 Sternopleura and hypopleura yellow posteriorly. Fore femur with 2 rings, hind femur black on apical 1/2; fore tarsus black. (NE & SE New Guinea).....**stenygralis***
- 33 (26). Mesonotum entirely black. (Borneo).....**didyma***
 Mesonotum vittate 34
- 34 (33). Mesonotum bivittate, humerus brown to black 35
 Mesonotum trivittate, humerus yellow. (NE New Guinea) **stictica***
- 35 (34). Scutellum and pleura black. Wing with large apical cloud 36
 Scutellum yellow, with brown lateral triangle, upper pleura brown and lower yellow. Wing with apical cloud smaller, extending from costa to vein R₂₊₃. (Solomons, Bismarcks) **opisthochracea***
- 36 (35). Wing with a faint fuscous cloud which extends from costa to a little beyond

- vein M_{1+2} on apical 1/2, halter black. Palpus black. (Australia)
 *imitans* Mall.
 Wing with 3 conspicuous blackish fasciae, halter yellow. Palpus yellow. (Australia)
 *australiae* Mall.
 37 (25). Gena yellow. Mesonotum bi- or trivittate 38
 Gena black. Mesonotum entirely yellow or with patch anteriorly 39
 38 (37). Mesonotum bivittate. Halter yellow. (Philippines) *mirabilis**
 Mesonotum trivittate. Halter with knob black. (Burma) *malaisei* Frey
 39 (37). Mesonotum with black patch between humeri, mesopleura black. Fore tibia
 and tarsus black. (Vietnam, Burma) *rufithorax* Czerny
 Mesonotum and mesopleura brownish yellow. Fore tibia striated and tarsal
 segments 1-2 brown, 3-5 yellow. (Fiji) *veitchi* Bezzi

1. *Heteromeriugia melaena* Sasakawa, n. sp. Fig. 1.

♂. Head including palpus black, ocellar triangle and parafrontalia strongly shining, frontalia grayish pruinose centrally for 2/3 their width, face brownish mesally; antenna pale brown. Thorax with mesonotum matt, black but brownish laterally and caudally; scutellum, pleura and pleurotergite brown. Wing hyaline, slightly fuscous on apical 1/3, veins pale brown; halter with stalk testaceous, knob black. Legs yellow, fore and middle coxae slightly brown-tinged on anterior part, fore femur with ring, which is 1/4 as long as length of femur, before knee, fore tibia and tarsal segments 1-2 black (other segments missing). Abdomen subshiny black. Setae and bristles black excepting yellow to brown ones on yellow parts of legs.

Head: Frons subequal to width of eye, almost parallel-sided; lower fronto-orbital as long as upper fronto-orbital 2; eye ratio as 0.79; gena about 1/9 height of eye; vibrissa subequal to upper fronto-orbital in length. *Antennae* broadly separated at base, segment 3 as long as broad, microscopically pilose, arista minutely pubescent. *Mesonotum* with an additional dorso-central seta less than 1/3 length of anterior dorso-central, 8-9 rows of acrostichals before suture but 6 rows of them extending posteriorly. *Wing*: Costal sections in proportion of 7.5 : 1.3 : 1, r-m beyond middle of discal cell (4 : 2.8), M_{1+2} ratio as 4, ultimate section of M_{3+4} 5/6 length of penultimate. *Leg*: Fore tarsus flattened, wider than tibia. *Terminalia*: Surstylus subconical, 3/4 as high as height of epandrium, bearing 5 spines at apex; cerci separated from each other, each about 1/2 as high as surstylus and with 2 apical setae slightly shorter than height of cercus; hypandrium without apodeme, praegonite with 3 bristles, postgonite quadrate, 1/2 length of phallapodeme, bearing 5 hairs apically. Phallopore with a pair of long epiphalli, basiphallus long, extending almost to distal end of distiphallus, distiphallus pointed on dorsal and ventral apices; ejaculatory apodeme 240 μ long, not expanded distally. *Length*: Body 3.99 mm, wing 3.44. ♀ unknown.

Holotype ♂ (BISHOP 6633), Biao, 500 m, Vietnam, 14-21.X.1960, C. M. Yoshimoto.

This species is distinctive in the coloration of the head and halter and in having the flat tarsus of the fore leg, distinct epiphallus, simple basiphallus and rod-like ejaculatory apodeme.

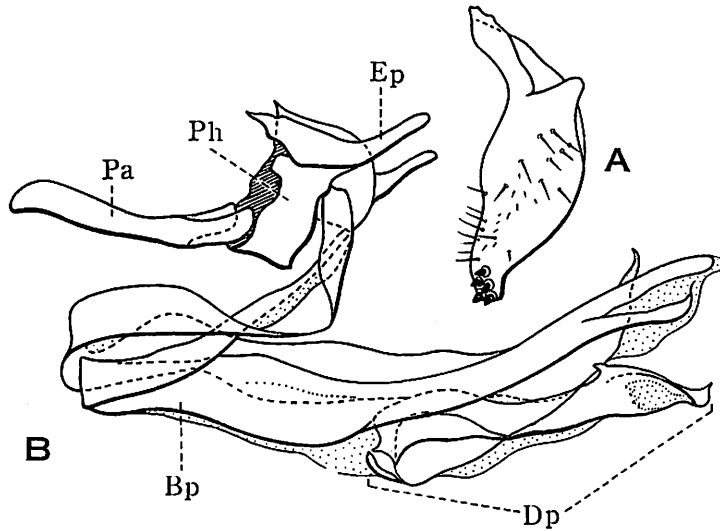


Fig. 1. *Heteromerhingia melaena*, n. sp.: A, surstylus, inner view; B, phallus and phallapodeme, lateral view (Bp, basiphallus; Dp, distiphallus; Ep, epiphallus; Pa, phallapodeme; Ph, Phallophore).

2. *Heteromerhingia nigrotibialis* Frey, 1960, *Comm. Biol.* 22: 25.

♂. Body almost entirely black. Antenna yellow, segment 3 with black anterior margin, arista bare. Palpus black. Wing tinged with brown, halter yellow. Legs yellow, fore femur black on apical 1/2, middle and hind femora brown to black, all tibiae brown to black, fore tarsus black. ♀. Similar to ♂, but middle and hind coxae and fore femur black. *Length of body*: ♂ 4.5 mm, ♀ 5.

DISTRIBUTION: Burma (Kambaiti).

The ♂ differs from other known Oriental *Heteromerhingia* in having tibiae of all legs black, and the ♀ by having the middle and hind coxae of all legs black.

3. *Heteromerhingia rufithorax* Czerny, 1926, *Konowia* 5: 51.

Czerny described this species from Tonkin from a single ♀. Frey (1960) recorded 4♂♂ and 2♀♀ from Burma and has distinguished the variety from the typical form on the basis of the ♀ thorax being entirely black as in the ♂.

♂. Body shining black. Antenna yellow, segment 3 with black apical margin, arista distinctly pubescent. Palpus black, with apex yellow. Wing tinged with brown on apical 1/2, halter yellow. Legs yellow, fore femur with black spot on inner apex, fore tibia and tarsus black. ♀. Thorax reddish yellow, anteriorly blackish between humeri, scutellum blackish dorsally, mesopleura black. *Length of body*: 3.5-5.0 mm.

DISTRIBUTION: Tonkin (Montes Mayon), Burma (Kambaiti).

4. *Heteromerhingia gressitti* Sasakawa, n. sp. Fig. 2.

♂. Head blackish brown, frons shiny, ventral 1/2 of frontalia and ventral 2/3 of para-

frontalia orangish yellow, gena pale brown; antenna yellow, arista brownish apically; palpus brown. Thorax and abdomen shiny black, humerus, posterior pleura and pleurotergite brown-tinged. Wing hyaline, veins brownish yellow; halter yellow but stalk brownish lateroproximally. Legs yellow, middle coxa brownish black proximally, fore femur with brown ring on apical 1/5 and hind femur with pale brown spots on inner and outer apices, fore tibia and tarsus brownish black, middle tibia slightly brownish proximally and hind tibia with proximal 3/5 brown. Setae and bristles yellowish excepting black ones on abdomen, fore tibia and tarsus.

Head: Frons subequal to width of eye, almost parallel-sided; lower fronto-orbital 2/3 length of upper fronto-orbital, ocellar minute; eye ratio as 0.79; gena 1/9 height of eye; vibrissa a little longer than upper fronto-orbital. **Antennae** approximated at base, segment 3 small, minutely pilose, arista shortly pubescent. **Mesonotum** with 1 or 2 short dorso-central setae less than 1/4 as long as anterior dorso-central, which is situated midway between suture and posterior dorso-central, 10 rows of acrostichals but very sparsely just before posterior dorso-central; scutellum with 1 short subapical seta. **Wing:** Costal sections in proportion of 8 : 2.5 : 1, r-m at distal 1/3 of discal cell, M_{1+2} ratio as 4.8, ultimate section of M_{3+4} 3/4 length of penultimate. **Terminalia:** Surstylus L-shaped, with antero-ventral projection as long as basal width, bearing 4 spines on inner tip; cercus as high as epandrium, distinctly narrowing ventrally and truncated at end; hypandrium with transverse bar, praegonite with 2 strong bristles, postgonite minutely serrated along margin, bearing many hairs. Basiphallus distally far beyond tip of distiphallus, hypophallus distinct, distiphallus short and somewhat bulbous; ejaculatory apodeme 204 μ long, 132 μ in greatest width. **Length:** Body 2.61 mm, wing 2.06. ♀. Unknown.

Holotype ♂ (BISHOP 6634), Madang, 5 m, NE New Guinea, 28. X. 1958, J. L. Gressitt.

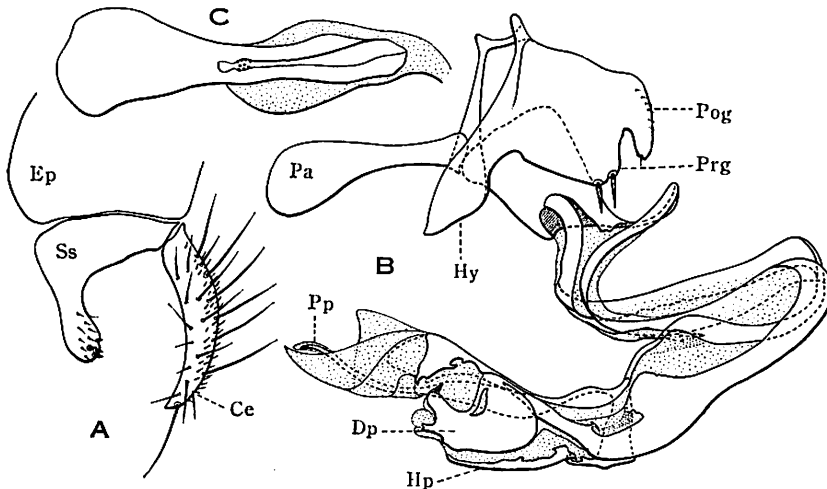


Fig. 2. *Heteromerhingia gressitti*, n. sp.: A, epandrium and surstylus, inner view; B, hypandrium and phallus, lateral view; C, ejaculatory apodeme. (Ce, cercus; Dp, distiphallus; Ep, epandrium; Hp, hypophallus; Hy, hypandrium; Pa, phallapodeme; Pog, postgonite; Pp, paraphallus; Prg, praegonite; Ss, surstylus).

This species is easily distinguishable from the other species by the clear and smaller size wing. The name is given in honor of Dr J. Linsley Gressitt who has collected this fly.

5. *Heteromeriugia cornuta* Sasakawa, n. sp. Fig. 3.

♂. Head with frontalia shining black but ventral 1/4 and parafrontalia brown, occiput and postgena brownish black, face yellow, gena brown but yellowish anteriorly and blackish posteriorly, peristome brown, parafacialia silverly pruinose; antenna whitish yellow, palpus yellow but brown on proximal 1/2-2/3. Thorax shiny black, slightly brown-tinged; abdomen subshiny black. Setae and bristles yellow excepting black or brown ones on abdomen and dark parts of legs. Wing hyaline, very slightly yellowish along veins R_{4+5} , M_{1+2} and penultimate section of M_{3+4} ; halter yellow. Legs yellow, middle coxa dark brown proximally, fore femur with brown apical ring, fore tibia brown, sometimes yellowish linearly on dorsoapical and ventroapical parts, hind tibia slightly brownish excepting apical end, fore tarsal segments 1-4 black (5 missing).

Head: Frons as wide as eye, diverging ventrally; eye ratio as 0.67; gena 1/12 height of eye; antennae slightly separated at base, arista missing. *Thorax*: Mesonotum with anterior dorso-central as far apart from suture as from the posterior, 8-9 rows of acrostichals (detectable by their pits). *Wing*: Costal sections in proportion of 5.5 : 2 : 0.8, r-m at distal 1/3-1/4 of discal cell, M_{1+2} ratio 5.5-8.5, ultimate section of M_{3+4} slightly shorter or longer than penultimate. *Terminalia*: Surstylus projected ventrally at anterior end, almost as long as basal width, bearing 4 spines on inner tip; cerci separated, each approximately 1/2 height of epandrium, narrowing ventrally; hypandrium with transverse bar basally, praegonite with 2 bristles. Basiphallus with a sharp spine before end, distiphallus short; ejaculatory apodeme 229 μ long, 100 μ in greatest width. *Length*: Body 3.07-3.30 mm, wing 2.15-2.28. ♀. Unknown.

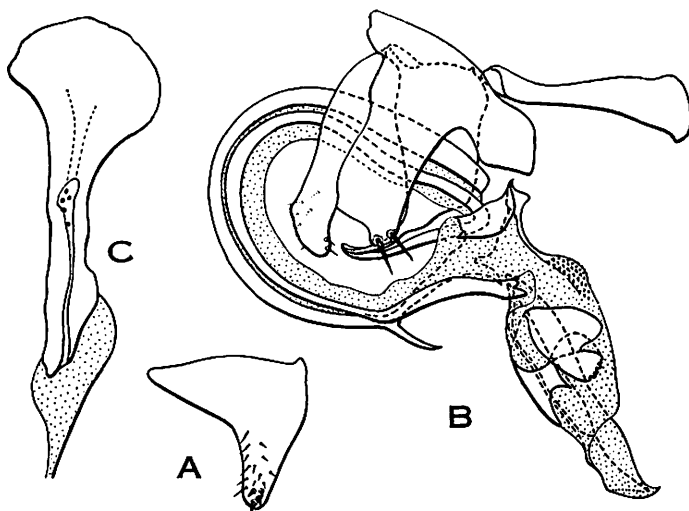


Fig. 3. *Heteromeriugia cornuta*, n. sp.: A, surstylus; B, hypandrium and phallus; C, ejaculatory apodeme.

Holotype ♂ (BISHOP 6635), paratopotypes 2♂♂, Brown River, SE New Guinea (Papua), 20. VIII. 1959, T. C. Maa; all types in bad condition.

The ♂ terminalia of this species is closely allied to that of *H. gressitti* n. sp. in the possession of the separate cerci bearing from the posteroventral corners of the epandrium, the L-shaped surstylus, U-shaped hypandrium with sidepiece slightly projecting ventrally beyond end of transverse bar and the minutely serrated postgonite, distinctly differing from the known Oriental species. It differs, however, from the latter in the structures of the distiphallus and colorations of head and legs.

6. *Heteromerhingia helicina* Sasakawa, n. sp. Fig. 4.

♂. Head black, orbit slightly brown-tinged, gena except for black peristome yellow, silverly pruinose, face dark brown; antennal segments 1-2 brown, segment 3 whitish yellow but brownish on outer dorsoproximal part; palpus black. Thorax and abdomen black; mesonotum very weakly shining, pleura shining. Setae and bristles black. Wing slightly fuscous on apical 1/2, darker on apical 1/3 along vein R_{2+3} , halter yellow. Legs yellow but proximal part of mid coxa, distal 1/3 of fore femur, fore tibia and tarsus black, hind tibia slightly brownish except for both extremities.

Head: Frons a little narrower than width of eye (2.2 : 2.5), slightly divergent ventrally; lower fronto-orbital about 3/5 length of upper; eye ratio as 0.89; gena about 1/9 height of eye; vibrissa slightly longer than upper fronto-orbital. *Antennae* slightly separated at base, segment 3 small, with rather distinct pile, arista distinctly pubescent. *Mesonotum* with 10 rows of acrostichals. *Wing*: Costal sections in proportion of 11 : 3 : 1.2, M_{1+2} ratio as 5, r-m on distal 1/3 of discal cell, m-m nearly 1/2 length of penultimate section of M_{1+2} , ultimate section of M_{3+4} about 4/5 length of penultimate. *Terminalia*: Surstylus 2/3 as high as cercus, bearing 14 setae on inner ventral part; cerci united, with lateral sides slightly diverging ventrally, without distinct apical setae; hypandrium with apodeme short, postgonite foot-shaped, bearing 10 minute hairs apically and 9 setae at base. Phallus with a pair of spiral processes of paraphallus which are largely membranous; ejaculatory apodeme 272 μ long. *Length*: Body 3.16 mm, wing 2.8.

♀. Similar to ♂ but differs in coloration as follows: gena entirely black, parafacialia slightly pruinose, face black and slightly brownish between base of antennae; antennal segments 1-2 and inner side of segment 3 testaceous yellow, segment 3 with brown apical spot extending largely on inner side; mesonotum more shining; wing only slightly brownish between veins R_{4+5} and M_{1+2} , halter with stalk brownish yellow and knob brown to black; distal 1/2 of all femora excepting yellow apices of middle and hind femora, and tibiae excepting yellow distal 1/2 to narrow band of middle, and distal 1/4 to narrow band of hind brownish black, fore tarsal segments 1-2 black, flattened. Bristles on head and mesonotum yellowish brown to brown.

Frons equal to width of eye; pile on dorsoapical part of antennal segment 3 longer, being subequal to arisal pubescence; acrostichals sparsely in 8 rows. *Length*: Body 3.3 mm, wing 2.2-2.6.

Holotype ♂ (BISHOP 6636), Minalwang, 1050 m, Misamis Or., Philippines, 24. III-4. IV. 1961, H. Torre Villas. Allotype ♀, Kebar Valley, 550 m, W of Manokwari, Vogelkop, NW New Guinea, in Malaise trap, S. & L. Quate (fore tarsus missing). Paratype ♀, Brown River, 5 m, SE New Guinea, 23. X. 1960, J. L. Gressitt.

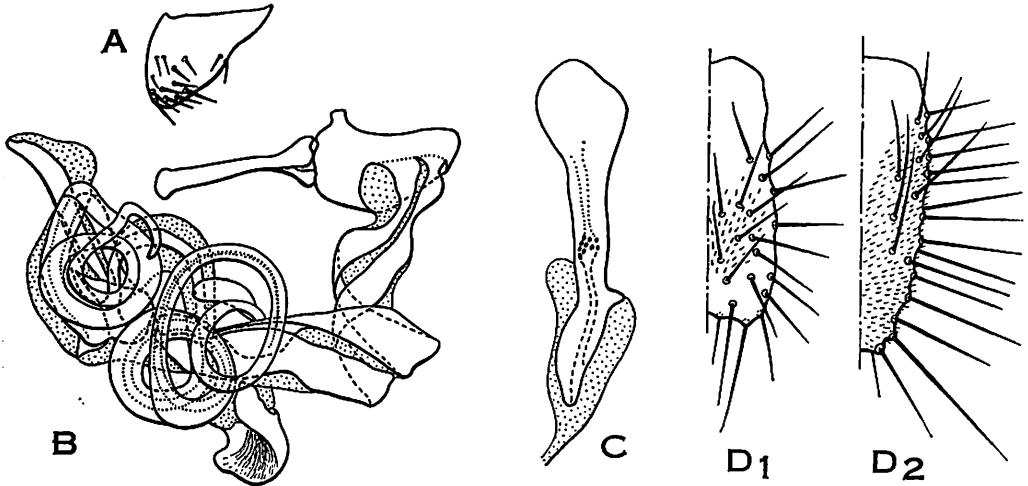


Fig. 4. *Heteromerhingia helicina*, n. sp.: A, surstylus; B, phallus; C, ejaculatory apodeme; D, cercus of *helicina* (1), of *stenogralis* (2).

This species differs strikingly from any other known *Heteromerhingia* because of the distinctive characters of the ♂ terminalia: the surstylus bears setae and the phallus has a pair of spiral paraphallus. Superficially, this species resembles *H. didyma* and *novaguinensis* n. spp., but is readily differentiated by its smaller size and other characters as pointed out in the key above.

7. *Heteromerhingia didyma* Sasakawa, n. sp. Fig. 5.

♂. Head shiny black but ventral margin of frontalia and parafrontalia brown, area between base of fronto-orbitals and orbit yellow, face and gena brownish yellow, parafacialia slightly pruinose; antenna and palpus yellow, antennal segment 3 with pale brown apical spot just ventrad from base of arista. Thorax and abdomen black, mesonotum grayish pollinose, abdominal tergites 1-5 slightly pollinose. Wing hyaline, with brown spot on apical 1/4 and a very slight cloud over m-m, veins yellow; halter yellow. Legs yellow, middle coxa blackish anteroproximally, fore tibia with brown stripes on inner and outer sides, all fore tarsal segments black. Setae and bristles black.

Head: Frons wider than width of eye (3 : 2.4), almost parallel-sided; eye ratio as 0.92; gena about 1/6 height of eye (many bristles missing). *Antennae* slightly separated at base, arista minutely pubescent. *Mesonotum* with anterior dorso-central as far apart from suture as from the posterior, 8 irregular rows of acrostichals, inner post-alar about 1/6 length of outer; scutellum with a short subapical seta. *Wing*: Costal sections in proportion of 14 : 3.5 : 1.7, r-m at distal 1/4 of discal cell, m-m 1/2 as long as penultimate section of M_{1+2} , M_{1+2} ratio as 7.5, ultimate section of M_{3+4} 5/6 length of penultimate. *Terminalia*: Surstylus slightly lower than cercus, bearing 4 spines and many hairs; cerci united but incised on ventral 1/17, about 2× as high as broad, with a pair of apical setae a little less than 1/2 height of cercus; hypandrium without apodeme, praegonite normal, postgonite sclerotized distally, bearing 7 setae at base. Sclerites of basiphallus united with each other by narrow

band at middle, distiphallus tubular, bifid and weakly sclerotized on distal 1/3, paraphallus narrow but distinct; ejaculatory apodeme 300 μ long, 144 μ in greatest width. *Length*: Body 3.85 mm, wing 3.16.

♀. Differs from ♂ in the following points: orbit pale brown, anteroventral part of postgena dark brown, antennal segment 3 without apical spot but very slightly reddish on inner side, palpus brownish on proximal 1/2; scutellum and pleura slightly brown-tinged; wing with brown cloud on apical 1/3; fore femur brownish on distal 1/4, fore tibia and tarsal segments 1-2 black, hind tibia with brown ring at base; abdomen dark brown, cercus yellow.

Frons almost as wide as eye, diverging ventrally; eye ratio as 0.67; gena 1/7 eye height; antennae broadly separated at base; crossvein r-m situated at distal 1/3 of discal cell (most of bristles missing, wings damaged). *Length*: Body 4.77 mm, wing 3.4.

Holotype ♂ (BISHOP 6637), Tenompok, Mt Kinabalu, Sabah (N. Borneo), 15. II. 1959, T. C. Maa; allotype ♀, 13. II. 1959, Maa.

The ♂ terminalia of this species show some similarity to those of *H. novaguinensis* and *papuensis* n. spp. by having the long and bifid distiphallus. But the structures of the phallus in detail between these species are quite different: in *didyma*, the membrane of the basiphallus is bare, while in the related species spinulose, and the paraphallus is well developed in *didyma*. The ♀ of this species is similar to *H. helicina* n. sp. in having the black middle coxa, but these two species are different as noted in the key. Also, the size of this species is larger, the face and halter are paler, and the apical cloud of the wing is larger than in *helicina*.

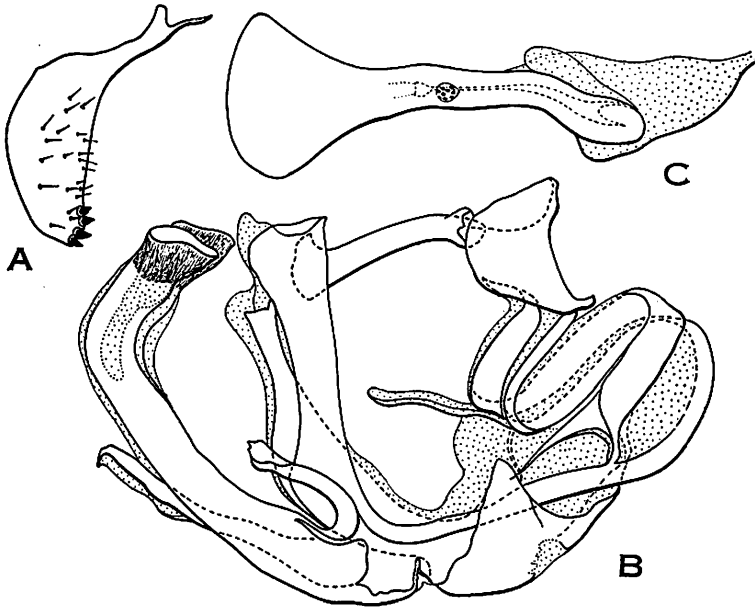


Fig. 5. *Heteromeriugia didyma*, n. sp.: A, surstylus; B, phallus C, ejaculatory apodeme.

8. *Heteromerhingia novaguinensis* Sasakawa, n. sp. Fig. 6.

♂. Head shining black except for testaceous yellow face and yellowish brown anterior 1/3 of gena; antenna yellow, segment 3 pale brown on inner apical 1/2, arista brown; palpus yellow but brown on basal 1/2. Thorax and abdomen black, mesonotum densely pollinose but pleura shining. Bristles and setae black. Wing rather evenly fuscous but basal 1/2 of anterior margin and posterior margin paler; halter with stalk brown, knob black. Legs yellow, middle coxa basally and hind coxa entirely brown, fore femur apically with very narrow brown ring, fore tibia and tarsus brownish black.

Head: Frons as wide as width of eye, almost parallel-sided, broadest at level of lower fronto-orbital; upper fronto-orbital only one, situated at middle between base of inner, vertical and lower fronto-orbital, the second absent; gena 1/6 height of eye. *Antennae* slightly separated by narrow carina; segment 3 small, arista microscopically pubescent. *Mesonotum* with 0+2 dorso-centrals and 8 rows of acrostichals. *Wing*: Costal sections in proportion of 8.8 : 1.7 : 1.0; M_{1+2} ratio as 5.2, r-m on distal 1/3 of discal cell, ultimate section of M_{3+4} almost 1/2 as long as penultimate (2.2 : 4). *Terminalia*: Surstylus with 12 spines along inner posterior margin; cerci well sclerotized, united with each other, with very shallow incision ventrally, as high as surstylus, without apical seta; hypandrium with short apodeme, praegonite with 2 strong bristles, postgonite with apex turned ventrally, with a few hairs apically and 3-4 setae at base. Basiphallus spinulose on membrane, distiphallus with 5 minute serration at apex; ejaculatory apodeme 388 μ long. *Length*: Body 3.8 mm, wing 3.5. ♀. Unknown.

Holotype ♂ (BISHOP 6638), Wau, Morobe Distr., 1000 m, NE New Guinea, 13. X. 1961, J. Sedlacek; most of bristles missing but detectable from their basal pits, and few legs broken.

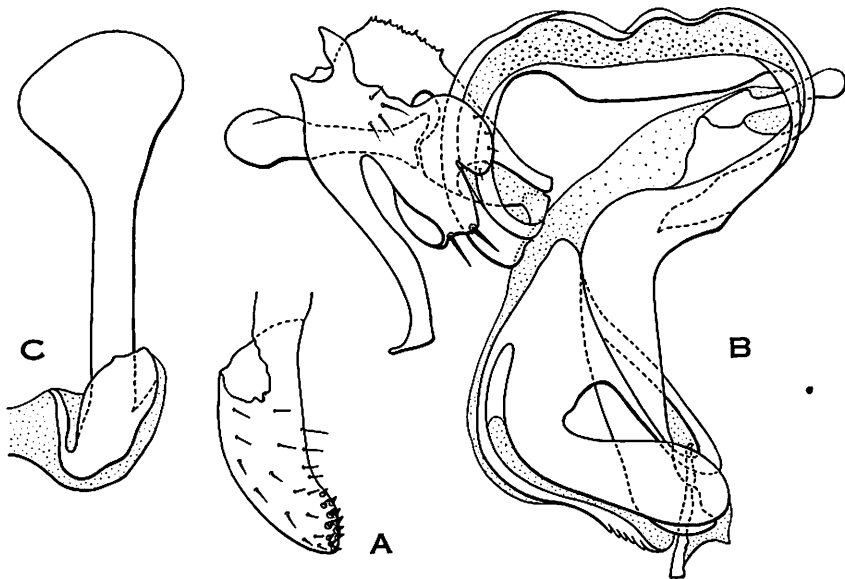


Fig. 6. *Heteromerhingia novaguinensis*, n. sp.: A, surstylus; B, hypandrium and phallus; C, ejaculatory apodeme.

This is highly specific in possession of dense spines on the surstylus and blades beside base of the ejaculatory apodeme among all the known Oriental species of the genus. The sclerites of basiphallus are united with each other at end and the distiphallus is connecting with the basiphallus by a narrow band, differing from those of *didyma*.

This species appears to be closely related to the European *nigrimana* Loew in the coloration, but is distinguished by having the narrow apical ring on the femur and entirely black tibia of the fore leg and by lacking the second upper fronto-orbital bristle.

9. *Heteromerhingia malayensis* Sasakawa, n. sp. Fig. 7.

♂. Head black but face testaceous, gena yellow and silverly pruinose; antenna yellow, arista brownish apically; palpus testaceous. Thorax entirely black; mesonotum subshiny, moderately gray-dusted. Setae and bristles on head and thorax yellowish brown. Wing with fuscous cloud small, covering only apical 1/3, veins yellow basally; halter yellow but stalk brownish laterally. Legs yellow; fore leg with about apical 1/2 of femur, tibia and tarsal segment 4 dark brown, tarsal segments 1-3 black; hind tibia yellowish brown excepting 1/6 of extremities. Abdomen black, anterior 4 tergites somewhat brownish, cercus yellow.

Head: Frons slightly narrower than width of eye, diverging ventrally; gena 1/11 height of eye. *Antennae* slightly separated at base, segment 3 small, arista covered with short pubescence. *Mesonotum* with anterior dorso-central as far apart from transverse suture as

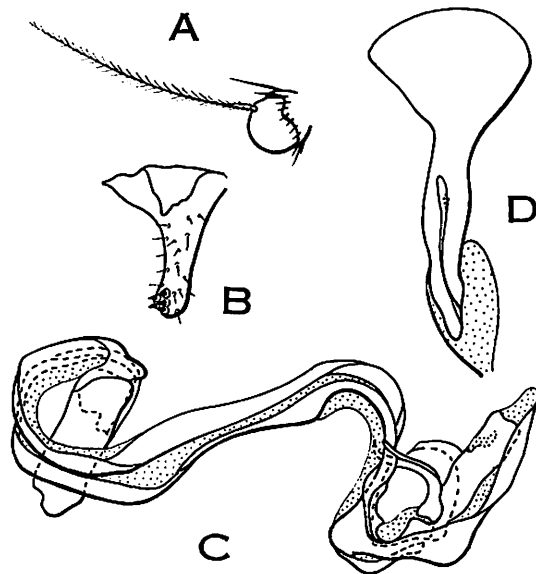


Fig. 7. *Heteromerhingia malayensis* n. sp.: A, antenna; B, surstylus; C, phallus; D, ejaculatory apodeme,

from the posterior, 8 irregular rows of acrostichals, outer post-alar subequal to posterior dorso-central and about $4\times$ as long as the inner. *Wing*: Costal sections in proportion of $8.5 : 2.8 : 1.3$, r-m situated at distal $1/3$ of discal cell, M_{1+2} ratio as 6.5, ultimate section of M_{3+4} about $3/4$ length of penultimate. *Terminalia*: Surstylus with 5 spines at apex; cerci united with each other through entire length, narrowing ventrally, with ventral margin almost straight and $2/5$ as wide as height of cercus, bearing a pair of very long apical setae which are about $1.3\times$ as long as height of cercus; hypandrium with short apodeme, sidepiece broad. Basiphallus bare on membrane, paraphallus claw-like; ejaculatory apodeme $240\ \mu$ long, strongly expanded distally. *Length*: Body 2.89 mm, wing 2.2. ♀. Unknown.

Holotype ♂ (BISHOP 6639), Kuala Tahan, King George V National Park, Pahang, Malaya, 12-15. XII. 1958, J. L. Gressitt & T. C. Maa.

This is one of the small species and is characteristic in having a pair of long apical setae on the cerci and a pair of claw-like paraphallus. *H. malayensis* comes close to *H. pristilepsis* n. sp., but distinctly differs from the latter by the fore tarsus bicolored, thoracic setae and bristles yellowish brown and the membrane of basiphallus bare. The coloration of legs is similar to that of *apicalis* n. sp. but the scutellum of *malayensis* is black. Also, the moderate apical cloud of the wing appears to indicate relationship with *pristilepsis*, *melaena* and *strandtmannorum* n. spp. but the latter two new species belong to the different group. The species of *malayensis*-group have close affinities with *helicina* and *novaguinensis* n. spp. in having a short apodeme at the base of hypandrium but differ strongly in the color, of the coxae and wing, and in the shape of phallus.

10. *Heteromeringia pristilepsis* Sasakawa, n. sp. Fig. 8.

This species is related to *H. didyma* n. sp. in the general coloration and size but differs in the following points: antennal segment 3 entirely yellow; mesonotum more matt, densely dusted with gray; wing with brown spot on apical $1/3$ between costa and vein M_{1+2} , halter brown, paler apically; legs yellow, fore femur with brown ring on apical $1/7$, fore tibia and tarsus black, hind tibia dark brown except for proximal $1/8$ and distal $1/4$.

Head: Frons slightly wider than eye ($2.8 : 2.5$), slightly divergent ventrally; upper fronto-orbitals equal in length, lower fronto-orbital about $3/4$ length of the upper; eye ratio as 0.89, with sparsely minute hairs; gena $1/9$ height of eye; arista slightly pubescent. *Mesonotum* with an additional seta $1/3$ length of anterior dorso-central, distance between dorso-centrals slightly longer than that between transverse suture and additional seta, about 8 rows of acrostichals, 4 of them extending between dorso-centrals. *Wing*: Costal sections in proportion of $14.5 : 3.5 : 1.7$, R_{4+5} and M_{1+2} slightly convergent distally, r-m at distal $1/3$ of discal cell, M_{1+2} ratio as 6, ultimate section of M_{3+4} about $3/4$ length of penultimate. *Terminalia*: Surstylus narrow, as high as cercus, bearing 5 spines and many hairs; cerci united with each other except for both ends, broadening ventrally, without distinct apical seta; hypandrium with apodeme very short, praegonite with 2 short but stout bristles. Phallopore with epiphallus papillate; basiphallus setulose on basal membrane, with 3 characteristic processes, one of which is L-shaped and serrated distally and other 2 paraphallus, somewhat trumpet-shaped and irregularly sinuate, with spinulae ventroproximal membrane; ejaculatory apodeme weakly sclerotized, distally membranous, $220\ \mu$ long, $112\ \mu$ in greatest width, *Length*: Body 3.85 mm, wing 3.16. ♀. Unknown,

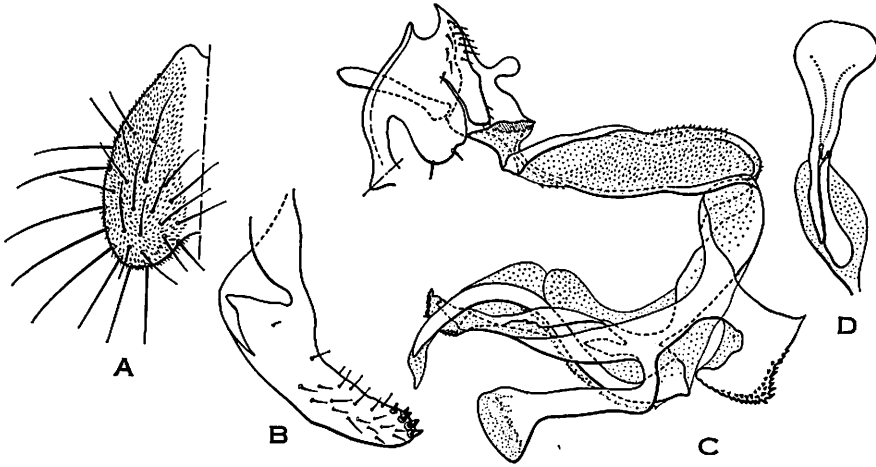


Fig. 8. *Heteromerlingia pristilepsis*, n. sp.: A cercus; B, surstylus; C, hypandrium and phallus; D, ejaculatory apodeme.

Holotype ♂ (BISHOP 6640), Swart Valley, 1450 m, Karubaka, NW New Guinea, 12. XI. 1958, J. L. Gressitt.

11. *Heteromerlingia australiae* Malloch, 1926, Proc. Linn. Soc. N. S. Wales 51: 48.

I have not seen this species. It seems most closely related to *H. opisthocracea* n. sp. and is distinguished by the coloration of the thorax and legs.

Face of ♂ brown; antenna testaceous, palpus fuscous in ♂ but yellow in ♀. Mesonotum black, with sides and 2 submedian vittae testaceous. Apical cloud of ♂ wing continued along the costa and connecting with a broad median fascia which does not extend to posterior margin of wing. Wing of ♀ provided with a basal narrow fascia which extends entirely across wing in addition to the above markings. Halter yellowish. Legs testaceous yellow; in ♂ fore leg except for base of tibia and bases of middle coxa and femur black, hind leg with apex of femur and base of tibia fuscous; in ♀ only fore tibia and tarsus black. *Length of Body*: 4.5–5 mm.

DISTRIBUTION: Australia (Coramba and Sydney, New South Wales).

12. *Heteromerlingia opisthocracea* Sasakawa, n. sp. Fig. 9.

♂. Frons brown, darkened dorsolaterally, vertical angle yellow to pale brown, parafacialia ventrad from base of upper fronto-orbital 1 yellow, orbit and parafacialia silvery pruinose, occiput brown, ocellar triangle and postgena excepting yellow ventral margin black, face, gena and postocciput yellow, slightly reddish; antenna and palpus yellow, segment 3 with pale brown apical spot, extending largely on inner side, rarely only slightly brownish along apical margin, arista brown. Thorax black; mesonotum subshiny, with yellow vittae, which are narrowly separated by pale brown line, starting from about middle

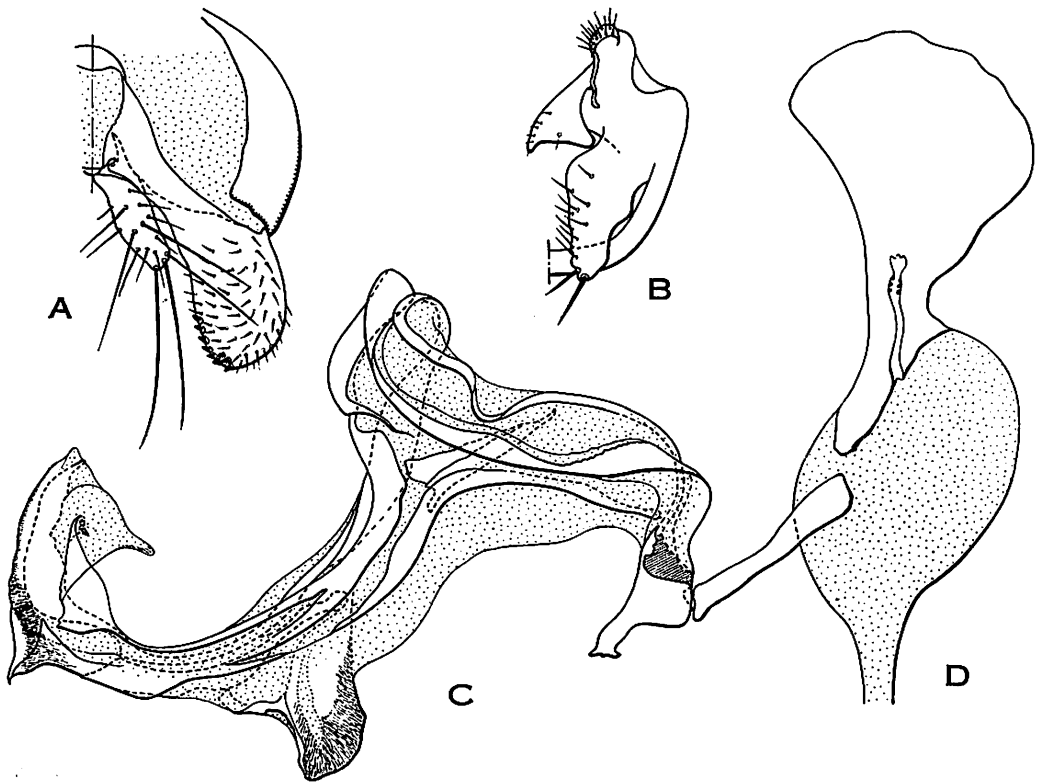


Fig. 9. *Heteromerhingia opisthochracea*, n. sp.: A, epandrium, surstylus and cercus, anterior view; B, hypandrium and gonites; C, phallus; D, ejaculatory apodeme.

of notum and extending posteriorly between bases of dorso-centrals, rarely both vittae united with each other; scutellum yellow, with dark brown lateral triangle, apical bristle growing on yellow area; humerus and pleurotergite brown-tinged, posterior 1/2 of sternopleura yellow, hypopleura pale brown but yellow anteroventrally. Setae and bristles on head and thorax brownish yellow. Wing hyaline, slightly fuscous on apical 1/4-1/3, becoming paler caudad from M_{1+2} , over cross-vein m-m and along penultimate section of M_{1+2} ; halter yellow. Legs yellow, fore leg with femur brownish striate dorsally, especially distinct on apical 1/3-1/4, narrowly extending ventrally at inner apex, and tibia and tarsus brownish black, hind tibia except for base brown. Abdomen black, matt.

Head: Frons subequal to width of eye, distinctly divergent ventrally; all fronto-orbitals equal in length; eye ratio as 0.79; gena 1/8-1/5 height of eye; vibrissa longer than fronto-orbital; ventral postorbit covered with white pubescence. **Antennae** broadly separated at base, segment 3 with minute pile, arista minutely pubescent. **Mesonotum** with a short seta being 1/4 length of anterior dorso-central just before that, distance between dorso-centrals about 2/3 as long as that between transverse suture and anterior dorso-central, 10 rows of acrostichals. **Wing:** Costal sections in proportion of 12.4 : 2.7 : 1.5, r-m on distal 1/3 of discal cell, M_{1+2} ratio as 5-6, ultimate section of M_{3+4} 2/3-4/5 length of penultimate.

Terminalia: Surstylus lobate, 2.5× as wide as cercus, with 8-9 spines along inner ventral margin; cerci separated, each narrow, bearing 2 long apical setae; hypandrium without apodeme, praegonite strongly sclerotized, bearing 2 strong bristles and 13-15 setae, postgonite triangular in lateral view but tapering distally, with about 10 setae at base. Sclerites of basiphallus forked distally, an accessory ventral sclerite with small triangular one at middle; ejaculatory apodeme 428 μ long, 300 μ in greatest width. *Length*: Body 3.44-3.99 mm, wing 2.89-3.02.

♀. Similar to ♂ but paler in color, frontalia yellowish dorsally, vertex and parafrontalia entirely yellow or reddish yellow, postgena yellow on ventral 1/4, antennal segment 3 without spot or slightly brownish on inner ventral part, humerus brown, apical scutellar bristle growing at edge of brown triangle, pleura yellow or tinged with red, propleura, dorsal 2/3 of mesopleura and 1/2 of pteropleura and pleurotergite brown; wing sometimes only slightly fuscous between costa and vein R_{2+3} on apical 1/2; abdomen brownish black, ovipositor brownish yellow.

Frons narrower than width of eye (2.8 : 3.4), eye ratio as 0.83; costal sections in proportion of 13 : 3.5 : 1.8. *Length*: Body 3.6-4.7 mm, wing 2.9-3.4.

Holotype ♂ (BISHOP 6641), Bodem, 100 m, 11 km SE of Oeberfaren, Sarmi Distr., NW New Guinea, 7-17.VII.1959, T. C. Maa. Allotype ♀, Kieta, Bougainville, Solomon Is., 27.XI.1959, Maa. Paratypes ♂, Waris, S of Hollandia, 450-500 m, NW New Guinea, 8-15.VIII.1959, Maa; ♂, Karimui, 3.VI.1961, NE New Guinea, J. L. Gressitt; ♀ (UZMD), Talumalaus, Mussau, Bismarck Archip., 24.I.1962, Noona Dan Exp., 1962.

The color of legs and wing of this species is similar to that of *H. pristilepsis* n. sp. but the latter species would fit into a different group having the entirely black thorax. The ♂ terminalia of this species show relationship to *H. sycophanta* n. sp. by having the surstylus lobate and the basiphallus with a rod-shaped sclerite in addition to the typical sclerites, those are, however, quite differently developed, the surstylus is provided with many spines, an accessory sclerite lacks the serration, and moreover the cerci are separated from each other and the hypandrial apodeme is lacking.

13. *Heteromeriugia papuensis* Sasakawa, n. sp. Fig. 10.

♂. Head shiny black but ventromesal 1/4 of frontalia, parafrontalia and ventral part of postgena slightly brownish, face and gena yellow but the latter posteriorly and peristome brownish, parafacialia silverly pruinose; antenna yellow, palpus yellow but brown on proximal 2/3; bristles black. Thorax subshining black, slightly pollinose, humerus and pleura slightly brown-tinged and posterior 1/2 of sternopleura yellow; bristles brown, setae yellowish. Wing slightly fuscous excepting transparent anterobasal 1/2, apical and posterior margins, veins yellowish brown; halter yellow. Legs yellow, fore leg with a pale brown dorsal spot on apex of femur, brown stripes on outer and inner sides of tibia, tarsal segments 1-4 black, hind leg with tibia slightly brownish on basal 1/4. Abdomen brownish black, pollinose; setae black.

Head: Frons narrower than width of eye, very slightly divergent ventrally; eye ratio as 0.77; gena 1/9 height of eye; vibrissa as long as inner vertical. *Antennae* linearly separated at base; arista and upper fronto-orbitals missing. *Mesonotum*: Distance between dorso-centrals slightly longer than that between anterior dorso-central and transverse suture,

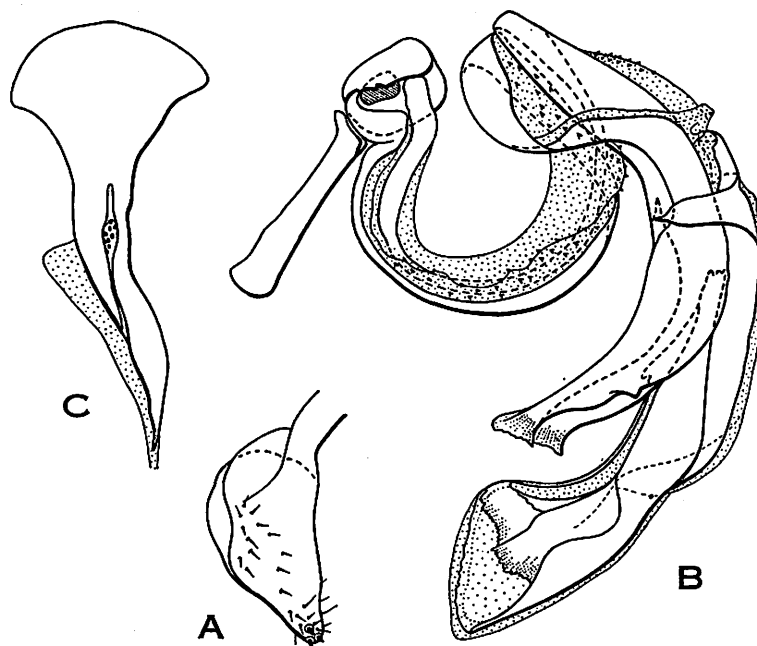


Fig. 10. *Heteromerlingia papuensis*, n. sp.: A, surstylus; B, phallus; C, ejaculatory apodeme.

8 rows of acrostichals anteriorly and 6 rows of them extending posteriorly; scutellum with 1 subapical seta. *Wing*: Costal sections in proportion of 5.5 : 1.8 : 0.8, r-m at distal 1/3 of discal cell, M_{1+2} ratio as 5.8, ultimate section of M_{3+4} about 3/4 length of penultimate. *Terminalia*: Surstylus conical, with 3 spines at apex; cerci united with each other, separated only on ventral 1/10, with apical seta 4/5 height of cercus; hypandrium rounded, without apodeme, praegonite with 2 long bristles. Phallus as figured, well-sclerotized, sparsely spinulose on membrane of basiphallus; ejaculatory apodeme 272 μ long, 130 μ in greatest width. *Length*: Body 3.07 mm, wing 2.39. ♀. Unknown.

Holotype ♂ (BISHOP 6642), Brown River, SE New Guinea (Papua), 20. VIII. 1959, T. C. Maa.

The general structures of the ♂ terminalia of this species are very similar to that of *didyma*, but differing in detail noted already. Also, the colorations between them are quite different.

14. *Heteromerlingia stenygralis* Sasakawa, n. sp. Fig. 11.

♂. Head shiny black, vertex yellowish brown but angle darker, parafrontalia usually slightly brown-tinged, face yellow to brown and usually darkened laterally, gena yellow, parafacialia silverly pruinose, peristome brown; antenna yellow, segment 3 testaceous yellow, somewhat darker on inner side, arista pale brown; palpus brown, sometimes yellow with testaceous apex. Thorax black; mesonotum subshining, humerus yellow, scutellum,

sternopleura, pteropleura and pleurotergite slightly brown-tinged, about posterior 1/2 of sternopleura just above coxa yellow, hypopleura yellow with pale brown band anteriorly. Wing hyaline, fuscous on apical 1/2 and along posterior margin of discal cell, veins yellowish brown; halter yellow. Legs yellow, fore femur with brown spot on inner apex, fore tibia with dark brown stripe on outer side and brown one on inner, sometimes both stripes connected with each other dorsally, fore tarsus brownish black, hind tibia brown except for extremities. Abdomen black, tergite 1, lateral margins of tergites 2-3 and cercus brownish. Setae and bristles black.

Head: Frons wider than width of eye (3 : 2.5), diverging ventrally; lower fronto-orbital nearly 2/3 length of upper fronto-orbital; eye ratio as 0.89; gena 1/6-1/7 height of eye; vibrissa longer than upper fronto-orbital. *Antennae* broadly separated at base, segment 3 small, microscopically pilose, arista slender, distinctly pubescent. *Mesonotum* sometimes with an additional seta which is 1/5 length of posterior dorso-central, just before anterior dorso-central, 7-8 rows of acrostichals, inner post-alar about 1/7 length of the outer; scutellum with subapical seta 1/4-1/5 as long as the apical. *Wing*: Costal sections in proportion of 12 : 3 : 1.6, r-m at about distal 1/3 of discal cell, M_{1+2} ratio as 4.5-6, ultimate section of M_{3+4} 5/6 to only slightly shorter than penultimate. *Terminalia*: Epandrium with extremely long and convergent bristles dorsoapically, surstylus as long as and 2X as wide as cercus, lobate, bearing 4 spines at apex; cerci united with each other, distinctly narrowing ventrally, with 2 pairs of apical setae which are 1/2 as long as height of cercus; hypandrium V-shaped, praegonite with 2 strong bristles and 1-2 short setae, postgonite very large, sparsely hairy at apex but densely setigerous at base. Basiphallus spinulose on membrane, accompanying with a crescent-shaped hypophallus, distiphallus weakly sclerotized;

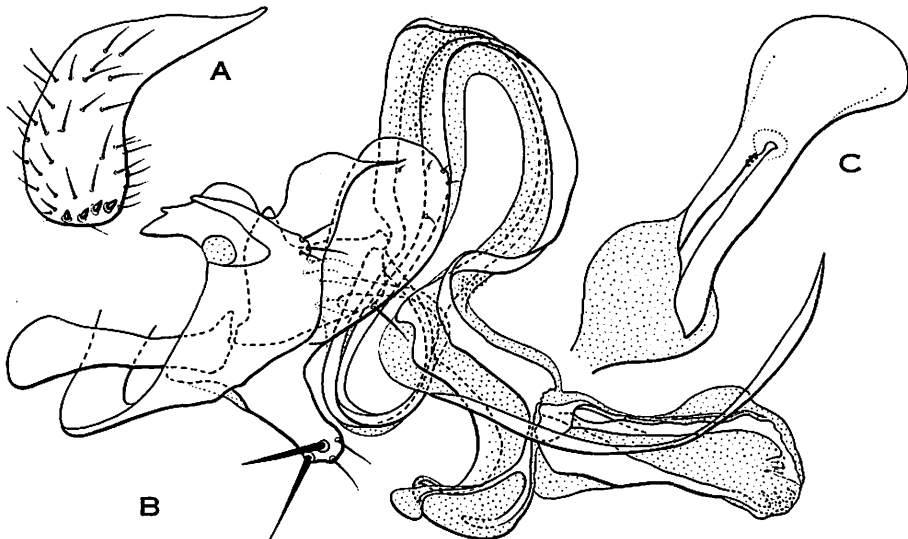


Fig. 11. *Heteromerhingia stenogralis*, n. sp.: A, surstylus; B, hypandrium and phallus; C, ejaculatory apodeme,

ejaculatory apodeme $240\ \mu$ long, $140\ \mu$ in greatest width. *Length*: Body 2.78-3.71 mm, wing 2.20-3.09.

♀. Similar to ♂ but differs in coloration: face blackish brown, carina paler, gena testaceous to brown, ventrally darkened; humerus testaceous to dark brown; apical cloud of wing somewhat darker; apex and central 1/3 of fore, distal 3/4-4/5 of middle and distal 1/2 of hind femora except for yellow knees and all tibiae brownish black but somewhat paler on middle and hind tibiae, fore tarsus black; ovipositor yellow. *Length*: Body 3.16-4.81 mm, wing 2.72-3.41.

Holotype ♂ (BISHOP 6643), Waris, S of Hollandia, 450-500 m, NW New Guinea, 24-31. VIII.1959, T. C. Maa. Allotopotype ♀, 8-15.VIII.1959; paratypes 21♂♂, 6♀♀, same locality as holotype, 1-31. VIII. 1959, Maa; 1♀, Brown River, 5 m, SE New Guinea, 23. X. 1960, J. L. Gressitt; 1♀, Ifar, 300 m, Cyclops Mts., NW New Guinea, 22. VI. 1959, Maa.

This species is allied to *H. papuensis* n. sp. in the coloration, but may be immediately distinguished by having the pale humerus and hypopleura, dark fore tarsal segment 5, longer 2nd section of the costa and more weakly sclerotized distiphallus. The general appearance and structures of ♂ terminalia relate this species to *H. opisthochracea* n. sp., from which it is separated by the striking differences in the development of the cercus and the basiphallus. The ♀ of *stenygralis* is quite different from *opisthochracea* in the coloration of the head and thorax but more closely resembles *H. flaviventris* n. sp. as will be discussed later under that species.

15. *Heteromeriania apicalis* Sasakawa, n. sp. Fig. 12.

♂. Head with frons and occiput shiny black, anterior margin of frontalia and parafrontalia brown-tinged, face testaceous, gena yellow and silverly pruinose; antenna yellow, arista brownish apically; palpus testaceous, darkened proximally. Thorax shiny black, scarcely pollinose; humerus and lateral part of mesonotum caudad from base of wing brown, scutellum brown with yellow patch on apical 1/3; pteropleura and pleurotergite brown, sternopleura yellow on caudal 1/4. Setae and bristles on head and thorax black. Wing fuscous on apical 1/2, veins yellow basally; halter yellow. Legs yellow; fore leg with apical 2/5 of femur, tibia and tarsal segment 4 dark brown and tarsal segments 1-3 black; hind tibia slightly brownish except both ends. Abdomen black, cercus yellow.

Head: Frons a little narrower than width of eye (1.8 : 2), diverging ventrally; eye ratio as 0.92; gena about 1/10 height of eye; vibrissa long. *Antennae* slightly separated at base, segment 3 small, arista distinctly plumose. *Mesonotum* with a short seta just before anterior dorso-central, distance between dorso-centrals $2\times$ as long as that between transverse suture and anterior dorso-central, 8 irregular rows of acrostichals, outer post-alar a little longer than posterior dorso-central; scutellum with subapical seta growing at edge of yellow area. *Wing*: Costal sections in proportion of 9 : 2.8 : 1.6, r-m at distal 1/3 of discal cell, M_{1+2} ratio as 5.7, ultimate section of M_{3+4} only slightly shorter than penultimate. *Terminalia*: Surstylus swollen anteromesally and elongated posteroventrally, with 3 spines at apex; cerci united with each other but rather deeply incised on ventral 1/6, without distinct apical seta; hypandrium circular, without apodeme, praegonite with 2 strong bristles, postgonite 4/5 as long as phallapodeme, bearing 6 hairs. Basiphallus spinulose at middle of membrane, paraphallus short, distiphallus well sclerotized; ejaculatory apodeme $160\ \mu$ long. *Length*: Body 2.61 mm, wing 2.34. ♀. Unknown,

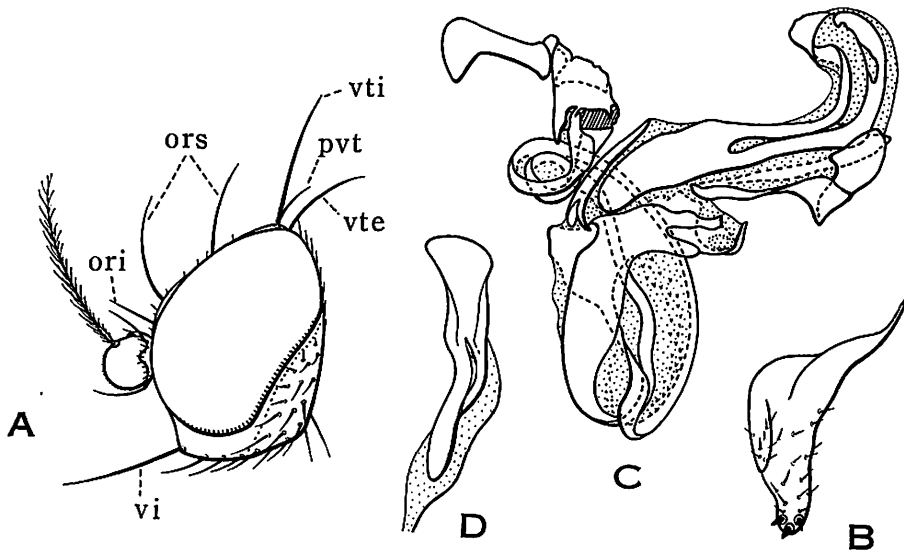


Fig. 12. *Heteromerhingia apicalis*, n. sp.: A, head in profile; B, surstylus; C, phallus; D, ejaculatory apodeme. (ors, upper fronto-orbital bristles; ori, lower fronto-orbital; pvt, postvertical; vi, vibrissa; vte, outer vertical; vti, inner vertical).

Holotype ♂ (BISHOP 6644), Minalwang, 1050 m, Misamis Or., Philippines, 24. III-4. IV. 1961, H. Torrewillas.

This species is closely related to *H. steyskali* n. sp., but mainly differs in respect to the characters mentioned in the key.

16. *Heteromerhingia steyskali* Sasakawa, n. sp. Fig. 13.

This species is apparently closely related to *H. apicalis* n. sp. but is differentiated by the following characters: face yellow, slightly brownish; palpus brown, yellowish at apex; scutellum yellow, with pale brown anterior margin and lateral triangle, pleura brown-tinged, sterno- and hypopleura paler; bristles brown but vibrissa black; wing fuscous on apical 1/2, darker between costa and R_{2+3} , basally connecting with cloud on discal cell and posteriorly not reaching margin; fore femur with 2 brown rings, median one about 1/3 and apical one just before knee 1/5 as long as length of femur, mid and hind femora slightly brownish on apical 1/2 and hind tibia pale brown excepting both ends.

Frons narrower than width of eye (1.3 : 1.6), eye ratio as 0.67; vibrissa about 1.5× as long as upper fronto-orbital. Mesonotum without additional seta before anterior dorso-central, which is as far apart from transverse suture as from the posterior. M_{1+2} ratio as 5.3, ultimate section of M_{3+4} about 2/3 length of penultimate. *Terminalia*: Surstylus conical, strongly curving inwards, bearing 3 spines on tip; cerci with a very shallow incision on ventral end, bearing a pair of long apical setae; postgonite as large as praegonite, with

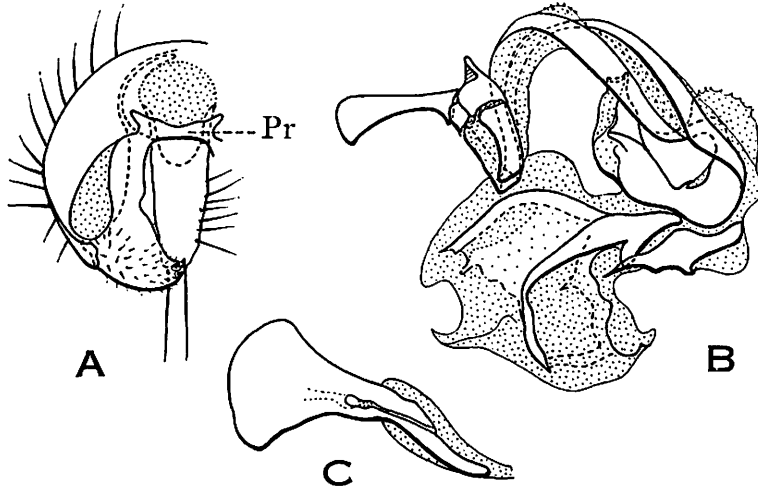


Fig. 13. *Heteromerhingia steyskali*, n. sp.: A, epandrium, cerci and surstylus, anterior view; B, phallus; C, ejaculatory apodeme. (Pr, proctiger).

3 hairs. Basiphallus spinulose on membrane, paraphallus small, distiphallus largely membranous; ejaculatory apodeme 228μ long. *Length*: Body 3.3 mm, wing 2.5.

Holotype ♂ (USNM), Mt. Makiling, Luzon, Philippines, Baker.

This small species is distinguished from the other members by the characteristic distiphallus of ♂ terminalia. I take pleasure in naming the species after Dr G. Steyskal of the United States National Museum.

17. *Heteromerhingia luzonica* Frey, 1928, Not. Ent. 8: 107.

♂. Head yellow, ocellar triangle black, postgena dorsally with large black spot; antenna and palpus yellow, arista distinctly pubescent. Thorax reddish yellow. Bristles on head and thorax yellow. Wing grayish, with brown cloud on apicoanterior 1/3; halter yellow. Legs yellow, fore tibia and tarsus black. Abdomen yellowish red, darkened posteriorly. *Length of Body*: 3.2 mm.

DISTRIBUTION: Philippines (Luzon).

18. *Heteromerhingia mirabilis* Sasakawa, n. sp. Fig. 14.

♂. Head yellow, frons tinged with red, ocellar area and dorsal 4/5 of postgena brownish black, face with antennal groove brown, peristome pale brown; antenna yellow, segment 3 with apical margin and inner side excepting dorsal base brown, arista brown; palpus

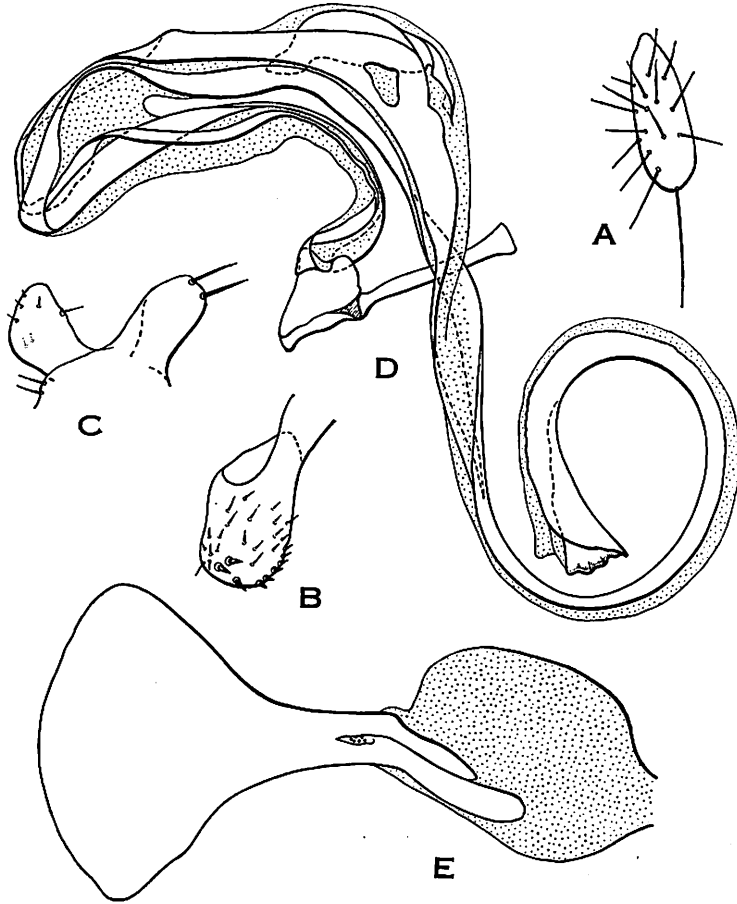


Fig. 14. *Heteromerhingia mirabilis*, n. sp.: A, cercus; B, surstylus; C, prae- and postgonites; D, phallus; E, ejaculatory apodeme.

pale yellowish brown, yellow at base. Mesonotum pale brown, with 2 dark brown to black stripes about 1/2 as wide as width between lines of dorso-central and supra-alar bristles, ending anteriorly at middle of prescutum, dorso-centrals growing at edge of black stripe; scutellum paler, with brown triangle laterally, subapical seta growing at edge of dark area; pleura pale brown, ventral part of notopleura, propleura, dorsal 1/2 of mesopleura, pteropleura and pleurotergite dark brown. Bristles on head and thorax yellowish brown. Wing fuscous on apical 1/3, pale brown over veins of penultimate sections of M_{1+2} and M_{3+4} and cross-vein m-m; halter yellow. Legs yellow, fore femur with pale brown stripe dorsally, ventral side of fore femur, dorsal and ventral sides of middle and hind femora slightly tinged with brown, fore tibia and tarsus brownish black. Abdomen brownish black.

Head: Frons slightly narrower than width of eye, diverging ventrally; ocellar minute; eye strongly oblique; gena about 1/7 height of eye. **Antennae** moderately separated at base; segment 3 of normal size, microscopically pilose, arista distinctly pubescent. **Mesonotum**

with a short seta which is approximately $1/3$ length of anterior dorso-central just before that, 10 rows of acrostichals anteriorly and 8 rows of them ending behind level of posterior dorso-central; inner post-alar subequal to acrostichal in length. *Wing*: Costal sections in proportion of $6.6 : 1.6 : 1$, r-m at distal $1/3$ of discal cell ($1 : 0.6$), M_{1+2} ratio as 5.2, ultimate section of M_{3+4} only a little shorter than penultimate. *Terminalia*: Surstylus broad, $3/5$ as wide as width of epandrium, bearing 9-10 spines; cerci separated, as high as epandrium or surstylus, about $1/3$ as broad as high, each with apical seta long being $2/3$ height of cercus. Hypandrium without apodeme, praegonite with 2 bristles, postgonite setulose. Phallus very long, narrow sclerites of basiphallus united with each other and forming distiphallus, hypophallus small. Ejaculatory apodeme 438μ long, expanded apically, 250μ in greatest width. *Length*: Body 3.7 mm, wing 2.7.

♀. Similar to ♂ excepting following coloration: face, peristome, antenna and palpus yellow; ventral $1/2$ of pleura yellow to brownish yellow; dorsal and ventral brownish stripes of femora indistinct or absent; ovipositor yellow. *Length*: Body 3.8-4.2 mm, wing 2.7-3.0.

Holotype ♂ (UZMD), N. of Batu Batu, Tarawakan, Tawi Tawi, Philippines, 8. XI. 1961, Noona Dan Exp. 1961, ♂ *Terminalia* mounted on a small slide and pinned. Allotopotype ♀, paratopotypes 2♀♀, 28. X-6. XI. 1961.

This species is most distinctive in the structures of the ♂ terminalia. The phallus is not completely divided into the basi- and distiphallus. The shape of the surstylus is similar to that of *stenygralis*, but *mirabilis* has a dense row of spines along the ventral margin. The ♀ of *mirabilis* is distinguished by the bivittate mesonotum and small size.

19. *Heteromeringia nitobei* Sasakawa, n. sp. Fig. 15.

♂. Head with frontalia brownish black to black, parafrontalia and gena shining, brown to dark brown, peristome darker, face dark brown; antenna orangish yellow, segment 3 with small brown apical spot, arista yellow basally and brown on apical $1/3-1/2$; palpus dark brown to black. Thorax pale brown; mesonotum almost matted when viewed from front, with 3 brown indistinct stripes, of which the median one is between the lines of dorso-centrals ending at middle of notal length, lateral one bifurcated behind transverse suture, extending before level of posterior dorso-central; pleura shining. Bristles on head and thorax black. Wing fuscous on apical $1/2$ from anterior margin to vein M_{1+2} , slightly brownish along posterior margin of discal cell, halter yellow but knob brownish black. Legs yellow, fore femur with pale brown band on inner distal $1/4$, fore tibia and tarsus black, hind tibia slightly brownish at distal end. Abdomen subshiny brownish black.

Head: Frons only a little wider than width of eye, almost parallel-sided; all fronto-orbitals equal in length; eye ratio as 0.8; gena about $1/5$ height of eye. *Antennae* separated almost as wide as diameter of antennal segment 1, segment 3 shorter than wide, microscopically pilose, arista with minute pubescence. *Mesonotum* with rather distinct additional seta which is less than $1/2$ length of anterior dorso-central, 10 rows of acrostichals before suture but about 6 rows of them ending before scutellum; scutellum with a short subapical seta near base of apical. *Wing*: Costal sections in proportion of $16.5 : 2.7 : 2$, r-m at distal $1/3$ of discal cell, M_{1+2} ratio as 4.5-5, ultimate section of M_{3+4} $3/4$ length of penul-

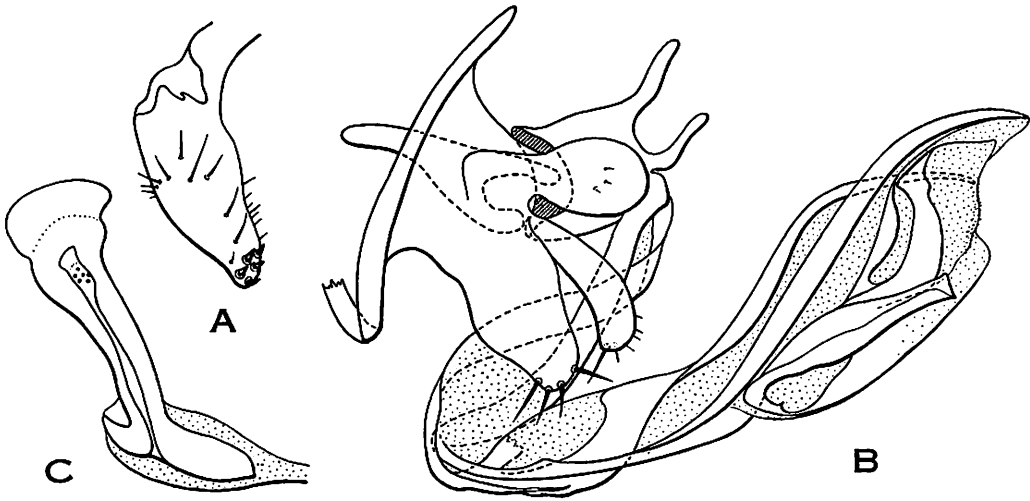


Fig. 15. *Heteromerhingia nitobei*, n. sp.: A, surstylus; B, hypandrium and phallus; C, ejaculatory apodeme.

timate. *Leg*: Fore tarsal segments 1-3 slightly wider than tibia. *Terminalia*: Surstylus with 5 spines at apex; cerci small, about $\frac{2}{3}$ as high as surstylus, separated from each other through entire length, without distinct apical seta; hypandrium without apodeme, praegonite with 4 strong bristles, postgonite divided into 2 lobes, one clavate and with 1 strong bristle and several hairs at apex, posterior one oval in form and with a few hairs. Phallopore with epiphallus distinct. Basiphallus extremely long, extending beyond tip of distiphallus. Ejaculatory apodeme 213μ long, slightly expanded apically. *Length*: Body 3.5-4.0 mm, wing 3.3-3.8. ♀. Unknown.

Holotype ♂ (TU), Mt Arisan, Taiwan, 10. X. 1912, I. Nitobe. Paratopotype ♂, same data as holotype.

In possessing a pair of long epiphallus of the ♂ terminalia this species comes close to *H. melaena* n. sp., but differs from it in possessing trivittate mesonotum and the well developed 2nd lobe of the postgonite.

20. *Heteromerhingia malaisei* Frey, 1960, *Comm. Biol.* 22: 24.

♂. Head black but gena and ventral part of postgena yellow. Antenna yellow, segment 3 blackish apically. Palpus black. Thorax dark reddish yellow, mesonotum anteriorly black, with 3 black vittae, often connecting with each other. Wing brownish, with large apical cloud, knob of halter black. Legs yellow, fore tibia and tarsus black, hind tibia brownish apically. Abdomen black. *Length of body*: ♂ 4-4.5 mm, ♀ 5-5.5.

DISTRIBUTION: Burma (Tanggyui, Kambaiti).

21. *Heteromerhingia kondoi* Sasakawa, n. sp. Fig. 16.

♂. Head yellow, with frontalia strongly shining brownish black, parafrontalia also shining, occiput dorsally with a pair of small, suboval dark brown spots, not extending

to yellow vertex, postvertical growing at edge of yellow area; antenna yellow, segment 3 orangish or very slightly tinged with brown apically, arista brown excepting yellow basal part; palpus yellow. Thorax yellow, mesonotum weakly shining, tinged with brown, trivittate, brownish black median vitta between lines of dorso-centrals extending posteriorly to apex of scutellum but 3-forked before transverse suture, lateral fork connecting with anterior triangular patch just above humeral callus, lateral vitta extending to notopleura through humerus and ventrally dorsal 1/5 of mesopleura, ventral pleurotergite brownish black. Bristles on head and thorax black but vibrissa brown, peristomal setae brownish yellow. Wing fuscous on apical 1/3 but broadening anteriorly, about 1/2 as long as length of 1st and 3rd radial cells; halter brown. Legs yellow, fore leg with tibia with pale brown linear stripes (sometimes interrupted) on outer and inner sides, tarsal segments 1-3 faintly tinged with brown. Abdomen brownish black, tergite 1 mesally and anterior median part of tergite 2 yellowish brown.

Head: Frons as wide as width of eye, slightly divergent ventrally, frontalia with a pair of yellow hairs at mesal part along ventral margin, ocellar minute, eye strongly oblique, gena broad being about 1/4 height of eye, peristomal setae five. *Antennae* separated by narrow carina at base, segment 3 with rather long pile, arista distinctly pubescent. *Mesonotum* with short seta which is 1/4 length of anterior dorso-central just before that, 10-12 rows of acrostichals anteriorly but 8 rows of them between anterior and posterior dorso-centrals, inner post-alar about 1/7 length of outer. *Wing*: Costal sections in proportion of 6 : 1.6 : 1, r-m at distal 2/5 of discal cell, M_{1+2} ratio as 6.5, ultimate section of M_{3+4} slightly shorter than penultimate (1 : 1.3). *Terminalia*: Surstylus with 6 spines along ventral margin; cerci united with each other, as high as surstylus, broadening ventrally, with very shallow ventral incision. Hypandrium circular, without apodeme; praegonite with 2 strong

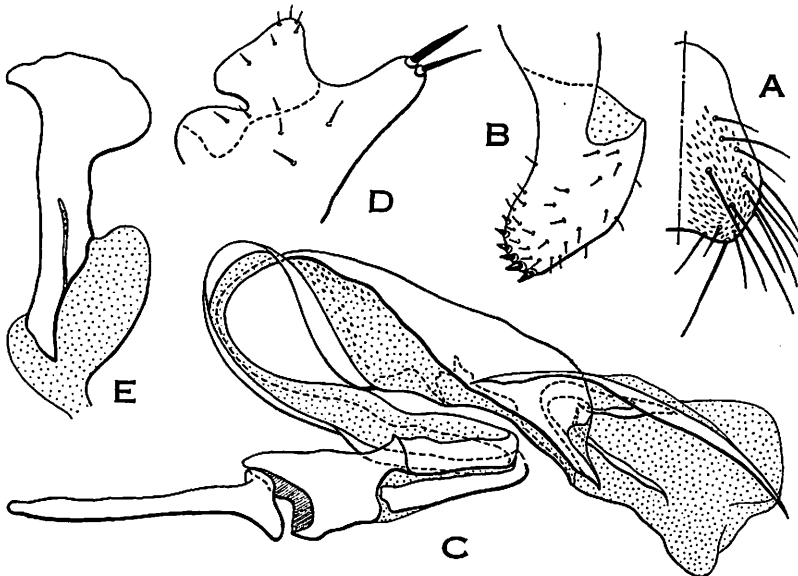


Fig. 16. *Heteromerhingia kondoi*, n. sp.: A, cercus; B, surstylus; C, phallus; D, prae- and postgonites; E, ejaculatory apodeme.

bristles, postgonite lobate, hairy at apex. Basiphallus spinulose on distal membrane, distiphallus weakly sclerotized. Ejaculatory apodeme $250\ \mu$ long, $120\ \mu$ in greatest width. Length: Body 4.7 mm, wing 3.4-4.0. ♀. Unknown.

Holotype ♂ (BISHOP 6645), Nandarivatu, Viti Levu, Fiji Is., 7.IX.1938, Y. Kondo. Paratopotype ♂, 5.IX.1938, Kondo (abdomen missing).

This species is clearly distinct from *H. polynesiensis* n. sp. by the coloration and the structures of the ♂ terminalia. On the basis of ♂ terminalia this species is closely related to *H. stenygralis* n. sp. But these species belong to the different groups in the coloration of thorax.

22. *Heteromerhingia polynesiensis* Sasakawa, n. sp. Fig. 17.

♂. Head with front, occiput and postgena shiny black, vertical angle, dorsal parafrofrontalia and orbit brown-tinged, face and peristome pale brown, gena yellow and silverly pruinose; antenna and palpus yellow, arista brown except for base. Thorax pale yellowish brown; mesonotum weakly shiny, trivittate, median one somewhat paler than lateral, linear anteriorly, gradually broadening posteriorly and extending to bases of apical scutellar bristles, dorso-centrals growing on pale brown area, lateral vittae united with each other at anterior end, narrowing at transverse suture and ending posteriorly just before scutellum, supra-alar and post-alar usually growing at edge of vitta; pleurae yellowish brown, ventral margin of meso- and pteropleura and mediotergite darker but dorsal 2/3 of propleura yellow, sternopleura and ventral 2/3 of hypopleura whitish yellow. Bristles black. Wing almost entirely fuscous excepting for base and posterior margin, veins brown; halter brown, yellowish basally. Legs brownish yellow but coxae, basal parts of femora and fore tarsal segments 4-5 white, fore femur with a small brown spot on outer distal tip, fore tibia excepting yellowish knee and tarsal segments 1-2 dark brown to black, 3 more or less brownish proximally. Abdomen dark brown to black, anterior tergite somewhat paler, epandrium and cercus black.

Head: Frons subequal to width of eye, divergent ventrally; lower fronto-orbital about

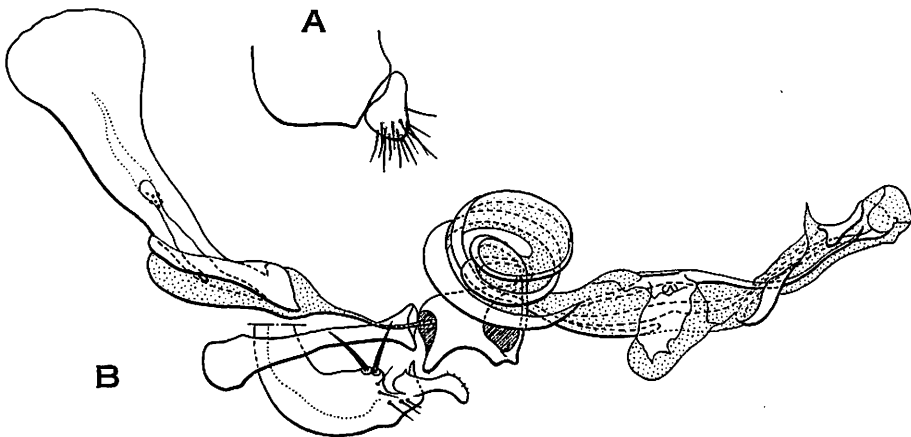


Fig. 17. *Heteromerhingia polynesiensis*, n. sp.: A, epandrium and surstylus; B, hypandrium, phallus and ejaculatory apodeme.

2/3 length of the upper; eye ratio as 0.67; gena about 1/11 eye height; vibrissa as long as upper fronto-orbital. *Antennae* narrowly separated at base, segment 3 and arista minutely pubescent. *Mesonotum* with an additional seta just before anterior dorso-central which is as far apart from suture as from posterior one, 8-9 irregular rows of acrostichals; scutellum without subapical seta. *Wing*: Costal ratio as 7.8 : 2.1 : 1, r-m at distal 1/3 of discal cell, M_{1+2} ratio as 5.6, ultimate section of M_{3+4} nearly 4/5 length of penultimate. *Terminalia*: Surstylus small, conical, about 1/3 as high as cercus, densely setose at apex; cerci united, narrowing ventrally, with very shallow incision and without distinct apical bristle; hypandrium without apodeme, sidepiece broad, praegonite with 2 strong bristles, postgonite boot-shaped and with several hairs at apex and setose at base. Basiphallus very long, coiled proximally, spinose on membrane; ejaculatory apodeme 370 μ long, 170 μ in greatest width. *Length*: Body 3.75-4.09 mm, wing 3.18. ♀. Unknown.

Holotype ♂ (USNM), paratype ♂, Leone Area, Tutuila I., Samoa, 27. VII-5. VIII. 1962, M. R. Wheeler.

This species is clearly distinct from any of the Pacific species by the coloration of mesonotum and wing. The surstylus is of the same structure as that of *helicina*, but the distiphallus which is largely membranous is provided with only a small process.

23. *Heteromerhingia veitchi* Bezzi, 1928, Dipt. Fiji Is., Brit. Mus. (Nat. Hist.), p. 87.

♀. Head shining black; antenna and palpus dark brown, arista yellowish; bristles black. Thorax yellow, mesonotum and upper pleurae more or less tinged with brown, the former weakly shining and with brown median stripe, extending posteriorly to bases of apical scutellar bristles, anterior gibbosity between humeri blackish; bristles brown. Wing slightly fuscous along veins R_{4+5} and M_{1+2} , veins brown; halter yellow. Legs yellow; fore femur with small brown spot on inner apex, fore tibia with brown stripes on inner and outer sides and tarsal segments 1-2 dark brown. Abdomen black, anterior 5 tergites brownish on anterolateral parts; ovipositor yellow. *Head*: Frons as wide as width of eye, divergent ventrally; distance between ventral pair of fronto-orbitals less than 1/2 that between first and second upper fronto-orbitals; gena 1/11 height of eye. *Antennae* very slightly separated at base; arista rather distinctly pubescent. *Mesonotum* with a seta just before anterior dorso-central, anterior dorso-central located anterior 1/3 of distance between transverse suture and scuto-scutellar suture, 8 irregular rows of acrostichals. *Wing*: Costal sections in proportion of 6.6 : 1.3 : 0.8, r-m situated at distal 1/3 of discal cell, M_{1+2} ratio as 5.3, ultimate section of M_{3+4} slightly shorter than penultimate. *Length*: Body 2.9 mm, wing 2.7.

SPECIMEN EXAMINED: 1 ♀, Havai-Nasonga Trail, Viti Levu, Fiji, 12. IX. 1938, E. C. Zimmerman (BISHOP).

The species was described from a single ♂. It differs from the ♀ in the following points: face whitish, antenna pale yellow, fore tibia blackish on inner side, fore tarsal segments 1-3 black, length of body 2.5 mm, of wing 2 mm.

24. *Heteromerhingia strandtmannorum* Sasakawa, n. sp. Fig. 18.

♂. Head yellow but frontalia, ocellar triangle and dorsal 3/5-3/4 of postgena brownish black, vertical angle to base of upper fronto-orbital 1 and frontalia with small median

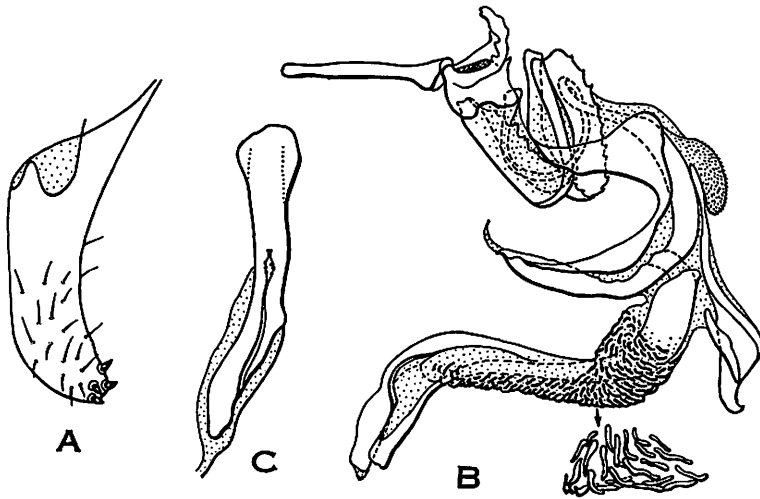


Fig. 18. *Heteromerhingia strandtmannorum*, n. sp.: A, surstylus; B, phallus; C, ejaculatory apodeme.

semicircular area just above lunule testaceous, occiput brown; antenna and palpus yellow, arista brownish except for base. Thorax yellow; mesonotum subshining, with brownish black patch on about anterior 1/2 between pronotum and transverse suture and median vitta behind suture, sometimes lateral side of mesonotum and mesopleura very slightly reddish at some places. Wing hyaline, fuscous on apical 1/3, becoming paler caudad from vein M_{3+4} ; halter yellow. Legs yellow, fore femur with pale brown spot on inner apex, fore tibia with stripes on outer and inner sides, fore tarsus brownish black, segments 4-5 somewhat paler. Abdomen brownish black but tergite 1 and anterolateral part of tergite 2 yellow to testaceous yellow. Bristles on head and thorax yellow to yellowish brown and those on abdomen black.

Head: Frons subequal to width of eye, divergent ventrally; lower fronto-orbital bristle 1/2-2/3 length of the upper; eye as high as wide; gena about 1/9 eye height; vibrissa subequal to upper fronto-orbital in length. **Antennae** narrowly separated at base, segment 3 small, minutely pilose, arista distinctly pubescent. **Mesonotum** usually with a short seta which is 1/6-1/5 length of anterior dorso-central just before that, distance between dorso-centrals about 3× as long as that between transverse suture and anterior dorso-central, 8-10 rows of acrostichals, becoming sparser posteriorly and 6 rows of them ending behind posterior dorso-central, inner post-alar as long as acrostichals; scutellum with short subapical seta. **Wing:** Costal sections in proportion of 12.5 : 3.2 : 1.8, r-m at distal 1/3 of discal cell, M_{1+2} ratio as 5.8, ultimate section of M_{3+4} mostly a little shorter than penultimate (5 : 5.5). **Terminalia:** Surstylus narrowing ventrally, bearing 4 spines at apex; cerci united, incised on ventral 1/10, slightly higher than surstylus, without distinct apical bristle; hypandrium V-shaped, broadened anteriorly, praegonite with 2 strong bristles and 1 seta, postgonite hamate distally, bearing 5 setae. Basiphallus with sclerite serrated and spinulose on ventral membranous process, distiphallus long and covered with small scale-like processes on membrane; ejaculatory apodeme 332 μ long, 120 μ in greatest width, *Length*;

Body 2.61-3.44 mm, wing 2.48-3.16. ♀. Unknown.

Holotype ♂ (BISHOP 6646), Waris, S of Hollandia, 450-500 m, NW New Guinea, 24-31. VIII. 1959, T. C. Maa. Paratypes 18♂♂, same locality as holotype, 1-31. VIII. 1959, Maa; 1♂, Archbold Lake, 760 m, Central Mts., NW New Guinea, 26.XI-3.XII.1961, L. W. Quate.

This is a distinct species, immediately recognizable by the coloration of the mesonotum and abdomen, and the structure of distiphallus of the ♂ terminalia. One paratype-specimen (Central Mts., NW New Guinea) has a median vitta extending from anterior gibbosity to scutoscuteellar suture as in *H. veitchi* Bezzi, but the coloration of head, legs and bristles, and size are entirely different from each other. The species is named in honor of Dr and Mrs R. W. Strandtmann of the Texas Technological College, who kindly helped me in various ways in the course of this present study during our stay at Bishop Museum.

25. *Heteromeriugia sycophanta* Sasakawa, n. sp. Fig. 19.

♂. Head yellow, front shiny, frontalia, ocellar triangle, occiput and dorsal 3/4 of postgena brownish black, vertical angle brown; antenna and palpus yellow, arista brownish distally. Thorax yellow; mesonotum shiny, with median blackish brown vitta between lines of dorso-centrals, broadening at both ends, anteriorly between humeri and posteriorly as wide as anterior width of scutellum, scutellum blackish brown; dorsal 1/2 of meso- and pteropleura and pleurotergite brown. Wing hyaline, very slightly tinged with brown on apical 1/2 and along penultimate section of M_{3+4} ; halter yellow. Legs yellow, fore tibia with stripes on inner and outer sides, fore tarsal segments 1-3 brownish black and 4 brown, hind tibia very slightly brownish proximally. Abdomen brownish black. Setae and bristles on head and thorax brownish yellow and those on abdomen black.

Head: Frons equal to width of eye, almost parallel-sided; lower fronto-orbital bristle

weak, 3/5 length of the upper; eye as high as wide; gena 1/7 height of eye. *Antennae* narrowly separated at base, segment 3 with rather long pile, arista distinctly plumose. *Mesonotum* with an additional short seta just before anterior dorso-central, distance between dorso-centrals 3× as long as that between suture and anterior dorso-central, 8 rows of acrostichals, 6 rows of them extending posteriorly, inner post-alar equal to acrostichal; scutellum with 1 subapical seta. *Wing*: Costal sections in proportion of 12 : 2.6 : 1.8, r-m at about distal 1/3 of discal cell, M_{1+2} ratio as 6.7, ultimate of M_{3+4} only slightly shorter than penultimate. *Terminalia*: Surstylus as high as cercus,

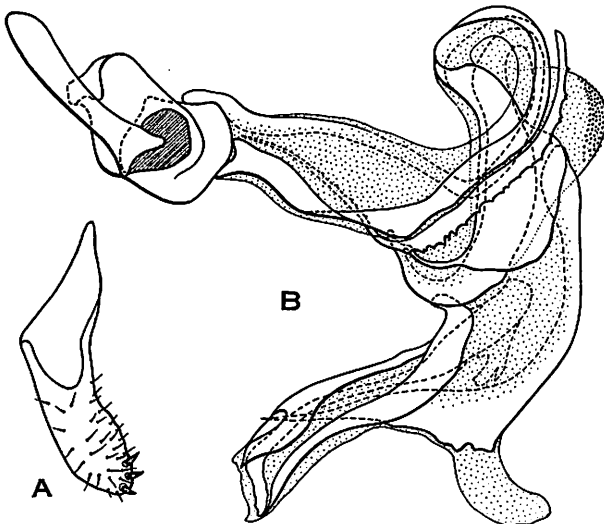


Fig. 19. *Heteromeriugia sycophanta*, n. sp.: A, surstylus; B, phallus.

bearing 3-4 spines; cerci united, $1.75\times$ as high as broad, with shallow incision on ventral $1/10$, bearing a pair of long apical setae; hypandrium with short apodeme, praegonite with 2 strong bristles, postgonite hamate and with several setae. Basiphallus with a serrated narrow sclerite at basal $1/2$, spinulose on ventral membranous process, paraphallus longer than distiphallus; ejaculatory apodeme $260\ \mu$ long, $70\ \mu$ in greatest width. *Length*: Body 3.06 mm, wing 2.61. ♀. Unknown.

Holotype ♂ (BISHOP 6647), Manokwari, 75 m, Vogelkop, NW New Guinea, 22.VII.1957, D. E. Hardy.

The wing marking of this species is similar to that of *stenygralis* which belongs to the different group which possesses a black mesonotum. This species is closely related to *H. strandmannorum* n. sp. in having the univittate mesonotum and yellowish bristles on the head and thorax, but differs in its darker scutellum and wing, in having plumose arista and distinct hypandrial apodeme, etc.

26. *Heteromeriingia leucosticta* Frey, 1960, Comm. Biol. 22: 25.

♀. Head black; antenna yellow, segment 3 brownish apically, arista pubescent. Thorax black, mesonotum with white postsutural patch extending posteriorly at middle of scutellum. Wing hyaline, with brown cloud on apical $1/3$; halter white. Legs yellow, fore tibia and tarsus black. Abdomen black. *Length of body*: 3.5 mm.

DISTRIBUTION: Key I.

This species can be very readily recognized by white patch of the mesonotum.

27. *Heteromeriingia nigricans* Sasakawa, n. sp.

♀. Entirely black, with antenna yellowish brown but segment 3 paler ventroapically, palpus more or less yellowish at apex, cercus yellow. Gena and thoracic pleura strongly shining, mesonotum moderately pollinose. Bristles on head and thorax yellowish brown, becoming darker apically. Wing very slightly tinged with brown at apical $1/3$ of 1st radial cell and almost over cell R_5 and discal cell; halter yellow. Legs yellow, middle coxa black, fore femur brown on apical $1/2$, fore tibia and tarsal segments 1-2 black, hind tibia brown except for yellow narrow base and apical $1/5$.

Head: Frons narrower than width of eye; eye ratio as 0.85, gena about $1/7$ height of eye; antennae approximated, arista with short pubescence. *Mesonotum* with 2 short setae just before anterior dorso-central, anteriorly 10 rows and posteriorly 6 rows of acrostichals, inner post-alar $1/5$ length of the outer. *Wing*: Costal sections in proportion of 3.5 : 1 : 0.5, r-m on distal $1/3$ of discal cell, M_{1+2} ratio as 6, ultimate section of M_{3+4} only a little shorter than penultimate. *Length*: Body 2.6 mm, wing 2.3.

Holotype ♀ (UZMD), Pinigisan, 600 m, Mantalingajan Range, Palawan, Philippines, 4. IX.1961, Noona Dan Exp. 1961 (right wing mounted on a small slide and pinned).

The fore tarsus is paler than any other of *helicina-stenygralis* groups.

28. *Heteromeriingia flaviventris* Sasakawa, n. sp.

♀. Head shiny black, parafroñtalia and ventromesal margin of froñtalia brownish, gena

dark to blackish brown; antenna testaceous yellow to pale brown, segment 3 with brown spot apically, largely extending on inner side, arista pale brown distally; palpus dark brown. Thorax shiny black, humerus and pleura slightly brown-tinged, pleura yellow ventrad from level between ventral margins of propleura and pleurotergite. Wing slightly fuscous, darker anteroapically, excepting basal 1/2 between costa and R_{4+5} ; halter yellow, with knob usually brown. Legs yellow, distal 1/2 of all femora dark brown, fore tibia brownish black, middle and hind tibiae brown except for extremities, fore tarsal segments 1-2 brownish black, 3 brown on basal 1/2. Abdomen brownish black; ovipositor yellow. Setae and bristles brown to black.

Head: Frons wider than width of eye, slightly divergent; upper fronto-orbitals equal in length, lower fronto-orbital 1/2-3/5 length of the upper; eye ratio as 0.86; gena about 1/8 height of eye; vibrissa subequal to upper fronto-orbital. *Antennae* broadly separated at base, segment 3 minutely pilose, arista distinctly pubescent. *Mesonotum* with 8 rows of acrostichals but becoming sparser between dorso-centrals, inner post-alar as long as acrostichal seta. *Wing*: Costal sections in proportion of 14.5 : 3.8 : 2, r-m beyond middle of discal cell (2.5-5 : 2), M_{1+2} ratio as 4-6.3, ultimate section of M_{3+4} about 5/6 length of penultimate. *Length*: Body 2.89-3.85 mm, wing 2.61-3.30. ♂. Unknown.

Holotype ♀ (BISHOP 6648), Waris, S of Hollandia, 450-500 m, NW New Guinea, 24-31. VIII.1959, T. C. Maa. Paratypes 3♀♀, same locality as holotype, 8-31.VIII.1959, Maa; 1♀, Kebar Val., W of Manokwari, 550 m, Vogelkop, NW NG, 4-31. I. 1962, under dead bark, L. W. Quate.

This species can be separated from the related *stenygralis* and *lyneborgi* n. spp. readily by the colors of the thoracic pleura and legs. Two ♀ paratypes exhibit a variation in the coloration of the fore femur which is pale on basal 3/4.

29. *Heteromeria lyneborgi* Sasakawa, n. sp.

♀. Black; frons shiny, with small pale brown spot on ventromedian part just above base of antennae, parafacialia ventrad of eye with brownish gray pruinescence; antennal segments 1-2 dark brown, 3 yellowish brown but brown on inner side except for basal margin, arista yellow, slightly brownish apically; palpus brown, with yellow tip on apical 1/5. Mesonotum weakly and pleura strongly shining, pteropleura and hypopleura tinged with brown. Bristles black. Wing fuscous on apical 2/5, darker between costa and R_{4+5} , connecting with stripe along anterior margin of discal cell, posterior margin of that also faintly fuscous; halter yellow. Legs yellow; fore leg with a pair of dark brown spots on inner and outer apices of femur; tibia and tarsal segments 1-3 black; middle femur brown on apical 1/2 excepting yellow knee part, hind femur with brown spot near inner apex, middle and hind tibiae brown except for both extremities. Abdominal segment 8 tinged with brown, ovipositor yellow.

Head: Frons slightly narrower than width of eye, distinctly diverging ventrally, with a pair of minute hair along median ventral margin; ocellar minute; eye ratio as 0.63; gena 1/6 height of eye. *Antennae* narrowly separated, segment 3 small, arista distinctly pubescent. *Mesonotum* with 6-7 rows of acrostichals posteriorly. *Wing*: Costal sections in proportion of 8 : 2.4 : 1, r-m at distal 1/3 of discal cell (2.4 : 1), M_{1+2} ratio as 6.4, ultimate section of M_{3+4} slightly shorter than penultimate (1 : 1.2). *Length*: Body 4.1 mm, wing 2.8,

Holotype ♀ (UZMD), Pinigisan, 600 m, Mantalingajan Range, Palawan, Philippines, 23. IX.1961, Noona Dan Exp. 1961.

This species may be distinguished from other members of the *stenygralis*-group by its uniformly dark pleura of the thorax. I dedicate this species with pleasure to Dr L. Lyneborg who arranged for the important collections of the Noona Dan Expedition for my study.

30. *Heteromerhingia stictica* Sasakawa, n. sp.

♀. Head including antenna and palpus testaceous yellow, parafrontalia dorsad from base of upper fronto-orbital 1 brown, central part of ocellar triangle, vertical angle and dorsal 1/2 of postgena black. Thorax black; mesonotum very weakly shining, with brownish yellow median vitta, running throughout whole length of notum but narrowing anteriorly and not reaching laterally to line of dorso-central bristles and testaceous yellow lateral vitta extending caudad from notopleura to postalar callus, humerus and scutellum yellow, the latter with brown lateral triangle, subapical seta growing at edge of brown area, supra-alar at boundary between black and yellow areas, outer post-alar on yellow; posterior 1/2 of sternopleura yellow, pleurotergite and hypopleura testaceous. Wing with dark cloud on apical 1/2, centrally connecting with cloud over cross-veins; halter yellow. Legs yellow, hind tibia brown except for distal 1/6 (fore leg missing). Abdomen dark brown, tergite 4 with a pair of yellow spots; ovipositor brownish yellow.

Head: Frons wider than width of eye, divergent ventrally; lower fronto-orbital about 2/3 length of upper fronto-orbital 1; eye ratio as 0.95; gena 1/7 height of eye; vibrissa as long as upper fronto-orbital 1; arista missing. *Mesonotum* with anterior dorso-central as far apart from transverse suture as from the posterior, inner post-alar 1/6 as long as the outer. *Wing*: Costal sections in proportion of 17 : 4 : 2.3, r-m slightly beyond middle of discal cell (5 : 3), M_{1+2} ratio as 4.7, ultimate section of M_{3+4} 3/4 length of penultimate. *Length*: Body 5.23 mm, wing 4.13. ♂. Unknown.

Holotype ♀ (BISHOP 6649), Karubaka, 1500 m, Swart Val., NW New Guinea, 11.XI.1958, J. L. Gressitt.

The trivittate mesonotum, yellow humerus, dark pleura and large size will distinguish this species from *opisthochracea* n. sp.

31. *Heteromerhingia imitans* Malloch, 1930, Proc. Linn. Soc. N. S. Wales 55: 435.

Described by a single ♀, differing from the ♀ of *australiae* Mall. by the characters given in the key. *Length of body*: 3.5 mm.

DISTRIBUTION: Australia (N. Queensland).

32. *Heteromerhingia* sp.

The specimen (Dalat, Vietnam, 29.IV.1960, Quate) is very similar to the Palaearctic *H. nigrimana* (Loew), but differs in the following points: dorsal 1/2 of parafrontalia black, antennal segment 3 with a small pale brown spot at base of arista, arista almost bare, fore femur black on apical 5/6.

This is also distinguishable from *novaguinensis* n. sp. by large band of the fore femur and longer ultimate section of M_{3+4} (5 : 7). I prefer not to describe it as a new species until more material is available.

Genus *Tranomeringia* Sasakawa, n. gen.

This genus comes close to the genus *Heteromeringia*, differing in having the extremely strong vibrissa in the ♂, a short propleural bristle and distally bifurcated basiphallus.

Type species: *Tranomeringia zosteriformis* Sasakawa, n. sp.

Head with 3 fronto-orbital bristles, upper fronto-orbital directed upwards and lower fronto-orbital inwards, postvertical bristle short, ocellar bristle minute; vibrissa in ♂ black, longer than height of head and upturned, but in ♀ normal. Arista distinctly pubescent.

Mesonotum with 2 postsutural dorso-central bristles; prescutellar bristle absent; propleural bristle short. M_{1+2} ratio as 6-7. All tibiae without preapical bristle.

Male terminalia: cerci united with each other; surstylus conical, incurved ventrally; hypandrium semicircular, without apodeme, praegonite with 2 strong bristles; basiphallus bifurcated distally; ejaculatory apodeme gradually expanded distally.

33. *Tranomeringia zosteriformis* Sasakawa, n. sp. Fig. 20.

♂. Head yellowish brown but ocellar triangle, frontalia excepting ventral 1/4 and occiput shiny black, face slightly darkened dorsomesally; antenna and palpus pale testaceous, segment 3 paler apically, arista pale brown but whitish on basal 1/5. Thorax shiny, yellowish brown; mesonotum with 2 blackish patches connecting with each other by narrow stripe and brown lateral stripe caudad from notopleura; scutellum with caudal margin yellow; mesopleura, pteropleura, pleurotergite and dorsal 1/2 of sternopleura and hypopleura brownish black. Setae and bristles on head and thorax brownish yellow. Wing hyaline, with pale brown cloud on apical 2/5, darker between costa and vein R_{4+5} ; halter yellow. Legs yellow; fore leg with brown preapical ring on femur and brown stripes on ventral sides of femur and tibia, fore tarsal segments 1-3 blackish. Abdomen shiny brownish black, setae black.

Head: Frons equal to width of eye, diverging ventrally; lower fronto-orbital 1/2 length of the upper; eye almost as high as wide; gena about 1/6 height of eye; postvertical slightly shorter than outer vertical. *Antennae* separated at base in distance of 1/2 as wide as diameter of segment 1, segment 3 with dorsal margin almost straight, arista growing at dorso-apical end, distinctly pubescent. *Mesonotum* with 0+2 dorso-centrals, distance between dorso-centrals nearly 3× as long as that between transverse suture and anterior dorso-central, 8 rows of acrostichals before suture but becoming sparser behind line of anterior dorso-central; scutellum with subapical seta about 1/4 length of the apical. *Wing*: Costal sections in proportion of 14.8 : 3.6 : 1.9, R_{4+5} and M_{1+2} slightly convergent apically, r-m at distal 1/4 of discal cell, M_{1+2} ratio as 7, ultimate section of M_{3+4} 5/6 length of penultimate. *Terminalia*: Epandrium with surstylus conical, bearing 4-5 minute spines on anteroinner apex and many hairs; cerci united, with very shallow incision on ventral 1/10, bearing a pair of long apical setae; hypandrium without apodeme; praegonite about 1/2 as long as sidepiece of hypandrium. Basiphallus spinulose on membrane, distiphallus weakly sclerotized; ejaculatory apodeme 160 μ long. *Length*: Body 4.4 mm, wing 3.7.

♀: Similar to ♂ excepting differences of coloration: mesonotal patches connected with 3 narrow stripes, anterior 1/2 of sternopleura and dorsal 3/4 of hypopleura brownish black, tergites 5-7 dark brown, posterior 1/4 of tergite 7 and ovipositor yellow, fore femoral ring

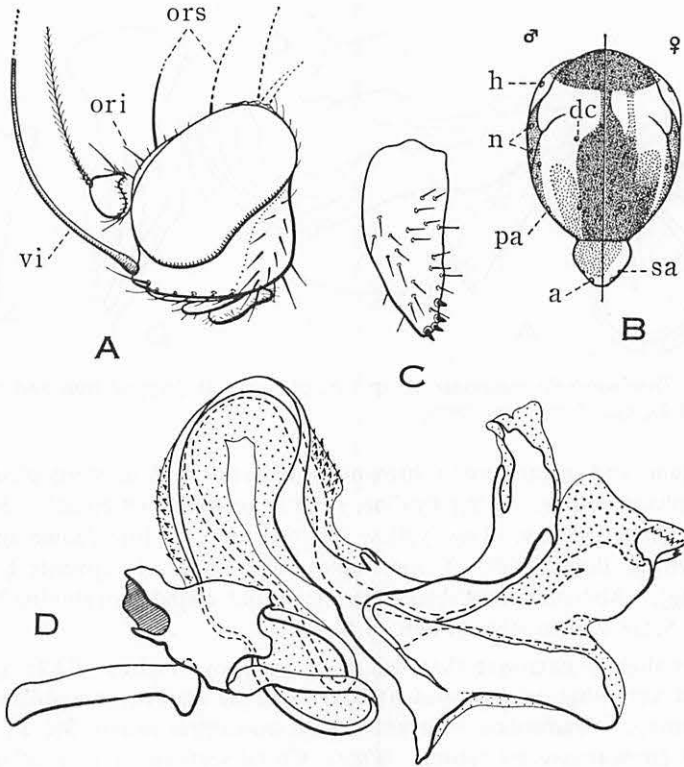


Fig. 20. *Tranomeringia zosteriformis*, n. sp.: A, head in profile; B, mesonotum and scutellum; C, surstylus; D, phallus, lateral view. (a, apical bristle; dc, dorso-central; h, humeral; n, notopleural; ori, lower fronto-orbital; ors, upper fronto-orbital; pa, outer post-alar; sa, subapical; vi, vibrissa.)

narrow and not touching ventrally, ventral stripe of fore femur lacking, fore tibia except for proximal end black, fore tarsal segments 1-2 brownish black and segments 3-5 white. Vibrissa normal, yellowish; cross-vein r-m at distal 1/3 of discal cell; M_{1+2} ratio as 6. Length: Body 3.99 mm, wing 2.86.

Holotype ♂ (BISHOP 6650), Bundu Tuan, at foot of Mt Kinabalu, Sabah (N. Borneo), 18.II.1959, T. C. Maa. Allotype ♀, Chiangdao, 450 m, Chiangmai Prov., Thailand, 5-11. IV. 1958, Maa.

This species is readily distinguished from *T. melasoma* n. sp. by the testaceous thorax and palpus.

34. *Tranomeringia melasoma* Sasakawa, n. sp. Fig. 21.

♂. Head shiny black; ventromesal part of frontalia, small area of vertex mesad from base of inner vertical bristle and orbit brownish distally; palpus brownish black. Thorax shiny black; mesonotum very slightly pollinose, posterior angle of humerus, lateroproximal

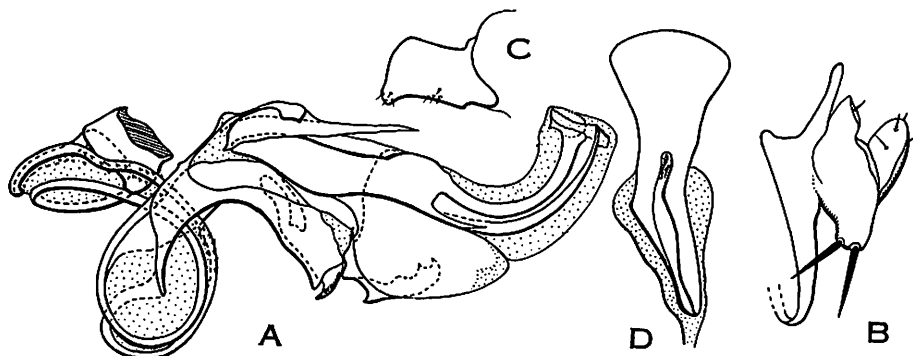


Fig. 21. *Tranomerlingia melasoma*, n. sp.: A, phallus; B, hypandrium and gonites; C, postgonite; D, ejaculatory apodeme.

part of scutellum and pleurotergite brownish, posterior 1/2 of sternopleura and ventral margin of hypopleura yellow. Wing hyaline, slightly brownish on apical 1/3 between veins R_{2+3} and M_{1+2} ; halter yellow. Legs yellow; dorsal apex of fore femur and basal 1/2 of hind tibia brownish, dorsal side of fore tibia and fore tarsal segments 1-4 black (other segments missing). Abdomen matt, black, tergite 6 and epandrium shining brownish black, cercus brown. Setae and bristles brown to black.

Head: Frons slightly narrower than width of eye; eye ratio as 0.89; gena 1/8 height of eye; antenna very slightly separated at base (vibrissa broken at middle); anterior peristomal setae strong. **Mesonotum** with anterior dorso-central nearly $2\times$ as far apart from the posterior as from transverse suture. **Wing:** Costal sections in proportion of 10.5 : 3.2 : 1.6, r-m at distal 1/3 of discal cell, M_{1+2} ratio as 6.8, ultimate section of M_{3+4} slightly shorter than penultimate (4.4 : 4.6). **Terminalia:** Surstylus with 3 spines; cerci with ventral margin very shallowly incised at middle. Phallus with sharply pointed hypophallus, distiphallus tubular; ejaculatory apodeme $260\ \mu$ long, $100\ \mu$ in greatest width. Other structures similar to *zosteriformis*. **Length:** Body 3.3 mm, wing 2.5. ♀. Unknown.

Holotype ♂ (BISHOP 6651), W. Sentani, 150-250 m, Cyclops Mts, NW New Guinea, 16. VI. 1959, T. C. Maa.