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ANTHOMYIIDAE COLLECTED BY THE HOKKAIDO UNIVERSITY
EXPEDITIONS TO NEPAL HIMALAYA, 1968
AND 1975 (DIPTERA)

Scientific Results of Hokkaidô University Expeditions to the
Himalaya, Entomology No. 23

By MASAAKI SUWA

Abstract

SUWA, M. Anthomyiidae collected by the Hokkaidô University Expeditions to Nepal Himalaya, 1968 and 1975 (Diptera). *Ins. matsum. n. s.* 10: 17-51, 108 figs.

Twenty-six Nepalese species of Anthomyiidae belonging to 11 genera are taxonomically reviewed. Of them 12 species are described as new to science: — *Hylemya takagii*, *Delia impilosa*, *Delia humatai*, *Pegohylemyia bangelensis*, *Pegohylemyia purpurea*, *Pegohylemyia himalaica*, *Hydrophoria ghoratobelae*, *Phorbia nepalensis*, *Phorbia pilicerca*, *Phorbia lobatoides*, *Phorbia pilostyla* and *Nupedia aestivaeformis*. Six species are newly recorded from Nepal: — *Anthomyia illocata* Walker, *Delia platura* (Meigen), *Delia gracilis* (Stein), *Pegohylemyia striolata* (Fallén), *Pegomya nigra* Suwa and *Emmesomyia kempi* (Brunetti). A species of *Emmesomyia* remains undetermined.

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INTRODUCTION

This paper is a report on Nepalese Anthomyiidae based on the material collected from Central Nepal by the Hokkaidô University Expeditions to Nepal Himalaya, 1968 and 1975.

Up to the present, so far as I am aware, 19 species, including 2 undetermined ones, of the Anthomyiidae have been known to occur in Nepal (Ackland, 1967 & 1968; Gregor, 1975). In this paper are dealt with 26 species, of which 12 are new to science, 6 are new to Nepal and 1 remains undetermined. In the result 35 species, excluding undetermined ones, of the family are recorded from Nepal. All of the type-specimens of the new species are deposited in the collection of Entomological Institute, Hokkaidô University.

Before going further I wish to express my sincere thanks to Dr. S. Takagi (S.T.), Dr. T. Kumata (T.K.) and Dr. T. Matsumura (T.M.), members of the Expeditions, for their pains and kindness in collecting material of Anthomyiidae during the laborious surveys with a crowded program. My hearty thanks are also due to Dr. D. M. Ackland, Oxford, England, for his help in giving me important information on Oriental species of *Emmesomyia*.

ENUMERATION

*1. *Anthomyia illocata* Walker

Anthomyia illocata Walker, 1856: 129. *Anthomyia illocata*: Malloch, 1924: 271; Snyder, 1965: 206; Hennig 1968: 205; Suwa, 1974: 50.

Material examined. Pokhara, No. 3 West, 1♀, 16-v-68 (T.K.).

Distribution. Nepal; Japan; Hawaii; Oriental and Australian regions.

2. *Hylemya detracta* (Walker)

(Figs. 1-4)

Anthomyia detracta Walker, 1852: 356. *Hylemya detracta*: Ackland, 1967: 123.

Material examined. Sheopuri, Bagmati, 44♂♂, 3♀♀, 27-30-viii-75 (S.T.).

Distribution. Nepal; Oriental region.

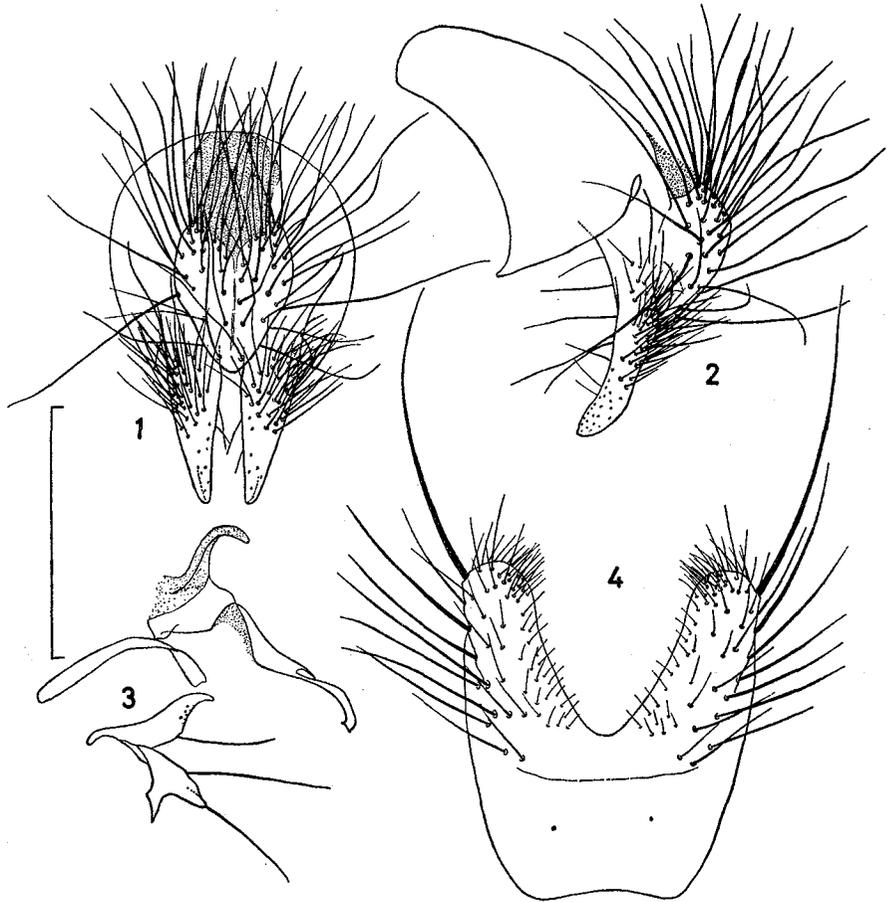
3. *Hylemya takagii* sp. nov.

(Figs. 5-8)

Type-material. Syabru — Syng Gomba, Bagmati, 2♂♂ (one the holotype), 1-x-75 (S.T.).

♂. Body-length 8.5 mm. Body including appendages blackish in ground colour. Parafacials and cheeks whitish grey pollinose, more or less tinged with yellow in pollinosity; haustellum with mentum densely pollinose. Thorax pale grey pollinose, more or less tinged with brown or brownish yellow; mesonotum with brownish pollinose vittae or patches along rows of *acr* and *dc* and on lateral declivities; median vitta and lateral patches blackish when viewed from behind, the

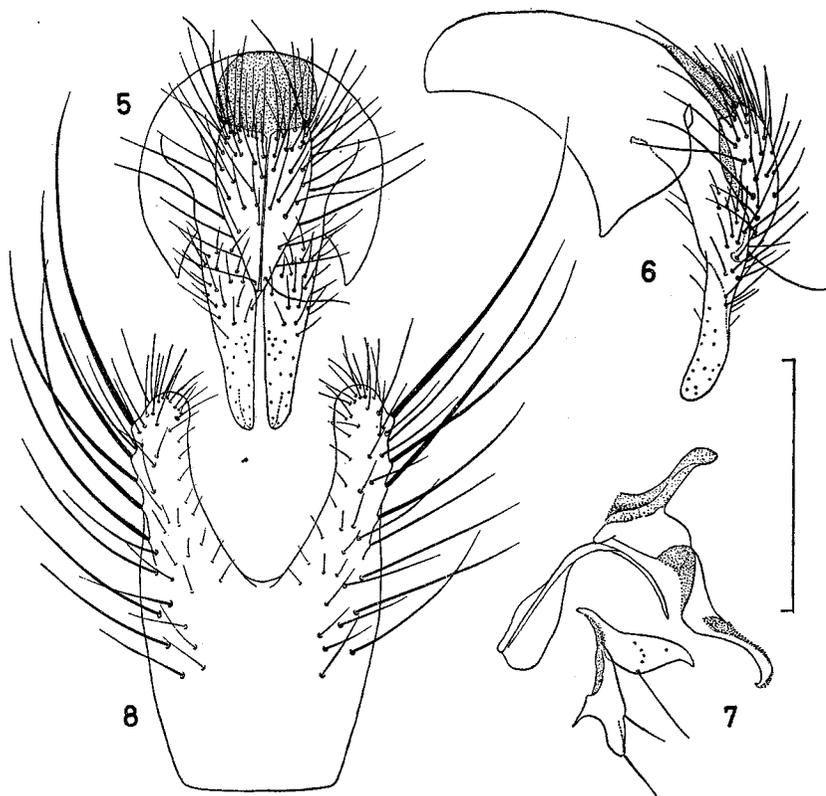
* The species with an asterisk is new to Nepal.



Figs. 1-4. *Hylemya detracta* (Walker), ♂: 1, hypopygium, dorsal view; 2, *ditto*, lateral view; 3, aedeagus; 4, 5th sternite. Sheopuri. Scale 0.5 mm (same for succeeding figures).

former being rather broad and slightly wider than distance between setae of the 1st pair of *pre acr*; scutellum brownish pollinose on dorsum. Abdomen densely pale grey pollinose and half-shining in some lights, with a slight brownish yellow tinge in pollinosity; broad median vitta, broad fore-marginal bands and narrow hind-marginal bands present, these markings being brownish pollinose and in some lights blackish; median vitta broadest on 4th tergite, and on there slightly wider than height of f_3 . Legs blackish; femora brownish apically in little; t_3 yellowish ventrally except near base and apex. Wings rather distinctly tinged with yellow; calyptrae yellowish, with a brownish tinge along margin; halteres yellow at knob.

Head about 1.35 times as high as long; frons very narrow, less than half as wide as anterior ocellus; interfrontalia with a pair of short yet distinct *if*, which are about as long and strong as secondary ocellar setae; parafrontals broadly contiguous to each other, with 7-8 *ori* and no *ors*; A_3 about 2.6 times as long as wide; arista with the longest hairs about twice as long as A_3 -width; profrons about as wide as A_3 ; parafacials becoming narrower ventrad a little in real width, yet much in



Figs. 5-8. *Hylemya takagii* sp. nov., ♂: 5, hypopygium, dorsal view; 6, *ditto*, lateral view; 7, aedeagus; 8, 5th sternite. Holotype from Syabru — Syng Gomba.

profile of head; cheeks about 1.5 times as high as profrons-width; epistoma situated slightly behind frons at lunule; occiput bare on upper depression.

Mesonotum with 3 pairs of *pre acr* and 5 pairs of *post acr*; distance between *acr*-rows shortest near the suture and becoming longer both cephalad and caudad, at the 1st pair of *pre acr* more or less shorter than that to *dc*; *ph* not duplicated; *pra* about two-thirds of posterior *ntpl* in length; mesopleura with a strong anterior *mpl*, and with 1 strong and 1 weak *pstg* and some (5-9) fine associated setulae; *stpl* 2:2, lower anterior being much weaker than the upper; scutellum setulose on dorsum laterally, thereon with about 10 setulae on each side.

Abdomen conical, about 1.8 times as long as wide, and rather densely covered with slender ground setae; 4th tergite with discal setae indistinguishable from ground setulae; 5th sternite (Fig. 8) with marginal setae strong.

Legs slender; t_1 with 1 *ad* and 1 *pv*; f_2 with no *av*, and on basal half with some (6-7) distinct *pv*; t_2 with 1 *ad*, 1 *pd*, 1 *p* and 1 *pv*; f_3 with a row of 7-9 strong *av*, the longest one being about 1.6 times as long as height of the femur, and with 1 *pv* near base and some *pv* in median third; t_3 with 2 *av*, 4 *ad* (distal and proximal ones weaker), 3 *pd* (becoming longer towards apex of the tibia), and 2 *pv* near middle, and with (in the holotype) or without (in the paratype) 2 weaker *pv* in apical fourth. Wings with costal thorns minute although stronger than costal setulae; *m-m* strongly

oblique and sinuate.

♀. Unknown.

Judging from the shape of the hypopygium this species may be closely related to the Palaearctic *H. strenua* R.-D. or *H. nigrimana* (Meigen), from which it can, however, be distinguished by the blackish legs, the stronger *if*, the broader markings on the abdomen; and the weaker costal thorns. Moreover, the primary setae on the body and legs are more or less weaker in *takagii* than in the two species. According to Hennig (1969) *H. latevittata* Stein known from Canary Is. is very similar to *strenua* and is separated from the latter by only a few characters, i.e. the black legs and the mid tibia with no *ad*. Nevertheless *H. takagii* may be distinguishable also from *latevittata* by the features mentioned above except for the colouration.

4. *Hylemya probilis* Ackland

(Figs. 9-12)

Hylemya probilis Ackland, 1967: 121.

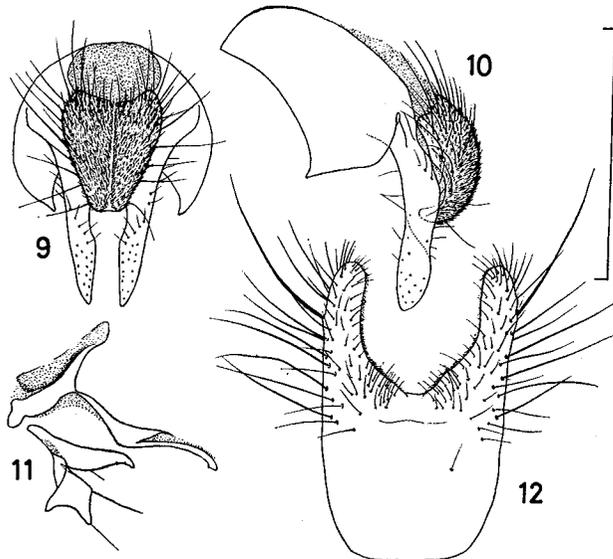
Material examined. Gorapani, No. 4 West, 1 ♂, 2-v-68 (T.K.).

The present specimen agrees well with the original description of *probilis* except for a slight difference in the chaetotaxy of the hind tibia, which is armed with 1 short *pv* near apical fifth in addition to 2-3 *p-pv* on median third.

Distribution. Nepal.

5. *Paregle cinerella* (Fallén)

Musca cinerella Fallén, 1825: 77. *Paregle cinerella*: Hennig, 1967: 161. *Paregle*



Figs. 9-12. *Hylemya probilis* Ackland, ♂: 9, hypopygium, dorsal view; 10, *ditto*, lateral view; 11, aedeagus; 12, 5th sternite. Gorapani.

cinerella: Ackland, 1967: 125.

Material examined. Kathmandu, 9♂♂, 24♀♀, 23-iii-, 14-iv- & 25-v-68 (T.K. & T.M.); Tukucha, Palpa, 8♂♂, 11♀♀, 6- & 16-v-68 (T.K.); Lete, Palpa, 6♂♂, 2♀♀, 5-v-68 (T.M.); Rakuche Kholā, Palpa, 1♂, 9-v-68 (T.K.); Ghasa, Palpa, 2♂♂, 4- & 8-v-68 (T.K.); Naudhara, No. 3 West, 3♂♂, 1♀, 28-iv-68 (T.K.); Pokhara, No. 3 West, 1♂, 1♀, 25- & 26-iv-68 (T.K. & T.M.); Godavari, Nepal Valley, 1♀, 26-iii-68 (T.M.).

Distribution. Oriental and Holarctic regions.

This species is widely distributed in the northern hemisphere and has been known to occur also in Nepal (Ackland, 1967).

*6. *Delia platyura* (Meigen)

Anthomyia platyura Meigen, 1826: 171. *Delia platyura*: Hennig, 1974: 881.

Material examined. Tukucha, Palpa, 2♂♂, 2♀♀, 6- & 16-v-68 (T.K.); Lete, Palpa, 1♂, 8-v-68 (T.M.); Ghasa, Palpa, 1♀, 4-v-68 (T.K.); Dunche, No. 1 West, 1♂, 31-v-68 (T.K.); Naudhara, No. 3 West, 1♀, 23-iv-68 (T.K.); Kathmandu, 2♂♂, 3♀♀, 14-iv-68 (T.K.); Syng Gomba, Gosainkund, 1♀, 1-vi-68 (T.K.); Ghora Tobela, Bagmati, 2♂♂, 1♀, 23-ix-75 (S.T.).

Distribution. Cosmopolitan.

7. *Delia bracata* (Rondani)

(Figs. 13-16)

Hylemyia bracata Rondani, 1866: 183. *Delia flavibasis*: Ackland, 1967: 119, nec Stein, 1903. *Delia bracata*: Hennig, 1974: 747.

Material examined. Kathmandu, 3♂♂, 2♀♀, 14-iv-68 (T.K.); Tukucha, Palpa, 3♀♀, 6-v-68 (T.K. & T.M.); Ghasa, Palpa, 1♂, 8-v-68 (T.K.); Pokhara, No. 3 West, 9♂♂, 3♀♀, 25-iv-68 (T.K.), & 1♂, 16-v-68 (T.K.); Naudhara, No. 3 West, 2♂♂, 8♀♀, 28-iv-68 (T.K. & T.M.); Biratanti, No. 4 West, 1♂, 29-iv-68 (T.K.).

Distribution. Nepal; India; Iran; Near East; North Africa; Canary Is.; South Europe; ? South Africa.

This species was already recorded from Nepal by Ackland (1967) under the name of "*Delia flavibasis* (Stein)."

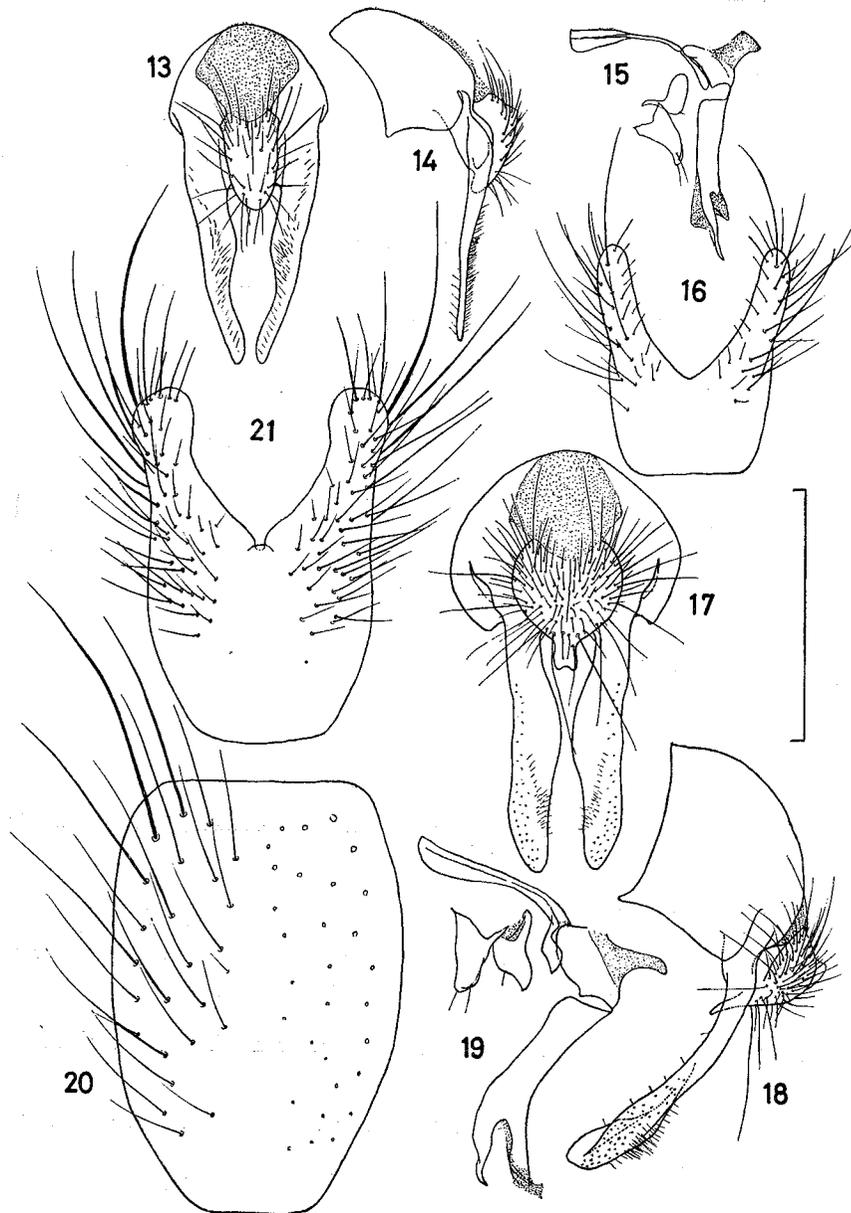
*8. *Delia gracilis* (Stein)

(Figs. 17-21)

Chortophila gracilis Stein, 1907: 360. *Delia gracilis*: Hennig, 1974: 833.

Material examined. Syng Gomba, Gosainkund, 1♂, 1-vi-68 (T.K.).

This species was described from a single male specimen collected in Zaidam, Tibet and there has been no additional record. The present Nepalese specimen



Figs. 13-16. *Delia bracata* (Rondani), ♂ : 13, hypopygium, dorsal view; 14, *ditto*, lateral view; 15, aedeagus; 16, 5th sternite. Pokhara.

Figs. 17-21. *Delia gracilis* (Stein), ♂ : 17, hypopygium, dorsal view; 18, *ditto*, lateral view; 19, aedeagus; 20, 4th sternite; 21, 5th sternite. Syng Gomba.

agrees well with the original description of *gracilis* and also with Hennig's (1974) redescription based on the holotype in main characters. On the basis of the specimen at hand a brief redescription will be given as follows: -

♂. Body-length 7.5 mm. Frons about 1.5 times as wide as anterior ocellus; interfrontalia more or less narrower than anterior ocellus, with no distinct *if*, only with some (6) minute setulae, of which upper 4 are paired; A_3 about 1.8 times as long as wide; epistoma slightly behind frons at lunule. Mesonotum with 2 strong *ph*; *pra* longer than anterior *ntpl*; notopleura with about 10 accessory setulae; *stpl* 1:2. Abdomen half-depressed, about 2.3 times as long as wide, and gradually narrowing caudad; median vitta and fore-marginal bands broad and distinct. Fore tibia with 1 or 2 *pv*; t_2 only with 2 *pv*; t_3 with 3 or 4 *av*, 5 *ad*, 3 or 4 long and a few short *pd*, and about 10 *pv*. Wings with a distinct brownish tinge; costal thorns very minute and hardly distinguishable from costal setulae; *m-m* oblique and distinctly sinuate.

♀. Unknown.

Distribution. Nepal; Tibet.

9. *Delia nepalensis* Ackland

(Figs. 22-23)

Delia nepalensis Ackland, 1967: 113.

Material examined. Pokhara, No. 3 West, 1 ♂, 25-iv-68 (T.K.); Dunche, No. 1 West, 1 ♂, 31-v-68 (T.K.).

According to Ackland (1967) this species can be distinguished from the closely related *D. nigribasis* (Stein, 1907) from Tibet by the male 5th sternite with setae more or less evenly distributed along the length of the lobes (processes). The present male specimens agree well with the original description of *nepalensis* except for a slight difference in the chaetotaxy of the legs: — Mid tibia (missing in the specimen from Dunche) with no *ad*, 1 or 2 *pd* and 1 or 2 *pv*; f_3 on basal half with some short and weak *av* and on apical half with some (5-6) long and strong ones; t_3 with 1 or 2 *av*, 2 or 3 *ad*, 2 or 3 *pd*, and 1 or 2 *pv*, the *pv* being discernible although fine.

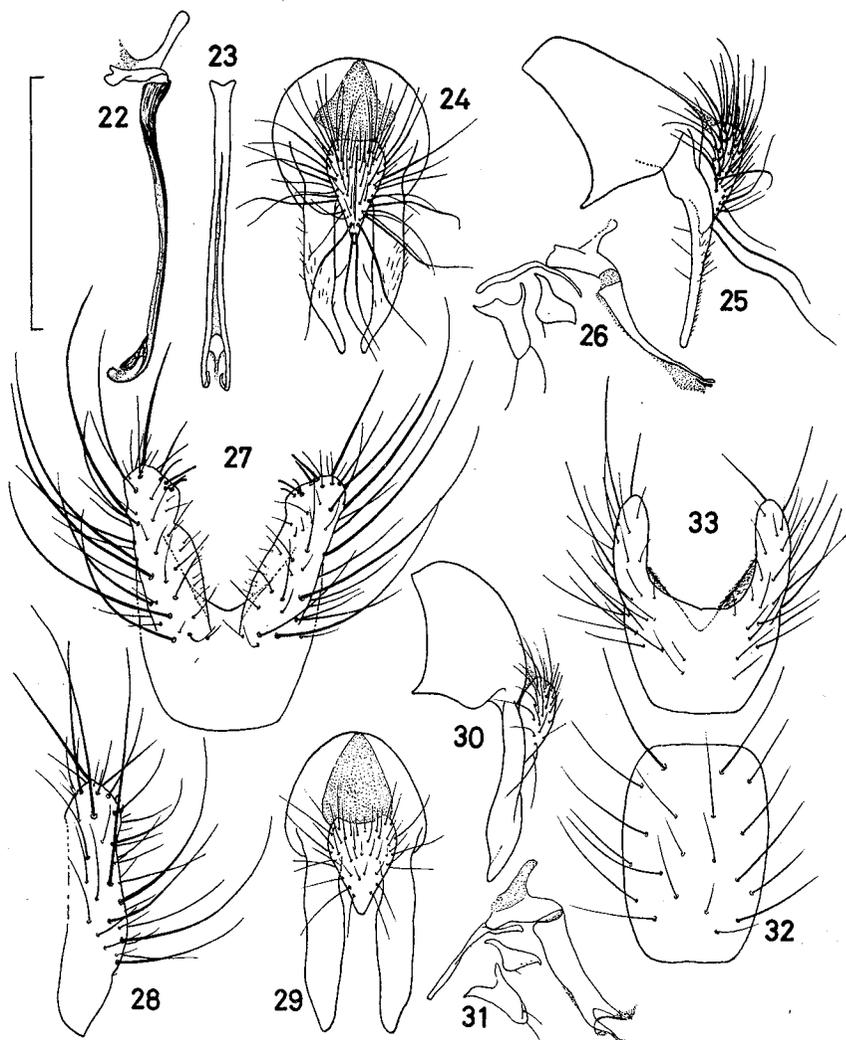
Distribution. Nepal.

10. *Delia impilosa* sp. nov.

(Figs. 24-28)

Type-material. Dunche, No. 1 West, 1 ♂ (holotype), 31-v-68 (T.K.).

♂. Body-length 4.7 mm; wing-length 4.7 mm. Body brownish in ground colour (probably owing to a shortage of time from the emergence and may be blackish in normal), and thinly whitish grey pollinose. Frons on lower half, parafacials, cheeks and face yellowish in ground colour and whitish pollinose; antennae blackish; haustellum with mentum pollinose. Mesonotum dark brownish in ground colour, thinly covered with pale grey pollen, paler and denser in pollinosity on humeral calli and notopleura, and when viewed from behind with narrow median and very broad lateral vittae, the latter being not interrupted at the suture. Abdomen brownish yellow in ground colour and very thinly covered with whitish pollen, when viewed from behind with a very faint and broad



Figs. 22-23. *Delia nepalensis* Ackland, ♂: 22, basiphallus and distiphallus, lateral view; 23, distiphallus, dorsal view. Dunche.

Figs. 24-28. *Delia impilosa* sp. nov., ♂: 24, hypopygium, dorsal view; 25, ditto, lateral view; 26, aedeagus; 27, 5th sternite, ventral view; 28, ditto, lateral view. Holotype from Dunche.

Figs. 29-33. *Delia kumatai* sp. nov., ♂: 29, hypopygium, dorsal view; 30, ditto, lateral view; 31, aedeagus; 32, 4th sternite; 33, 5th sternite. Holotype from Bangel Kharka.

median vitta. Legs brownish. Wings tinged with yellow; calyptrae yellowish; halteres yellow at knob.

Eyes rather distinctly haired although sparsely; head about 1.3 times as high as long; frons narrower than anterior ocellus; interfrontalia not interrupted though very narrow, with a pair of short *if*; parafrontals with about 4 *ori* and no *ors*; A_3 about twice as long as wide; arista shortly plumose, the longest hairs being about

3 times as long as basal diameter of arista; profrons about as wide as A_3 ; parafacials at the narrowest part about two-thirds of A_3 in width; cheeks about 1.3 times as high as A_3 -width, with genal setae in 1 row; epistoma situated behind frons at lunule; occiput with a few setulae on upper part below postocular series.

Mesonotum almost devoid of accessory setulae; only 1 pair of *pre acr* present, the setae being rather strong, only a little shorter and weaker than posterior *ntpl* and separated from each other by a distance about two-thirds as long as that to *dc*; 2 pairs of fine *post acr* (including *prsc acr*) present; *ph* not duplicated; *pra* about as long as anterior *ntpl*; mesopleura with no distinct anterior *mpl*, and with 1 *pstg* and 4 associated setulae; *stpl* 1:2.

Abdomen depressed, nearly parallel-sided and about 2.3 times as long as wide.

Fore tibia with 1 *pv* and no *ad*, apical *pv* being rather strong and pointed apically; t_2 with no *av* and on basal half with some rather distinct *pv*; t_2 with 1 *ad*, 2 *pd*, 2 *pv* and no *av*; t_3 with a row of about 8 *av* and on basal half with some weak *pv*; t_3 with 3 *av*, 4 or 5 alternately long and short *ad*, 4 *pd* and a few *pv*. Wings with costal thorns rather distinct, about as long as *h*; *m-m* nearly upright and a little sinuate.

♀. Unknown.

This species may be similar to *D. parafrontella* Hennig, 1974 from Manchuria in having a slender distiphallus, long setae on the praegonite, and a similar hypopygium. However, it can be readily distinguished from the latter by the larger body, the hairy arista and the longer *pra*.

11. *Delia kumatai* sp. nov.

(Figs. 29–33)

Type-material. Bangel Kharka, No. 1 West, 2♂♂ (one the holotype), 7-vi-68 (T.K.); Ulleri, No. 4 West, 1♂, 11-v-68 (T.K.).

♂. Body-length 4.3–4.5 mm; wing-length 4–4.2 mm. Body including appendages blackish or dark brown in ground colour and brownish grey in pollinosity. Parafacials and cheeks pale brownish grey pollinose; haustellum with mentum densely pollinose. Mesonotum brownish grey pollinose, paler and denser in pollinosity on humeral calli and notopleura, when viewed from front with a rather distinct black median vitta and along *dc*-rows with faint paramedian vittae, and when viewed from behind with a black median vitta and black lateral patches. Abdomen brownish grey pollinose, with a faint median vitta and no marginal bands. Legs dark brownish, more or less paler than body. Wings distinctly tinged with brown, strongly at base; veins dark brownish; calyptrae yellowish; halteres at knob yellow and more or less reddish.

Eyes rather distinctly though sparsely haired; head about 1.2 times as high as long; frons wider than anterior ocellus, about 1.2–1.3 times of the latter; interfrontalia about half as wide as anterior ocellus, with a pair of short *if*; parafrontals with 5–6 long and 0–2 short and fine *ori*, and with no *ors*; A_3 about 1.6 times as long as wide; arista distinctly pubescent although the longest hairs are shorter than basal diameter of arista; profrons slightly narrower than A_3 ; parafacials not narrowing ventrad; cheeks about 1.5 times as high as profrons-width, with

genal setae in 1 row, the bare region being distinctly narrowing caudad; face strongly concave near epistoma; epistoma rather distinctly protruded forwards beyond frons at lunule; palpi slender, slightly longer than A_2 and A_3 combined; haustellum slender, with mentum rather distinctly longer than palpi; occiput with a few or some setulae on upper part below postocular series.

Mesonotum with 2 or 3 pairs of fine *pre acr* and 3-5 pairs of fine *post acr*; rows of *acr* distinctly more narrowly separated from each other than from *dc*-rows; *ph* not duplicated; *pra* more or less longer than anterior *ntpl*; notopleura with no accessory setulae; mesopleura with no distinct anterior *mpl*, and with 1 *pstg* and some associated setulae; *stpl* 1:2.

Abdomen depressed, about 2.4-2.7 times as long as wide and gradually narrowing caudad.

Fore femur with a row of about 8 rather strong *a* on basal two-thirds; t_1 with some (4-5) slender *pv* on apical half, the longest one being about 2.5-3 times as long as height of the tibia, and in the specimen from Ulleri with 1 distinct *ad* near apical third; apical *pv* of t_1 long and pointed apically; f_2 with a few rather distinct *av* near base and with a row of *pv*, of which the setae on apical third are short and weak; t_2 with 2-3 *av*, 1 *ad*, 1-2 *pd* and 2 *pv*; f_3 with some *av* on apical half and no *pv* except for a few preapical ones; t_3 with 3-4 *av*, 5-6 *ad* of various strength, 3-4 strong and some weak *pd*, and 5-7 *pv*; fore tarsus with 5th segment enlarged, more than twice as wide as the 1st. Wings with costal thorns short, and slightly stronger than costal setulae; *m-m* slightly oblique and faintly sinuate.

♀. Unknown.

Judging from the distiphallus and the surstyli this species may be closely related to *D. interflua* (Pandellé, 1900), from which it can, however, be readily distinguished by the smaller body, by the distinctly protruded epistoma, and by the chaetotaxy of the body and legs.

*12. *Pegohylemyia striolata* (Fallén)

Musca striolata Fallén, 1824: 71. *Pegohylemyia striolata*: Hennig, 1970: 417; Suwa, 1974: 99.

Material examined. Bangel Kharka, No. 1 West, 1 ♂, 7-vi-68 (T.K.); Thare Pati, Gosainkund, 1 ♂, 6-vi-68 (T.K.); Syng Gomba, Gosainkund, 1 ♂, 1-vi-68 (T.K.).

The Nepalese form is slightly different from the European and also the Japanese ones in having fewer setae on the male mid tibia, i.e. 1 *ad*, 1 *pd* and 2 *pv*, and in having a narrower male frons, which is at most as wide as anterior ocellus. In other characters including the genital structures the present form agrees well with redescriptions of *striolata* given by Hennig (1970) and Suwa (1974).

13. *Pegohylemyia bangelensis* sp. nov.

(Figs. 34-38)

Type-material. Bangel Kharka, No. 1 West, 1 ♂ (Holotype), 7-vi-68 (T.K.).

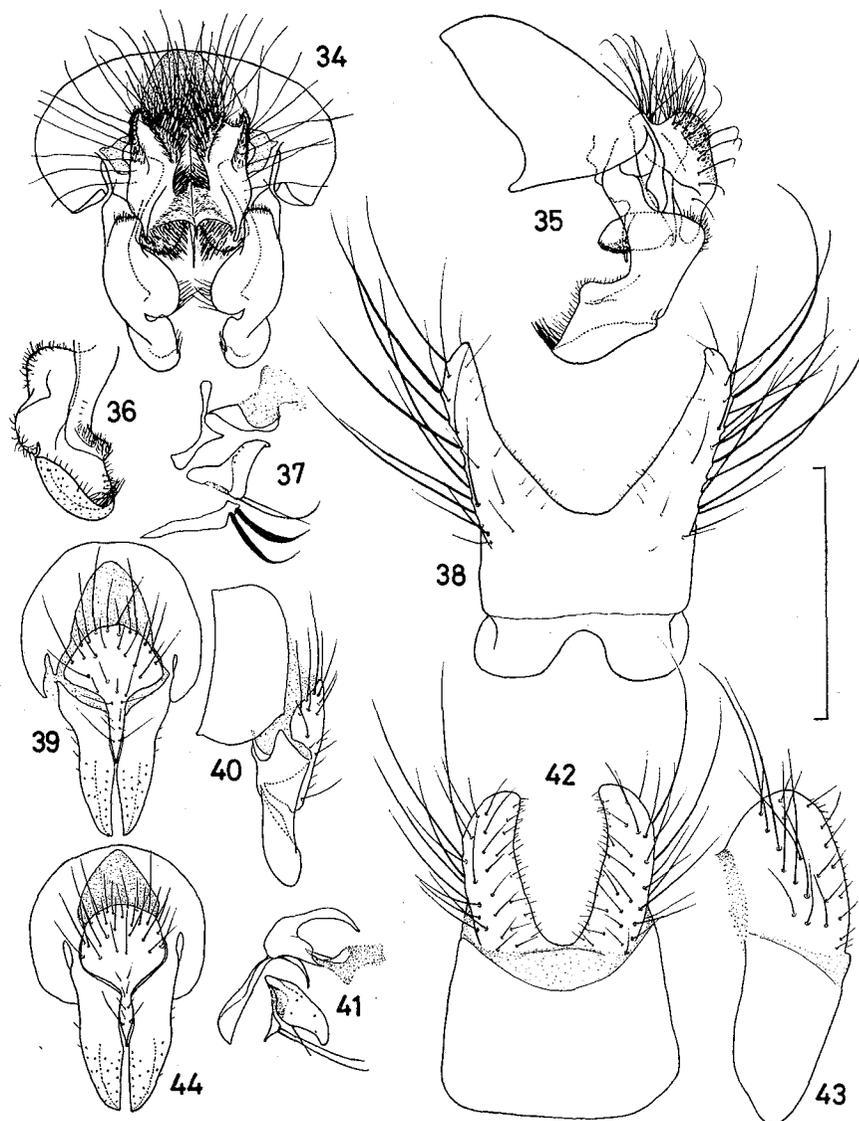
♂. Body-length 5.2 mm; wing-length 5.3 mm. Body including appendages blackish in ground colour and bluish grey in pollinosity. Frons and parafacials pale brownish in pollinosity; cheeks whitish grey and slightly brownish in pollinosity; face bluish grey and more or less brownish in pollinosity; haustellum with mentum densely pollinose. Mesonotum densely pollinose on humeral calli and notopleura, rather thinly pollinose and half-shining on the remaining part, and with 5 dark vittae along rows of *acr*, *dc* and *ia*, these vittae being broader when viewed from front than from behind; mesonotum brownish pollinose on and near the vittae; pleura brownish pollinose in part; scutellum brownish pollinose dorsally. Abdomen with fine texture in pollinosity and shining, with a rather broad median vitta and narrow fore-marginal bands, these markings sharp. Wings tinged with brown, darker basad; calypterae and halteres at knob yellowish.

Eyes sparsely haired; head about 1.3 times as high as long; frons more or less narrower than anterior ocellus; interfrontalia about half as wide as anterior ocellus, with a pair of slender *if*, which are about as long as ocellar setae; parafrontals with 6-7 slender *ori* (of them a few ones rather strong) and with a few minute associated setulae; A_3 about 1.8 times as long as wide; arista distinctly pubescent although the hairs are at most as long as basal diameter of arista; profrons more or less wider than A_3 ; parafacials slightly narrowing ventrad, at the narrowest part nearly as wide as A_3 ; cheeks only a little higher than profrons-width, with genal setae in 3 rows; epistoma protruded forwards about as far as frons at lunule; face distinctly concave near epistoma; palpi slender, about 1.2 times as long as A_2 and A_3 combined; haustellum rather slender, with mentum more or less longer than palpi; occiput setulose on upper part below postocular series.

Mesonotum with 3 pairs of rather fine *pre acr* and with several (4) accessory setulae between the rows, setae of the middle pair being the strongest and separated from each other by a distance about as long as that to *dc*-rows; *ph* not duplicated; *pra* about as long as anterior *ntpl*; mesopleura with a long and slender anterior *mpl*, and with 1 strong and 1 weaker *pstg* and some (8) associated setulae; *stpl* 1:3, lowest posterior much shorter than the uppers; scutellum with some accessory setulae on each lateral side dorsally.

Abdomen depressed except on hypopygium, nearly parallel-sided, and about twice as long as wide; 2nd tergite with marginal setae as fine as ground setulae except for a few rather strong lateral ones; 3rd tergite with marginal setae only a little stronger than ground setulae except for long and strong lateral and sublateral ones; 4th tergite with marginal setae distinctly stronger than ground setulae; 5th tergite with some distinct discal setae; prebasal sclerite bare.

Fore femur with some distinct *a*; t_1 with 1 strong *pv* near middle and with 1 short and weak *ad* near apical third, some setulae on apical third of anterodorsal surface being more or less discernible; f_2 with some strong *av* on basal two-thirds, basal one being the longest although weaker than median ones and about 1.7 times as long as height of the femur, and with about 10 slender *pv* on basal two-thirds, the longest one being about twice as long as height of the femur; t_2 with 2 *av*, 1 *ad*, 2 *pd* and 2 *pv*; f_3 with a row of long and strong *av*, basal one being the longest although much weaker than the others and more than twice as long as height of the femur, on basal two-thirds with some long *pv* weaker than *av*, the longest one being about twice as long as height of the femur, and with ground setulae on basal half of posterior surface more or less lengthened and becoming longer towards base



Figs. 34-38. *Pegohylemyia bangelensis* sp. nov., ♂: 34, hypopygium, dorsal view; 35, ditto, lateral view; 36, surstylus (left), inside view; 37, aedeagus; 38, 5th sternite. Holotype from Bangel Kharka.

Figs. 39-44. *Pegohylemyia purpurea* sp. nov., ♂: 39, hypopygium, dorsal view; 40, ditto, lateral view; 41, aedeagus; 42, 5th sternite, ventral view; 43, ditto, lateral view; 44, hypopygium, dorsal view. Paratype from Gosainkund (Figs. 39-43) and another paratype from the same locality (Fig. 44).

of the femur; t_3 with 2 *av*, 5 alternately short and long *ad*, 3 *pd* (2 additional ones on the left leg) and 4 or 5 *pv*, apical *pd* distinctly shorter and weaker than apical *ad* although longer than height of the tibia. Wings with costal thorns rather strong, about as long as *r-m*; costa bare ventrally; costal setulae between *h* and

costal thorns rather distinct and more or less erect; *m-m* slightly oblique and not sinuate.

♀. Unknown.

In having the 5th sternite and hypopygium of the same type as those of *P. obscura* (Zetterstedt, 1845) and its allies (the *obscura*-group) *P. bangelensis* belongs to this species-group. In a key to the Palaearctic species of *Pegohylemyia* given by Hennig (1970) the present species runs out to *P. albifacies* (Karl, 1943), a member of the *obscura*-group, from which and other members of the group it can, however, be distinguished by the epistoma protruded forwards about as far as frons at lunule, by the mid tibia with 2 *av*, by the mesonotum hardly setulose between the *acr*-rows, and by the hypopygium with different detail.

14. *Pegohylemyia purpurea* sp. nov.

(Figs. 39–44)

Type-material. Gosainkund, alt. ca 4,400 m, 5♂♂ (one the holotype), 3♀♀, 4-v-68 (T.K.), the flies were walking on fresh snow.

♂. Body-length 3.7–4 mm. Body blackish in ground colour, and brownish grey and purplish red in pollinosity, which is often tinged with greenish colour on the thorax ventrally and on the occiput medianly. Interfrontalia blackish or on lower half brownish in ground colour, with pale brown or brownish grey pollen; parafacials and cheeks blackish or dark brownish in ground colour, and pale brown or brownish grey in pollinosity; antennae and palpi blackish; haustellum with mentum blackish and distinctly pollinose. Mesonotum when viewed from front wholly pollinose and hardly vittate, and when viewed from above with 5 vittae along rows of *acr*, *dc* and *ia*, when viewed from behind the median and paramedian vittae are broadly fused on caudal half of scutum and the lateral vittae are enlarged to lateral declivities and become patch-like. Abdomen variously darkened according to the point of view, wholly pollinose when viewed from front, and almost wholly darkened except on pollinose lateral areas when viewed from behind in low angle, the darkenings becoming inverted-triangular on each tergite in certain view-angles; 5th sternite with processes light yellow and shining. Legs blackish. Wings with a dark brownish tinge; calyptrae yellowish and hardly or slightly tinged with brown; halteres brownish at base and yellow or brownish yellow at knob.

Eyes sparsely haired; head only a little higher than the length; frons wide, about 1.3–1.4 times as wide as distance between posterior ocelli inclusive; interfrontalia about as wide as distance between posterior ocelli inclusive, with a pair of distinct or rather fine *if* and with a few or some minute or microscopical setulae; parafrontals with 3–4 *ori* and a few associated short setulae, and with no *ors*; antennae separated from each other by a distinct facial elevation; A_3 short and more or less broadening apicad, about 1.3–1.4 times as long as wide; arista rather distinctly pubescent, yet the hairs being shorter than basal diameter of arista; profrons about as wide as A_3 ; parafacials only a little narrowing ventrad; cheeks more or less higher than A_3 -width, with genal setae in 1 or 2 rows; epistoma distinctly protruded forwards beyond frons at lunule; palpi stick-like, about as long as A_2 and A_3 combined; haustellum slender, with mentum much longer than

palpi; occiput with some setulae on each side of upper part below postocular series; both outer and inner vertical setae long and strong.

Mesonotum with many short and rather strong setulae along anterior margin; *acr* fine, about 4 pairs of *pre acr* excluding a few setulae near anterior margin of the mesonotum and 6 or 7 pairs of *post acr*; the *acr*-rows narrowly separated from each other, the anterior distance being about half as long as that between *dc* and *acr*; between the rows of *acr* hardly setulose; *ph* not duplicated; *pra* about as long as 1st *ia*; mesopleura with no distinct anterior *mpl*, and with 1 strong and 1 weaker *pstg* and 0–2 fine associated setulae; *stpl* 1: 2; scutellum with discal setae very fine.

Abdomen depressed except on hypopygium, about 1.7–2.4 times as long as wide; 2nd to 4th tergites with marginal setae weak except for a few lateral ones; prebasal sclerite with some strong and usually some weak setae along hind margin.

Fore tibia with 1 (2 in 1 specimen) long *ad* and 1 long *pv*, the *ad* being about 2.5 times as long as height of the tibia and the *pv* more or less longer than the *ad*; f_2 with a row of rather strong *av*, the longest one at most as long as height of the femur, and with a row of slender *pv* becoming shorter towards apex of the femur, setae near base being much longer than height of the femur; t_2 with 2 (3 in 1 specimen on the left leg) *ad*, 2 *pd* and 2 (1 in 1 specimen) *pv*; f_3 with a row of 6–8 strong *av*, the longest one being about 1.3–1.6 times as long as height of the femur, and on basal two-thirds with some slender *pv*, the longest one more or less longer than the longest *av*; t_3 with 2–4 *av*, 3–4 *ad*, 3 long and 1–2 short *pd*, and 2–5 *p-pv*. Wings with costal thorns rather strong; *m-m* upright or a little oblique inwards and hardly or faintly sinuate.

♀. Frons very wide, nearly half as wide as head (in 1 specimen of good condition); interfrontalia about half as wide as frons, with *if* long and strong; parafrontals with 1 proclinate and 2 reclinate *ors*, which are directed outwards. Mid femur in basal two-thirds with a few or some slender *pv*, which are weaker than in male.

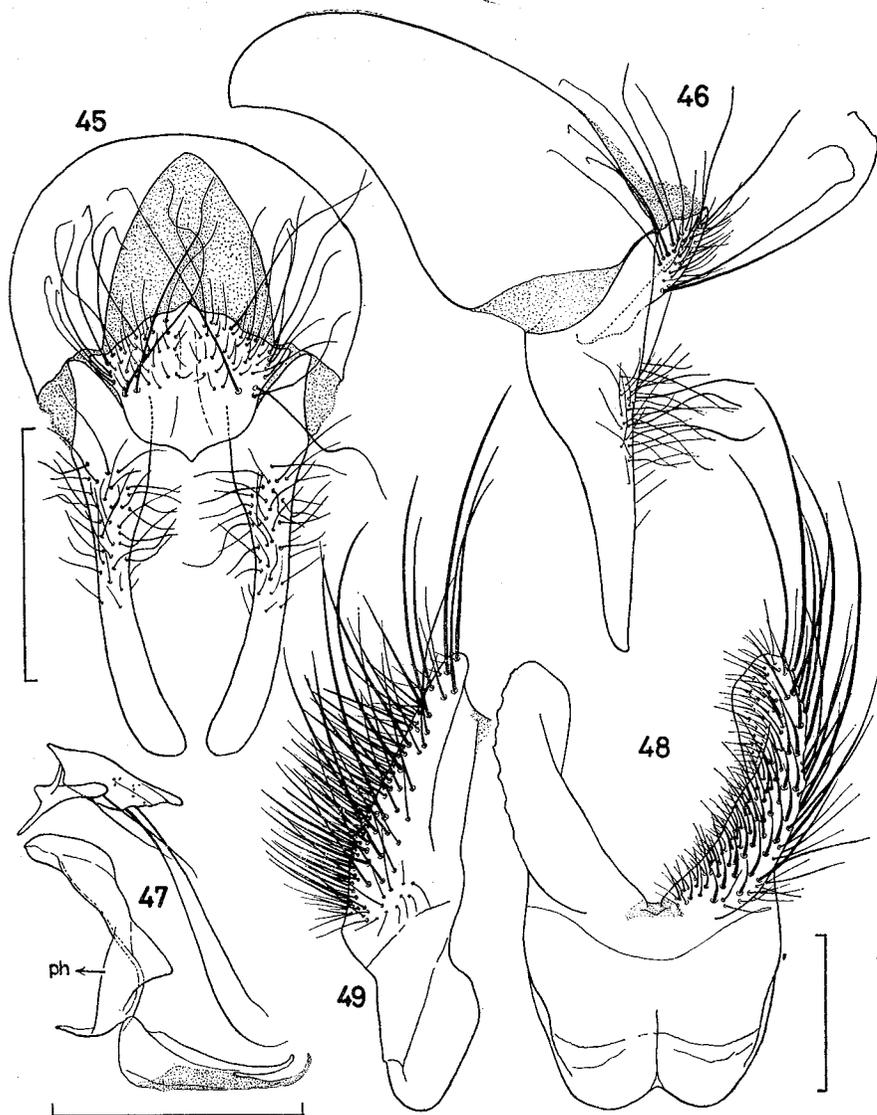
Judging from the setose prebasal sclerite and the similar aedeagus this species may be more closely related to *P. striolata* than to other known species of the genus. *P. purpurea* can, however, be readily distinguished from *striolata* by the reddish colouration in the pollinosity, by the wider frons of the male, by the more protruded epistoma and by the yellow processes of the male 5th sternite.

15. *Pegohylemyia himalaica* sp. nov.

(Figs. 45–49)

Type-material. Tukucha, Palpa, 3♂♂, 6-v-68 (T.K.); Dunche, No. 1 West, 3♂♂ (one the holotype), 31-v-68 (T.K.).

♂. Body-length ca. 8–9 mm. Body blackish in ground colour, and densely covered with pale bluish grey and hardly or faintly yellowish pollen, which is faintly suffused with a purplish tinge in part and is more or less brownish especially on dorsum of the body. Interfrontalia brownish to blackish in ground colour, and whitish grey and more or less yellowish in pollinosity; parafacials and cheeks brownish to blackish in ground colour, and whitish and slightly yellowish in pollinosity; antennae and palpi blackish; haustellum with mentum blackish and



Figs. 45-49. *Pegohylemyia himalaica* sp. nov., ♂: 45, hypopygium, dorsal view; 46, ditto, lateral view; 47, aedeagus, ph, phallapodeme; 48, 5th sternite, ventral view; 49, ditto, lateral view. Paratype from Dunche (Figs. 45-47) and another paratype from Tukucha (Figs. 48-49).

densely pollinose; occiput rather distinctly suffused with a purplish tinge in pollinosity. Mesonotum rather strongly brownish pollinose along median line, rows of *dc* and lateral margins, these markings being connected with brownish diffusion of pollen; when viewed from above to behind with a blackish median vitta and blackish lateral patches, and when viewed from lateral with blackish paramedian vittae along rows of *dc*. Abdomen more or less brownish in pollinosity

on dorsum, with tessellation in some lights, and with a rather broad median vitta, very broad fore-marginal bands and very narrow hind-marginal bands, the vitta and bands being sharp when viewed from behind in low angle. Legs blackish. Wings with a distinct yellow or brownish yellow tinge; calyptrae yellowish; upper calyptra with blackish fringe, the lower with pale one; halteres yellowish, paler at knob.

Eyes sparsely haired; head about 1.2–1.3 times as high as long; frons 1.5 times or a little more as wide as anterior ocellus; interfrontalia about as wide as anterior ocellus, with a pair of *if*, which are rather distinct (in the holotype), fine, or microscopical; parafrontals with 7–10 *ori* and a few or some microscopical associated setulae, and with no *ors*; A_3 about 2.3–2.7 times as long as wide; arista distinctly pubescent, with hairs in every direction, the longest hairs being more or less shorter than twice of basal diameter of arista; profrons about twice as wide as A_3 ; cheeks in height equal to or a little less than A_3 -length, with genal setae in 1 row; epistoma situated behind frons at lunule; palpi slender, about as long as A_2 and A_3 combined; haustellum slender, with mentum about as long as palpi; occiput with some setulae on upper part below postocular series.

Mesonotum with no *pre acr*, and on caudal half of scutum with a pair of distinct and slender *prsc acr* and a few pairs of very fine *post acr*, which are associated with some fine accessory setulae; *ph* not duplicated; *pra* much longer than anterior *ntpl* and as long as or a little shorter than 1st *ia*; mesopleura with a strong anterior *mpl*, and with 1 strong and 1 fine *pstg* and some (4–10) fine associated setulae; *stpl* 1:3, lowest posterior much weaker than the uppers; scutellum setulose on dorsum laterally.

Abdomen cylindrical, more or less longer than twice of the width; prebasal sclerite with a row of many setae similar to ground setulae.

Legs with claws and pulvilli very well developed; t_1 with 1 short and distinct or fine *ad* near apical fourth and 1 long and strong *pv* between middle and apical third, the *pv* lacking in the holotype; f_2 with no *av*, on basal half with some (4–5) strong *pv* longer than height of the femur, and on apical half with a row of weak *pv* shorter than height of the femur; t_2 with 1 *ad*, 2 or rarely 1 *pd* and 1 *pv*; f_3 with a row of 7–9 strong *av*, most of which are much longer than height of the femur and about twice as long as the height, near base with 1 or 2 slender *pv*, on median third with a few long and strong *pv*, and on apical third with a row of weak or fine *pv* shorter than height of the femur; t_3 with 2–3 *av*, 2 or sometimes 3 *ad*, 3–4 *pd* and 2–3 *pv*, the distal *pd* being very long, about one-third as long as the tibia. Wings with costal thorns rather strong, about as long as *h*; costa haired on ventral surface rather anteriorly; *m-m* more or less oblique and distinctly sinuate; fringe on upper calyptra and on liaison part of upper and lower calyptrae being composed of long hairs, of which those on and near the liaison part are especially long and distinctly longer than the projection-length of the upper calyptra.

♀. Unknown.

In having a greyish stout body and a setose prebasal sclerite this species is similar to *Botanophila*-species rather than to *Pegohylemyia*-ones. It should, however, be included in the latter genus by the absence of apical *pv* on the hind tibia. Moreover, the setose 5th sternite of this species is more similar to the state in the Japanese *P. spinisternata* Suwa, 1974 than in *Botanophila*-species. Discovery of the present species may strongly suggest that the two genera are closely related to

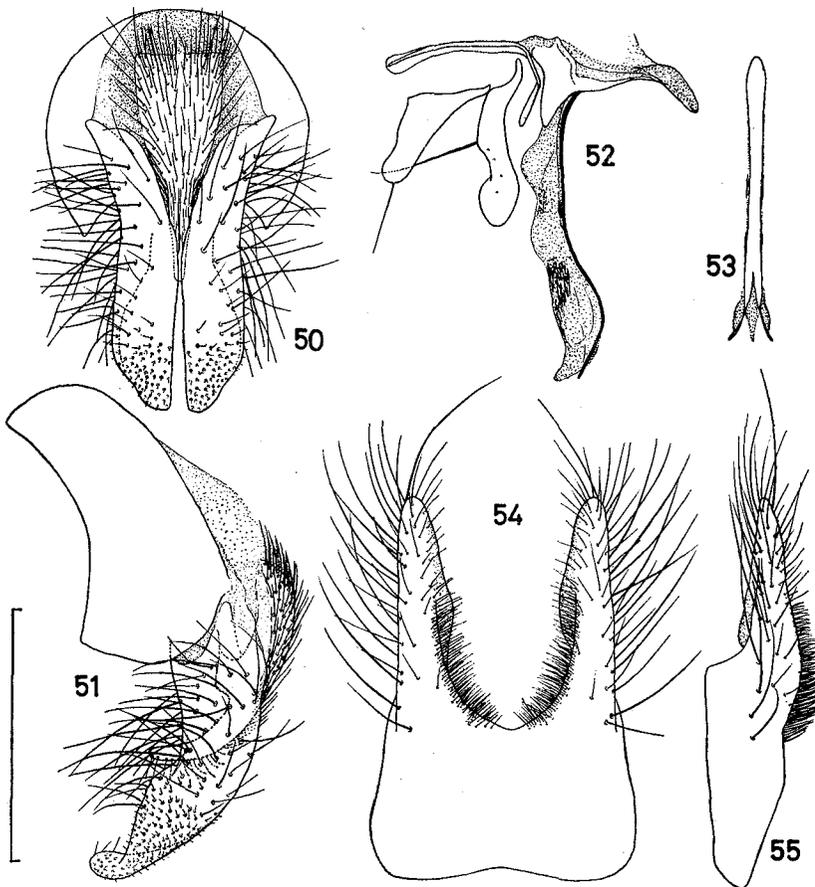
each other.

16. *Hydrophoria ghoratobelae* sp. nov.

(Figs. 50–55)

Type-material. Ghora Tobela, Bagmati, alt. ca. 3,000 m, 1 ♂ (holotype), 29-ix-75 (S.T.).

♂. Body-length 6.5 mm; wing-length 6.3 mm. Body black in ground colour and rather hairy. Interfrontalia brownish in ground colour on lower triangle part, paler near lunule, with whitish pollen; parafacials in ground colour brownish, darkened along eye-margin, and in pollinosity whitish and faintly yellowish; cheeks brownish in ground colour, whitish and faintly yellowish in pollinosity; antennae and palpi black; haustellum with mentum black and polished; occiput black in ground colour, rather thinly covered with greyish



Figs. 50–55. *Hydrophoria ghoratobelae* sp. nov., ♂: 50, hypopygium, dorsal view; 51, ditto, lateral view; 52, aedeagus; 53, distiphallus, dorsal view; 54, 5th sternite, ventral view; 55, ditto, lateral view. Holotype from Ghora Tobela.

pollen. Thorax black in ground colour, thinly covered with grey and more or less brownish pollen, and shining; mesonotum when viewed from behind with a broad black median vitta and black lateral patches. Abdomen black in ground colour and rather densely covered with pale yellowish grey pollen, with tessellation in some lights; median vitta rather broad and distinct; fore-marginal bands lacking; hind-marginal bands rather distinctly appearing when viewed from behind; hypopygium pollinose. Legs black. Wings hyaline, slightly darkened basally; veins blackish or dark brownish; calyptae pale yellow, rather strongly yellow on margin; halteres yellow at knob.

Frons more or less wider than anterior ocellus; interfrontalia linear caudad, less than half as wide as anterior ocellus, and with an irregular pair of microscopical *if*; parafrontals with 12 or 13 long and strong or slender *ori* and some fine associated setulae; A_3 about 1.6 times as long as wide; arista with long hairs on basal third dorsally and between basal fourth and apical third ventrally, dorsal hairs being much longer than the ventrals, the longest one more or less longer than A_3 -width; profrons and cheeks respectively more or less wider and higher than A_3 -width; cheeks with genal setae strong and arranged in 3 rows; epistoma situated behind frons at lunule; occiput densely setulose including upper part.

Mesonotum with 6 or 7 irregular pairs of hairy *pre acr*, many (about 10) hair-like setulae present between the rows, which are more narrowly separated from each other than from *dc*-rows; *ph* not duplicated; *pra* about two-thirds of posterior *ntpl* in length; notopleura with no accessory setulae; mesopleura with no distinct anterior *mpl*, and with 1 strong *pstg* and many (about 15) associated setulae; *stpl* 1:2, in addition with 1 or 3 rather distinct setae below the anterior and 1 rather distinct seta below the posteriors; hypopleura with some (6-7) setulae on upper ridge; scutellum densely setulose dorsally.

Abdomen half-depressed, ovoid when viewed from above, and about 1.3 times as long as wide.

Fore tibia with 1 short *ad* and 1 long *pv*; f_2 with 1 *av* near basal fifth and a row of about 8 strong *pv* on basal half; t_2 with 1 *ad*, 2-3 *pd-pv*, 1 *pv* and no *av*; f_3 with a row of about 10 strong *av* and on basal half with some (about 5) strong *pv*; t_3 with 2 *av*, 2-3 strong *ad*, a complete row of weak *ad*, 2 *pd*, and about 8 short and weak *pv* on median third, the distal *pd* being very long and more or less longer than one-third of the tibial length. Wings with costal thorns minute; costa haired on ventral surface especially from base to costal thorns and very sparsely so beyond the costal thorns; *m-m* strongly oblique and sinuate; lower calyptra much protruded beyond the upper.

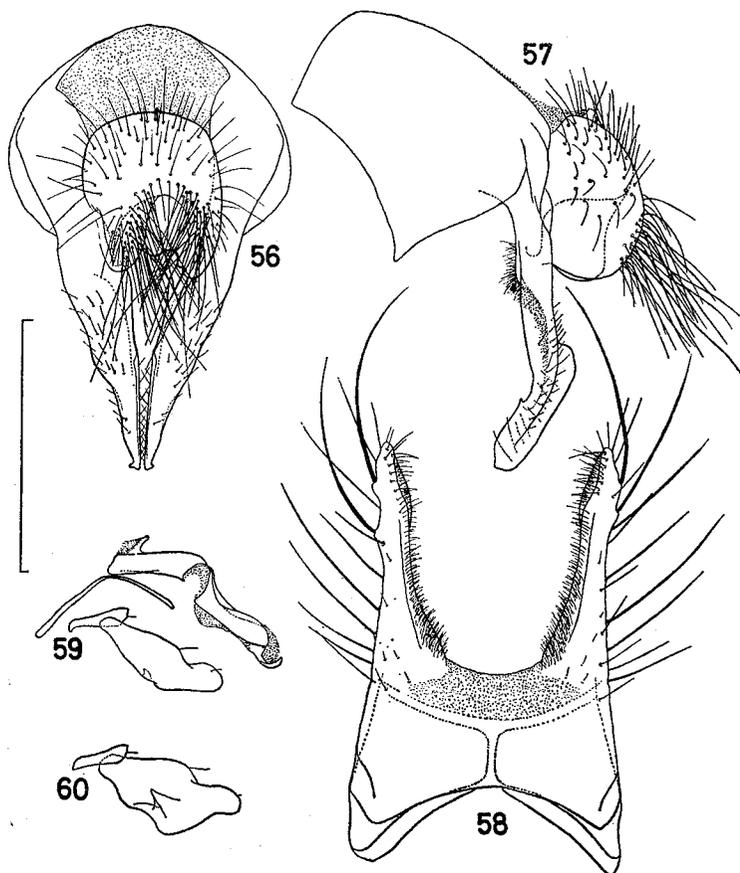
♀. Unknown.

H. ghoratobelae may be closely related to *H. divisa* (Meigen, 1826) known from Europe and North America in having long hairs on the arista, some setulae on the hypopleura, no *av* on the mid tibia, and similarity in the 5th sternite and hypopygium. The present species is, however, distinguishable from *divisa* by the bare notopleura and the broader surstyli.

17. *Phorbia morula* Ackland

(Figs. 56-60)

Phorbia morula Ackland, 1967: 130.



Figs. 56-60. *Phorbia morula* Ackland, ♂: 56, hypopygium, dorsal view; 57, *ditto*, lateral view; 58, 5th sternite; 59, aedeagus; 60, praegonite and postgonite (right), inside view. Thare Pati.

Material examined. Gosainkund, alt. ca. 4,300 m, 1 ♂, 4-vi-68 (T.K.); Thare Pati, Gosainkund, 4 ♂♂, 6-vi-68 (T.K.); Ulleri, No. 4 West, 5 ♂♂, 11-v-68 (T.K.).

♂. Body-length 3.3-4.4 mm; wing-length 3-4.1 mm. Mid tibia with 1 *ad*, 2 or sometimes 1 *pd* and 2 *pv*, in 1 specimen from Thare Pati with 1 well developed *av*; t_3 with usually 3 *av*, 2 (and often 2 additional) *ad*, some *pd* (of them usually 3 being strong), and 1 or 2 *pv*, the *pv* sometimes indiscernible.

♀. Unknown.

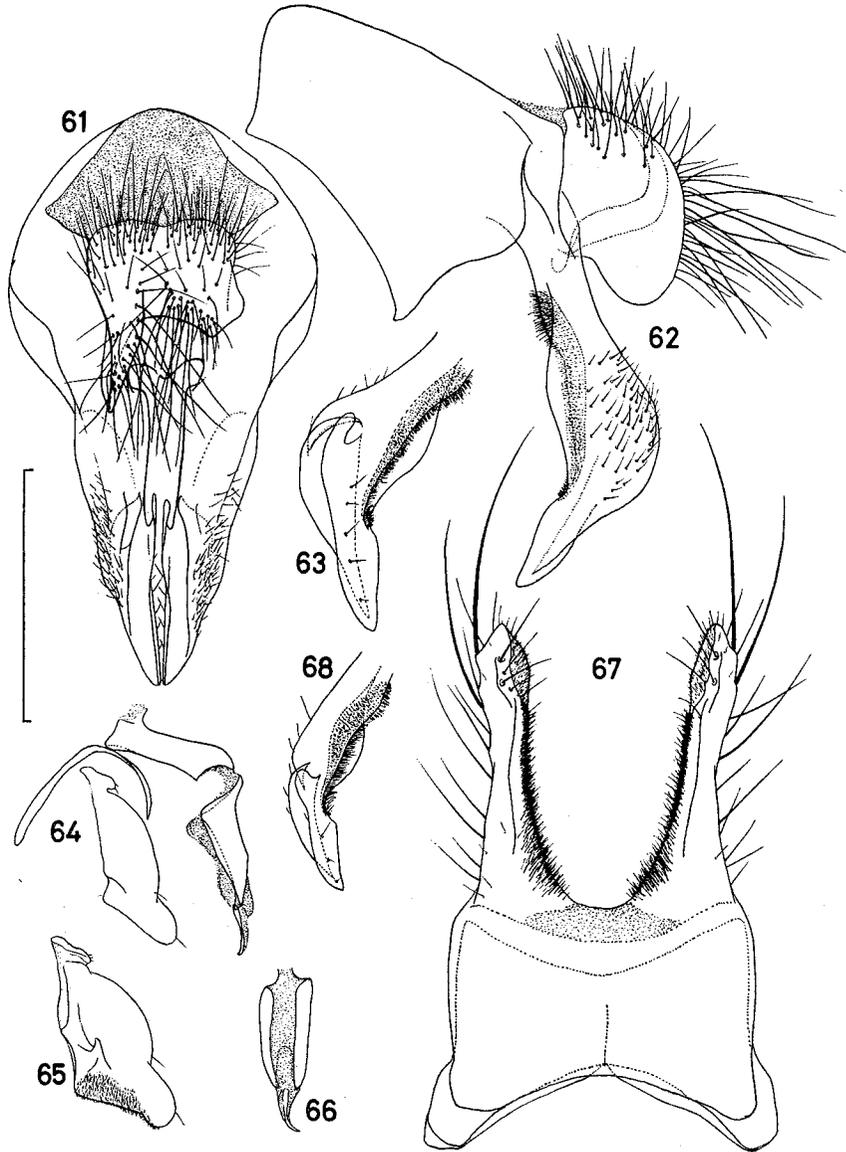
Distribution. Nepal.

According to Ackland (1967) *P. morula* is closely related to *P. tysoni* Ackland, 1967 also known from Nepal, from which it differs only in the form of the genitalia. Having dissected 8 specimens out of the present 10 ones I have found that all the dissected specimens are referable to *morula*.

18. *Phorbia nepalensis* sp. nov.

(Figs. 61-67)

Type-material. Ulleri, No. 4 West, 2♂♂ (one the holotype), 11-v-68 (T.K.).



Figs. 61-67. *Phorbia nepalensis* sp. nov., ♂: 61, hypopygium, dorsal view; 62, *ditto*, lateral view; 63, surstylus (left), inside view; 64, aedeagus; 65, praegonite and postgonite (right), inside view; 66, distiphallus, ventral view; 67, 5th sternite. Holotype from Ulleri.

Fig. 68. *Phorbia asymmetrica* Suwa, ♂: surstylus (left), inside view. Mt. Kiso-Komagatake, Japan.

♂. Body-length 4.7–4.8 mm; wing-length 4.2–4.4 mm. Body blackish in ground colour and greyish in pollinosity, which is more or less tinged with brown, rather strongly on dorsum of the body. Parafacials whitish grey in pollinosity; cheeks more or less brownish in ground colour, with whitish grey pollen. Wings with a distinct dark brownish tinge, strongly darkened at base; calyptrae whitish yellow.

Frons more or less wider than anterior ocellus; interfrontalia slightly or rather distinctly narrower than anterior ocellus, with *if* absent; parafrontals with about 6 *ori* and no *ors*; A_3 about 1.6–1.7 times as long as wide; arista minutely yet distinctly pubescent; profrons as wide as or a little wider than A_3 ; cheeks slightly higher than A_3 -width, with genal setae in 2 rows; epistoma slightly behind frons at lunule.

Mesonotum with 4 or 5 *pre acr*, which are irregularly paired, setae of the 2nd pair being rather strong and very narrowly separated from each other; 2nd *ph* much shorter and weaker than the 1st and as strong as or a little stronger than *prsc acr*; *stpl* 1:3, lowest posterior about two-thirds of just upper one in length; scutellum distinctly haired ventrally, and with a few setulae on each lateral side dorsally.

Abdomen with 5th sternite (Fig. 67) strongly edged on inner margin of each process; right praegonite (Fig. 65) much larger than the left (Fig. 64); distiphallus (Figs. 64 & 66) with acrophallus curved to the left side of body.

Fore tibia with 1 *pv* and no distinct *ad*, yet some setulae on apical third of anterodorsal surface are more or less discernible; f_2 with a few weak *av* near base and a few strong ones near middle, and with 5–6 strong *pv* on basal half; t_2 with 1 *ad*, 2 *pd* and 2 *pv*, and with 1 well developed *av*; f_3 with a row of about 7–8 strong *av* except near base, thereon with a few weak ones, and on basal two-thirds with some (about 5) *pv*, of which a few near base are rather weak and a few near middle are rather strong though much shorter and weaker than the strong *av*; t_3 with 3 *av*, 3 *ad*, 4–5 *pd* of various length, and 2 *pv*, apical *pv* lacking, apical *pd* strong and twice as long as height of the tibia or nearly so. Wings with costal thorns minute (in the holotype) or rather distinct (in the paratype); costa haired rather anteriorly on ventral surface especially from base to costal thorns.

♀. Unknown.

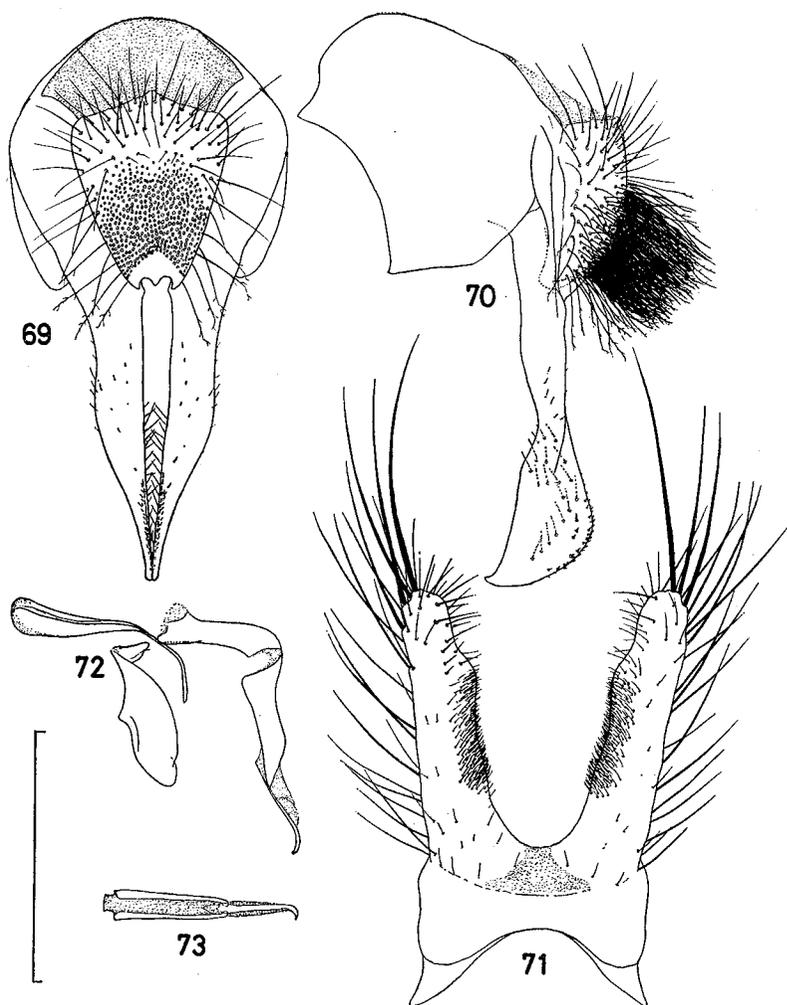
This species much resembles the Japanese *P. asymmetrica* Suwa, 1974 not only in the external features but also in the genital structures. *P. nepalensis*, however, differs from that species in the mid tibia with a well developed *av*, in the surstyli with a broader profile and a more developed inside lobe (cf. Figs. 63 and 68), and in the distiphallus with a left-curved acrophallus (cf. Fig. 66 of the present paper and Fig. 477, B of Suwa, 1974).

19. *Phorbia pilicerca* sp. nov.

(Figs. 69–73)

Type-material. Ulleri, No. 4 West, 3♂♂ (one the holotype), 11-v-68 (T.K.).

♂. Body-length 4.6–5.2 mm; wing-length 4–4.5 mm. Body blackish or dark brownish in ground colour and greyish in pollinosity, which is more or less



Figs. 69-73. - *Phorbia pilicerca* sp. nov., ♂: 69, hypopygium, dorsal view; 70, *ditto*, lateral view; 71, 5th sternite; 72, aedeagus; 73, distiphallus, ventral view. Holotype from Ulleri.

bluish and is tinged with brown especially on dorsum of the body. Interfrontalia brownish grey pollinose; parafacials and cheeks whitish grey pollinose. Abdomen when viewed from behind rather broadly darkened medianly and with broad pollinose lateral areas; 5th sternite not shining along inner margin of each process. Legs dark brownish. Wings dark brownish at base and with a faint brownish tinge on the remaining part; calyptrae whitish, on margin faintly yellowish; halteres yellow at knob.

Frons about 1.5 times as wide as anterior ocellus; interfrontalia more or less wider than anterior ocellus; with a pair of rather distinct *if*; parafrontals with 5-6 *ori* and no *ors*; A_3 about 1.5-1.7 times as long as wide; arista minutely yet distinctly pubescent; profrons and cheeks respectively a little wider and higher than A_3 .

width; cheeks with genal setae in 2 rows; epistoma protruded forwards as far as frons at lunule, or situated slightly behind there.

Mesonotum with *pre acr* completely lacking (only in 1 paratype with a single fine one), and with only 2 pairs of *post acr* including *prsc acr*; *ph* not duplicated; *pra* about as long as anterior *ntpl*; *stpl* 1: 3, lowest posterior much shorter and weaker than the uppers; scutellum with no accessory setulae on dorsal surface, with a few or some hairs on ventral surface near apex.

Abdomen with 5th sternite (Fig. 71) not edged on inner margin of processes; cercal plate (Figs. 69 & 70) with a shaggy tuft of numerous slender and ramified setae.

Fore tibia with 1 *pv* and 1 rather strong *ad*; f_2 on median third with a few strong *av* and on basal third with some strong *pv*; t_2 with 1 *ad*, 2 *pd* and 2 *pv*, and with 1 (3 in 1 paratype) *av*; f_3 with a row of 6-7 strong *av*, near base with a few weak ones, and on basal half with some *pv*, of which a few near base are weak; t_3 with 3 *av*, 3 *ad*, 3 strong and 1 or a few weak *pd* and 0-2 *pv*, apical *pv* lacking, apical *pd* being rather distinct yet at most as long as height of the tibia. Wings with costal thorns rather distinct; costa bare ventrally; *m-m* nearly upright and faintly or hardly sinuate.

♀. Unknown.

Judging from the genital structures and the presence of *av* on the mid tibia this species is closely related to *P. fascicularis* Tiensuu known from Europe and Japan. However, *P. pilicerca* is different from *fascicularis* in the parafrontals without *ors*, in the mesonotum with fewer *acr*, and in the cercal plate with a tuft of shorter setae.

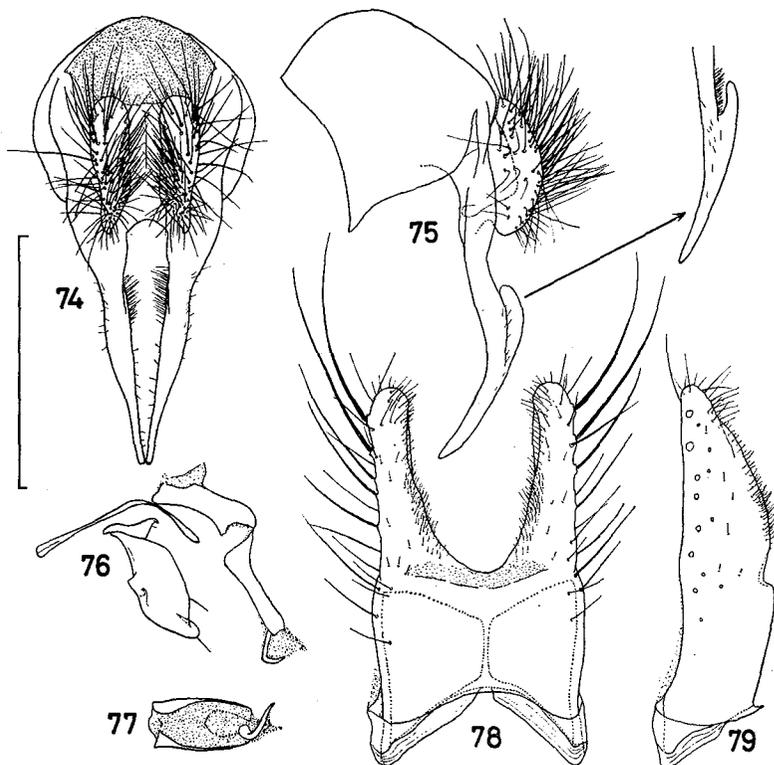
20. *Phorbia lobatoides* sp. nov.

(Figs. 74-79)

Type-material. Ghora Tobela, Bagmati, alt. ca. 3,000 m, 1 ♂ (holotype), 23-ix-75 (S.T.).

♂. Body-length 4.8 mm; wing-length 4.5 mm. Body including appendages black in ground colour and bluish grey in pollinosity. Interfrontalia pale brownish pollinose; parafacials whitish grey pollinose; cheeks whitish grey and more or less tinged with brown in pollinosity. Mesonotum thinly covered with brownish grey pollen, densely whitish pollinose on humeral calli and notopleura. Abdomen thinly covered with pale grey pollen, which is slightly tinged with brown, when viewed from behind mainly blackish. Wings distinctly tinged with dark brown, strongly at base; calyptreae whitish, on margin pale yellow; halteres yellowish at knob.

Frons about 1.7 times as wide as anterior ocellus; interfrontalia slightly narrower than anterior ocellus, with a pair of rather distinct *if* below the level of middle between anterior ocellus and uppermost *ori* and with a few microscopical setulae below the level of uppermost *ori*; parafrontals with 5-6 *ori* (associated with a few fine setulae), the uppermost one being short and weak, and with no *ors*; A_3 about 1.7 times as long as wide; arista distinctly pubescent, yet with hairs shorter than basal diameter of arista; profrons about as wide as A_3 ; cheeks a little higher than A_3 -width, with genal setae in 2 rows; epistoma situated behind frons at



Figs. 74-79. *Phorbia lobatoides* sp. nov., ♂: 74, hypopygium, dorsal view; 75, *ditto*, lateral view; 76, aedeagus; 77, distiphallus, ventral view; 78, 5th sternite, ventral view; 79, *ditto*, lateral view. Holotype from Ghora Tobela.

lunul ♂

Mesonotum with 3 pairs of fine *pre acr*; 2nd *ph* fine although distinctly discernible from accessory setulae; *pra* more or less longer than anterior *ntpl*; *stpl* 1:2; scutellum haired on ventral surface, bare dorsally.

Fore tibia with 1 *ad* and 2 *pv*; *t*₂ with 1 or a few strong *av* on median third and some (about 5) strong *pv* in basal two-thirds; *t*₂ with 1 *ad*, 2 *pd*, 2 *pv* and no *av*; *t*₃ with about 7 strong *av* except near base, and with 1 rather distinct *pv* at base and 2 strong ones near middle; *t*₃ with 3 *av*, 2 long and a few shorter *pd* and 2 *pv*, apical *pv* lacking, apical *pd* being rather strong and much longer than height of the tibia. Wings with costal thorns minute though discernible from costal setulae; costa bare ventrally; *m-m* slightly oblique and nearly straight.

♀. Unknown.

In the shape of the cercal plate which is strongly concave medianly and practically divided into 2 densely setose pads (Fig. 74) this species much resembles the North American *P. lobata* (Huckett, 1929), from which it is, however, distinguishable by the narrower frons, by the weaker 2nd *ph* and by the surstyli with a well developed inner expansion. Judging from the cercal plate in profile and from the 5th sternite this species may be also similar to *P. ponti* Hennig, 1969 known

from Germany. The latter may, however, be different from *lobatoides* in the mid tibia with *av*, in the surstyli without an inner expansion, and in the cercal plate not divided into pads.

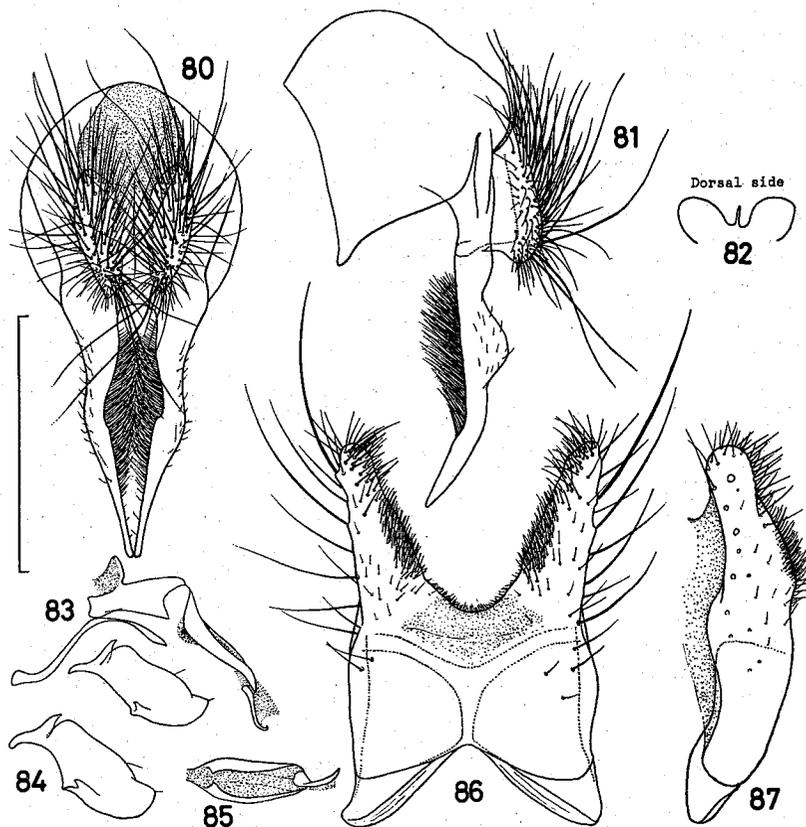
21. *Phorbia pilostyla* sp. nov.

(Figs. 80-87)

Type-material. Bangel Kharka, No. 1 West, 1 ♂ (holotype), 7-vi-68 (T.K.).

♂. Body-length 4.3 mm; wing-length 3.9 mm. Body blackish in ground colour and bluish grey in pollinosity, which is more or less tinged with brown, distinctly on mesonotum. Legs blackish or dark brownish. Wings with a weak brownish tinge, strongly dark brown at base; calyptrae whitish, on margin pale yellow; halteres yellow at knob.

Frons about 1.7 times as wide as anterior ocellus; interfrontalia about as wide as anterior ocellus, with a pair of distinct *if* above the level of middle between



Figs. 80-87. *Phorbia pilostyla* sp. nov., ♂: 80, hypopygium, dorsal view; 81, *ditto*, lateral view; 82, cercal plate, outline of cephalic view; 83, aedeagus; 84, praegonite and postgonite (right), inside view; 85, distiphallus, ventral view; 86, 5th sternite, ventral view; 87, *ditto*, lateral view. Holotype from Bangel Kharka.

anterior ocellus and uppermost *ori* and with a pair of microscopical setulae below the middle level; parafrontals with 8-9 *ori* and no *ors*; A_3 about 1.5 times as long as wide; arista minutely yet distinctly pubescent; profrons about 1.2 times as wide as A_3 ; cheeks about 1.7 times as high as A_3 -width, with genal setae in 2 rows; epistoma situated only a little behind frons at lunule.

Mesonotum with 3 fine *pre acr* irregularly paired, 3 fine *post acr* (anterior 2 being paired) and a pair of *prsc acr*; 1st *ph* well developed on left body-side as usual yet fine on right; real 2nd *ph* fine, yet a well developed and strong seta is present between the 2nd *ph* and *prst* on each body-side (it is uncertain whether this arrangement of *ph* is normal or not); *pra* slightly longer than anterior *ntpl*; *stpl* 1:2; scutellum hardly setulose dorsally, and on ventral surface nearly bare, only a few hairs being visible.

Fore tibia with 1 *pv* and no distinct *ad*; f_2 with some *av* on basal two-thirds (a few near middle being strong), and with 4 strong *pv* on basal half; t_2 with 1 *ad*, 2 *pd* and 2 *pv*, and with a well developed *av*; f_3 with a row of about 8 *av*, of which setae on apical half are stronger than those on basal half, and with some *pv* on basal half, of which a few near base are weak; t_3 with 3-4 *av*, 3 strong (becoming longer and stronger towards apex of the tibia) and 1 or 2 weak *ad*, 3 *pd* and no discernible *pv*, apical *pv* lacking, apical *pd* being rather strong and much longer than height of the tibia. Wings with costal thorns minute although discernible from costal setulae; costa not haired ventrally; *m-m* nearly upright and straight.

♀. Unknown.

This species is very similar to the preceding *P. lobatooides* and also to *P. lobata* from North America in having a practically divided cercal plate. *P. pilostyla* can, however, be readily distinguished from the two species by the presence of *av* on the mid tibia and by the surstyli with a fringe of numerous long hairs.

22. *Calythea setifrons* Ackland

(Figs. 88-92)

Calythea sp.: Ackland, 1967: 110. *Calythea setifrons* Ackland, 1968: 137.

Material examined. Godavari, Kathmandu, 1 ♂, 18-vi-68 (T.K.); Bangel Kharka, No. 1 West, 2 ♀♀, 7-vi-68 (T.K.); Ulleri, No. 4 West, 2 ♀♀, 11-v-68 (T.K.).

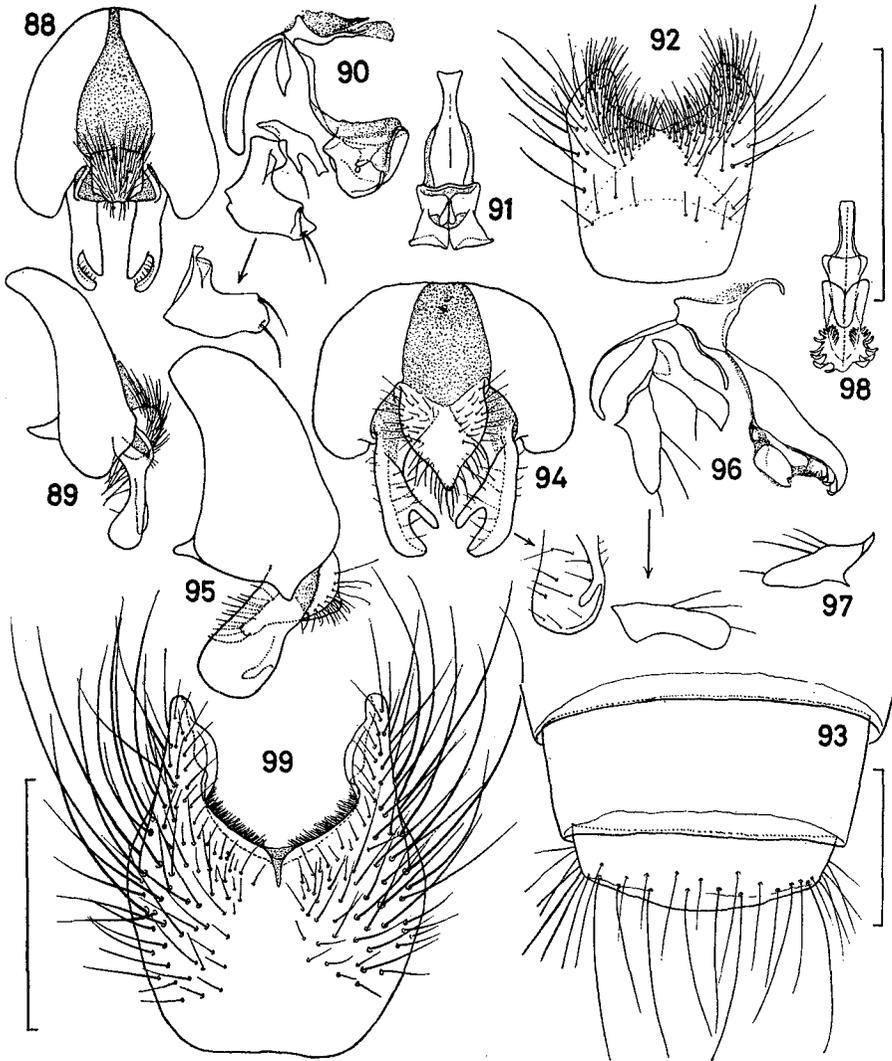
In having numerous *ori* arranged in about 2 rows on the parafrontals and a bifurcation on the surstyli apically *C. setifrons* is peculiar and can be readily distinguished from other known species of the genus. This species was described on the basis of specimens (4 ♂♂, 6 ♀♀) from India (Darjeeling Dist.), N.E. Burma, Sikkim and Nepal. The specimens at hand from Nepal agree well with the original description.

Distribution. Northern part of Oriental region.

23. *Nupedia aestivalaeformis* sp. nov.

(Figs. 93-99)

Type-material. Bangel Kharka, No. 1 West, 1 ♂ (holotype), 7-vi-68 (T.K.).



Figs. 88-92. *Calythea setifrons* Ackland, ♂: 88, hypopygium, dorsal view; 89, *ditto*, lateral view; 90, aedeagus; 91, distiphallus, ventral view; 92, 5th sternite. Godavari.
 Figs. 93-99. *Nupedia aestivaeformis* sp. nov., ♂: 93, terminal segments of abdomen, showing the setose prebasal sclerite (6th tergite); 94, hypopygium, dorsal view; 95, *ditto*, lateral view; 96, aedeagus; 97, praegonite (right); 98, distiphallus, ventral view; 99, 5th sternite. Holotype from Bangel Kharka.

♂. Body-length 5.5 mm; wing-length 5 mm. Body including appendages black in ground colour. Interfrontalia in pollinosity whitish grey near lunule and brownish grey on the upper; parafacials and cheeks silvery grey pollinose; haustellum with mentum more or less brownish in pollinosity. Mesonotum when viewed from front wholly brownish grey pollinose, in other points of view variously darkening and shining, and when viewed from behind mostly blackish and with a pair of

small lateral pollinose patches just before the suture and a large median one just before scutellum, the latter patch being divided into 2 parts in very low angle of view; humeral calli and notopleura denser and paler in pollinosity. Abdomen pale grey and more or less brownish in pollinosity, with a broad and rather obscure median vitta, which is broader than lateral pollinose areas on 2nd to 4th tergites, thereon with a rather narrow fore-marginal band; 5th sternite with processes brownish yellow. Wings more or less tinged with brown anteriorly and clear or hyaline posteriorly, strongly dark brownish at base; calyptrae whitish; halteres yellow at knob.

Epistoma distinctly protruded forwards beyond frons at lunule; head only a little higher than the length; frons distinctly narrower than anterior ocellus; interfrontalia very linear caudad yet not interrupted, with slender *if*; parafrontals with 6 or 7 *ori* and 1 microscopical *ors*; antennae rather widely separated from each other by a well developed facial elevation; A_3 about 1.5 times as long as wide; arista minutely yet distinctly pubescent; parafacials becoming broader ventrad; cheeks about as high as A_3 -width, on lower part densely covered with slender setae, which are arranged in a few rows on anterior part of the cheeks; occiput densely setose on swollen part, lower setae being slender, and with many setulae on upper depression below postocular series; palpi stick-like, slightly shorter than fore metatarsus; haustellum very long, with mentum much longer than palpi although less than twice as long as the latter.

Mesonotum with 3 pairs of rather strong *pre acr*, the rows being more widely separated from each other than from *dc*-rows; 1 or 2 fine setulae present along rows of *pre acr*; *ph* duplicated, a few associated setulae being more or less developed and differentiated from other accessory setulae; *pra* short and about as long as *pre acr* of the 3rd pair, yet stronger than the latter; notopleura with no accessory setulae; propleura setulose; *stpl* 1: 2.

Abdomen long-ovoid, about 1.7 times as long as wide, and completely depressed except on hypopygium; prebasal sclerite (Fig. 93) setose; praegonite with 3 or 4 setae (probably 3 in normal condition).

Fore femur densely covered with slender setae on posterior surface; t_1 with no distinct *ad* and 2 *pv*; f_2 with a row of weak *av* and no strong ones, and with about 6 strong *pv* on basal half; t_2 with 1 *ad*, 1 *pd* and 1 *p-pv*, and with no *av*; f_3 with a row of *av*, setae near base being weak, and on basal half with some *pv*, of which a few near middle are strong, ground setulae on basal half of posterior surface being lengthened; t_3 with 1 *av*, 2 *ad* and 2 *pd*. Wings with costal thorns short although much stronger than costal setulae; costa bare ventrally; *m-m* rather distinctly oblique and slightly sinuate.

♀. Unknown.

This species is undoubtedly closely related to *N. aestiva* (Meigen, 1826), which is known from Europe and North America and also from Nepal, in having a rather hairy body, well protruded epistoma, setose propleura and similar hypopygium. *N. aestivaeformis* is, however, distinguishable from *aestiva* by the mid tibia without *av* and by the setose prebasal sclerite. *N. valentinae* Ackland, 1971 known from East Pamir and Kirghizia and the Japanese form of *N. nigroscutellata* (Stein, 1920) also have a setose prebasal sclerite, yet they are quite different from the present species in other features.

*24. *Pegomya nigra* Suwa

Pegomya nigra Suwa, 1974: 201.

Material examined. Thare Pati, Gosainkund, 5♂♂, 6-vi-68 (T.K.); Gosainkund, alt. ca. 4,300 m, 1♂, 4-vi-68 (T.K.).

Having compared the present Nepalese specimens with the type-series of *nigra* described from Japan I have found that the Nepalese form agrees very well with the Japanese one and at most differs from the latter in having slightly stronger costal thorns on the wings. The Nepalese form should be identified with *nigra*. This species might be widely distributed in mountaneous regions of central to eastern part of Asia.

Distribution. Nepal; Japan.

*25. *Emmesomyia kempi* (Brunetti)

(Figs. 100–103)

Pegomyia kempi Brunetti, 1924: 101.

Material examined. Ghora Tobela, Bagmati, 1♂, alt. ca. 3000 m, 23-ix-75 (S.T.).

♂. Body-length 7.3 mm. Fore coxa blackish; mid and hind coxae partly brownish and partly blackish; trochanters yellowish; f_1 blackish, with yellowish base and apex; f_2 and f_3 yellow, with dark suffusion on apical fourth or less dorsally; tibiae and tarsi yellow.

Arista with the longest hairs less than twice as long as basal diameter of arista. Mesonotum with 2nd *ph* rather well developed although shorter and weaker than the 1st; *pra* about two-thirds of posterior *ntpl* in length; pteropleura with 2 setae. Hind tibia with 1 *av*, 3 *ad* and only 1 *pd*. Wings with 1 to some minute setulae at base of R_{4+5} -vein on either of dorsal and ventral surfaces.

♀. Unknown to me.

Distribution. Nepal; India (Assam).

E. kempi was originally described from Assam, India based on 7 specimens (5♂♂, 2♀♀). Dr. Ackland (in litt., 1971) kindly gave me figures showing the genital structures of this species and based on a paratype. Having examined the figures I have been convinced that the present Nepalese specimen should be referred to *kempi*.

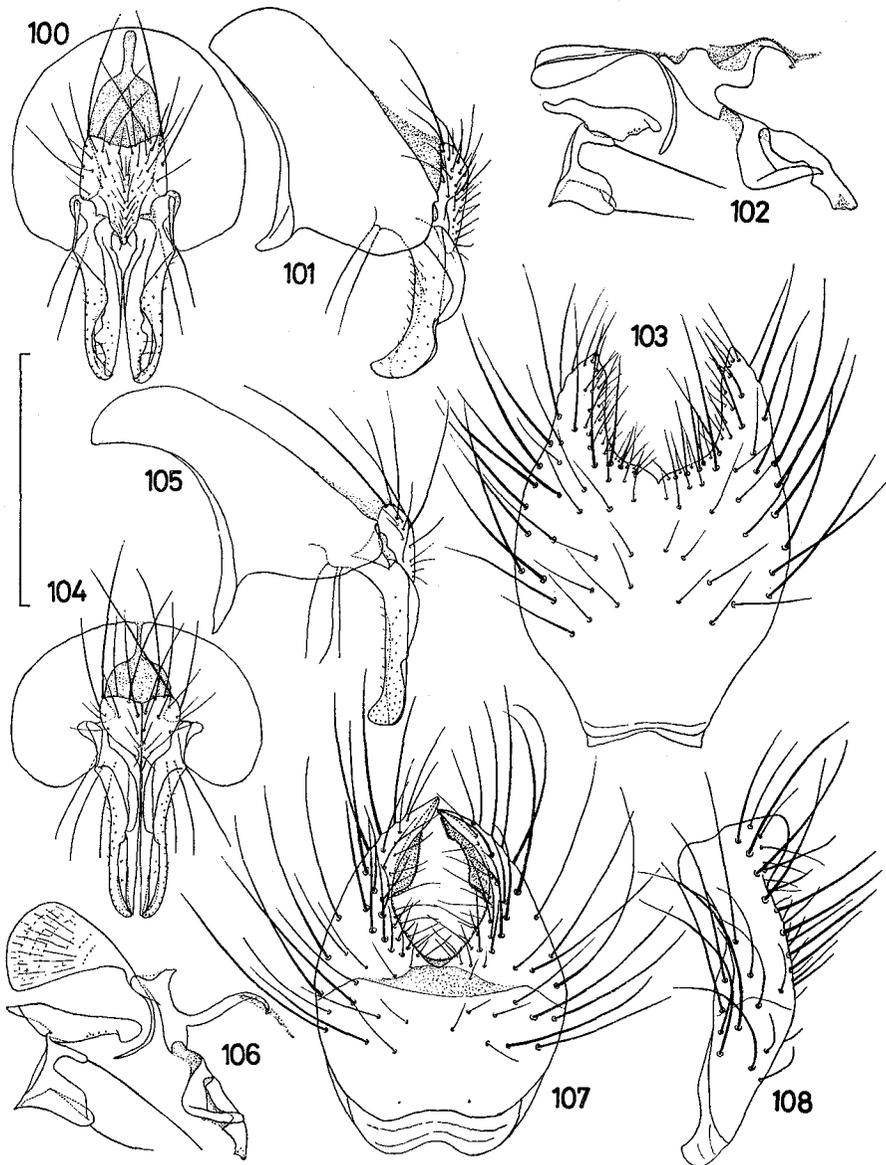
26. *Emmesomyia* sp.

(Figs. 104–108)

Material examined. Sheopuri, alt. ca. 2,600 m, Bagmati, 1♂, 25-viii-75 (S.T.).

♂. Body-length 6.8 mm. Coxae and trochanters blackish; femora blackish, only a little yellowish apically; tibiae yellow; tarsi dark brownish.

Parafrontals with 5–6 *ori* and 1 microscopical *ors*; arista with the longest hairs



Figs. 100–103. *Emmesomyia kempfi* (Brunetti), ♂: 100, hypopygium, dorsal view; 101, *ditto*, lateral view; 102, aedeagus; 103, 5th sternite. Ghora Tobela.

Figs. 104–108. *Emmesomyia* sp., ♂: 104, hypopygium, dorsal view; 105, *ditto*, lateral view; 106, aedeagus; 107, 5th sternite, ventral view; 108, *ditto*, lateral view. Sheopuri.

at least 3 times as long as basal diameter of arista. Mesonotum densely setulose between rows of *acr*; 2nd *ph* well developed, nearly as long and strong as the 1st; *acr*-rows very widely separated from each other, distance between setae of the 1st pair being about twice as long as that to *dc*; *pra* slightly longer than posterior

ntpl; pteropleura with 3 or 4 setae. Abdomen ovoid when viewed from above, about 1.4 times as long as wide. Fore tibia with 1 *pv*; t_2 with 1 *pd* and 2 *p-pv*; t_3 with 1 *av*, 3 *ad* and 2 *pd*. Wings with a few minute setulae at base of R_{4+5} -vein on ventral surface; *m-m* strongly oblique and sinuate.

♀. There is at hand a female specimen collected from the locality same (alt. ca. 2,300–2,500 m, 30-viii-75, S.T.) as that of the present male specimen. This female specimen agrees well with the male one except in the pteropleura with only 1 seta and naturally except in the sexual dimorphic characters. At present it is, however, uncertain to me whether they are conspecific or not.

Distribution. Nepal.

According to Dr. Ackland (in litt.) a species with several setae on the pteropleura and with dark femora is distributed in North Burma. The present species might be referred to that species. A precise revision of the Oriental species of *Emmesomyia* will be given by him in near future. In addition it should be mentioned here that Ackland (1967) already recorded 2 undetermined species (spp. A and B) of *Emmesomyia* from Nepal on the basis of a female specimen in each case. The female specimen of sp. A has only 1 seta on the pteropleura, on the other hand the female specimen of sp. B has 3 setae on the part.

LIST OF THE SPECIES OF THE ANTHOMYIIDAE RECORDED FROM NEPAL

1. *Craspedochoeta hamata* Ackland, 1967
Distribution: Nepal; North India (Simla).
2. *Anthomyia illocata* Walker, 1856
Distribution: Nepal; Japan; Hawaii; Oriental and Australian regions.
3. *Hylemya detracta* (Walker, 1852)
Distribution: Nepal; Oriental region.
4. *Hylemya takagii* sp. nov.
Distribution: Nepal.
5. *Hylemya probilis* Ackland, 1967
Distribution: Nepal.
6. *Lasiomma nitidicauda* (Zetterstedt, 1855)
Distribution: Nepal; Europe.
7. *Paregle cinerella* (Fallén, 1825)
Distribution: Oriental and Holarctic regions.
8. *Paregle danieli* Gregor, 1975
Distribution: Nepal.
9. *Delia platura* (Meigen, 1826)
Distribution: Cosmopolitan.
10. *Delia bracata* (Rondani, 1866)
Distribution: Nepal; India; South Europe; North Africa; Canary Is.; Near East; Iran; ? South Africa.
11. *Delia gracilis* (Stein, 1907)
Distribution: Nepal; Tibet.
12. *Delia nepalensis* Ackland, 1967
Distribution: Nepal.
13. *Delia coei* Ackland, 1967
Distribution: Nepal.

14. *Delia repens* Ackland, 1967
Distribution: Nepal.
15. *Delia impilosa* sp. nov.
Distribution: Nepal.
16. *Delia kumatai* sp. nov.
Distribution: Nepal.
17. *Pegohylemyia striolata* (Fallén, 1824)
Distribution: Nepal; Japan; Kamchatka; Siberia; Europe.
18. *Pegohylemyia quinlani* Ackland, 1967
Distribution: Nepal.
19. *Pegohylemyia nupera* Ackland, 1967
Distribution: Nepal.
20. *Pegohylemyia bangelensis* sp. nov.
Distribution: Nepal.
21. *Pegohylemyia purpurea* sp. nov.
Distribution: Nepal.
22. *Pegohylemyia himalaica* sp. nov.
Distribution: Nepal.
23. *Pseudomyopina fumidorsis* Ackland, 1967
Distribution: Nepal.
24. *Hydrophoria ghoratobelae* sp. nov.
Distribution: Nepal.
25. *Phorbia tysoni* Ackland, 1967
Distribution: Nepal.
26. *Phorbia morula* Ackland, 1967
Distribution: Nepal.
27. *Phorbia nepalensis* sp. nov.
Distribution: Nepal.
28. *Phorbia pilicerca* sp. nov.
Distribution: Nepal.
29. *Phorbia lobatoides* sp. nov.
Distribution: Nepal.
30. *Phorbia pilostyla* sp. nov.
Distribution: Nepal.
31. *Calythea setifrons* Ackland, 1968
Distribution: Nepal; India (Darjeeling Dist.); Northeast Burma; Sikkim.
32. *Nupedia aestiva* (Meigen, 1826)
Distribution: Nepal; Europe; North America.
33. *Nupedia aestivaeformis* sp. nov.
Distribution: Nepal.
34. *Pegomya nigra* Suwa, 1974
Distribution: Nepal; Japan.
35. *Emmesomyia kempi* (Brunetti, 1924)
Distribution: Nepal; India (Assam).

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