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<td>著者</td>
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<tr>
<td>引用</td>
<td>Insecta matsumurana. New series : journal of the Faculty of Agriculture Hokkaido University, series entomology, 4, 1-247</td>
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<td>発行日</td>
<td>1974-11</td>
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ANTHOMYIIDAE OF JAPAN
(DIPTERA)

Part of a thesis submitted to the Hokkaido University in partial fulfillment of the requirements for the degree of Doctor of Agriculture, 1974

By MASAAKI SUWA

Abstract


Japanese species of the family Anthomyiidae are reviewed and arranged taxonomically. A total of 172 species are dealt with; of them 44 are new to science and 92, including 5 undetermined, new to Japan. Two new genera are proposed and described. The genera and species treated are given under "Enumeration of genera and species." The following new nomenclatorial changes are made:—Chionomyia Ringdahl is included within Paregle Schnabl; Pegomyza Schnabl & Dziedzicki and Arctopegomyia Ringdahl are included within Eutrichota Kowarz; Melinia bisinuata Tiensuu is transferred to Meliniella gen. nov.; Eustahomyia lepraota Séguy is suppressed as a synonym of Eustahomyia vitipes (Zetterstedt).

Author's address. Entomological Institute, Faculty of Agriculture, Hokkaido University, Sapporo, 060 Japan.
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Introduction

In spite of a large number of described species, the Calyptratae may be one of the most unclarified groups among the Diptera, and out of many subdivisional systems of authors on this group it is difficult to find two ones which agree completely with each other (see Hori, 1967). Nevertheless, the Anthomyiidae as here accepted after Hennig (1955 & 1966) have usually been recognized as a good group if having no regard to the taxonomic rank, and may be distinguished from other groups of the Muscoidea by the combination of the following characters: — Wings with anal vein reaching to wing-margin, or nearly so; lower calyptra not much reduced as forming only a membraneous fold; scutellum haired on ventral surface; if lower calyptra much reduced and scutellum not haired ventrally then interfrontalia with a pair of crossed setae or setulae (ef).

In the sense here adopted this family is a large group of true flies, being represented by about 1000 described species in the world, mostly from Europe and North America. So far as I am aware, 36 species of the family have been recorded from Japan mainly by Kato (1939, 1941 & 1950), Hori & Kurahashi (1969) and Suwa (1970b, 1971a & 1971b). So that this study is the first attempt to review and to arrange taxonomically the Japanese species of this family. In the course of the present study carried on since 1966 have been examined thousands of specimens collected from various localities covering almost all prefectures of Japan. These specimens are classified into 171 species, of which 44 are new to science and 92, including 5 undetermined species, new to Japan. All of them, with another species previously described from Japan but not available to the present study, will be given hereinafter. Further, 2 new genera are proposed in this paper. All of the holotypes of the new species are deposited in the collection of the Entomological Institute, Hokkaido University.

Acknowledgements

My grateful acknowledgement is made to Prof. T. Nakashima of the Hokkaido University for his continuous encouragement and support. I wish to express my sincere thanks to Dr. C. Watanabe, former professor of entomology in the Hokkaido University, under whose guidance the present work was attempted. Particular acknowledgement is made to Mr. D. M. Ackland of Oxford, England, Mr. E. C. M. d’Assis Fonseca of Bristol, England, and Dr. G. C. Steyskal of the United States Department of Agriculture for their kindness in giving me valuable material and helpful information, and to Prof. M. Sasakawa of the Kyōto Prefectural University, Mr. N. Fukuhara of the National Institute of Agricultural Sciences, and Mr. T. Tomioka of the Hokkaido Prefectural Agricultural Experiment Station for the loan of some valuable material. My sincere appreciation is extended to Dr. S. Takagi and Dr. T. Kumata of the Hokkaido University for their kind help in various ways. Many thanks are also due to Dr. H. Takada of the Kyōto Prefectural University, Dr. M. Miyazaki of the National Grassland Research Institute, Dr. K. Kusigemati of the Kagoshima University, Dr. H. Higuchi of the Hokkaido University, Mr. H. Takizawa of the Japan Monopoly Corporation, Mr. T. Kocha of the Yokohama Plant Protection Station, and Mr. Sk. Yamane, Mr. S. Aoki and Mr. T. Hattori, all of the Hokkaido University, for their kindness in offering valuable material.
BIOLOGY

The adult flies of the Anthomyiidae are found everywhere from the seashore to above the timber-line. The biology of most of the species is, however, little known. Nevertheless, some published observations show that their habits are widely differentiated. Among the family oviparity is an ordinary type of reproduction, yet some species of the genus Hylemya, e.g. H. strenua and H. nigrimana, are ovoviviparous. Larvae of the family are mostly phytophagous, saprophagous or omnivorous, yet certain species of Tettigoniomyia and Acridomyia, both of which have not been found from Japan, are known to be parasitic on grasshoppers. Species belonging to Fucellia, known as kelp flies, inhabit seashores, living on animal or plant organisms cast in the tidal zone. Species of Chiastocheta are alpine flies, the adults being found on the flower-heads of Trollius, in which the larvae grow. The larvae of certain species of Chirostia are known as leaf-miners of ferns. Anthomyia pluvialis and A. procellaris have been bred from the nests of several species of birds. Adult flies of Hyporites, Alliopsis and Paraprosalpia are predatory upon midges or gnats. Species belonging to Leucophora are associated with andrenid bees, the larvae living on pollen or honey stored by the bees. Larvae of the genus Eustalomyia are found in the nests of crabronid wasps built in herbs, shrubs or trees, probably feeding on preys caught by the wasps. From the economic point of view, some species are well known as serious pests of agricultural crops or coniferous trees. Pegomya mixta (=hyoscyami of Japanese authors) is an important pest in Japan and known as the beet-fly or the spinach leaf-miner. Delia platura, D. antiqua and D. floralis are respectively known as the seed-corn maggot, the onion maggot and the radish maggot. According to Yamada et al. (1972) the larch cone maggot, Lasiomma laricicola, is the most injurious species among the larch-infesting insects in Japan, the damage by the species running as high as 50–70% of the seeds in individual cones. Apart from the species mentioned above there are known a few as pests of garden plants, e.g., Phorbia servadeii injurious to iris and Delia echinata to carnation. On the other hand, Pegohylemyia seneciella, known as the ragwort seed fly, is a beneficial species. During the larval stage it feeds on the seeds of Senecio jacobaea, a poisonous weed belonging to Compositae; it was introduced into New Zealand, Australia and North America from Europe and proved to be an excellent natural enemy to that weed.

TERMINOLOGY AND MEASUREMENTS

Head. The eyes usually more or less approximate to each other in frontal view in the male and are widely separated in the female. In some genera, e.g. Fucellia, Chiastocheta, etc., and in certain species of some other genera the eyes are widely separated in both sexes, while in most or all species of Paraprosalpia, Hyporites, Alliopsis and Leucophora the eyes more or less approximate in the female as in the male. The distance between the eyes or the width of the frons is measured at the narrowest part. The frons, which is the area between the eyes limited by the lunule and the vertex, is composed of an interfrontalia and a pair of parafrontals, the latter being contiguous to each other or separated by the former. The profrons means the part of the orbit (parafrontalia and parafacialia) at level of the lunule. The width of the profrons and parafacialis is measured at right angles to the plane of each area. The height of the cheeks is measured with
Fig. 1. Head in frontal view. *Meliniella sikisima* sp. nov., ♀.

Fig. 2. Head in lateral view. *Meliniella sikisima* sp. nov., ♂.
the head in profile and it is the shortest distance between the bottom of the eyes and the ventral margin of the head. Setae above and just behind the vibrissae are termed peristomal setae. The term genal setae is restricted to the setae on the anterior half of the cheeks and behind the peristomal setae, the genal setae being usually more or less curved upwards. Epistoma is stated with the head in profile. Other characters and measurements are given in Figs. 1-6.

**Thorax.** The arrangement of the primary setae is important, the number, position and length of the setae being always counted and measured. The distance between the rows of acr is measured between the setae of the first distinct or strong pair unless otherwise mentioned. Accessory or ground setulae are found among the primary setae, and the density is used. The term suture means the transverse suture when it is used in connection with the mesonotum. The mesonotum

![Diagram of thorax](image-url)

Fig. 7. Thorax in dorsal view. Chaetotaxy is indicated by the setal position.
occupies almost the whole of the dorsal surface of the thorax, consisting of the prescutum, scutum and scutellum. In the present paper, however, the term mesonotum is used for the part exclusive of the scutellum. In describing the colouration the term vitta is used for a longitudinal band and the term band for a transverse one. The median vitta is seen between the rows of acr, often protruding beyond the rows. The paramedian vittae are seen between the rows of dc and acr or along the rows of dc. The sublateral vittae are short ones between ia and dc behind the suture. The lateral vittae or patches are situated on the lateral angles of the mesonotum. These markings are usually shifting according to the point of view because of a different inclination of the tomentum or pollen. Other characters, see Figs. 7 & 8.

**Abdomen.** The first and second tergites are more or less fused together, yet they are counted as distinct from each other. The 6th tergite of the male, which is termed the prebasal sclerite of hypopygium, is usually more or less reduced and partly or entirely hidden beneath the 5th tergite. The suranal and subanal plates and cerci of the ovipositor are sometimes named collectively as terminal sclerites. Main characters including those of the hypopygium and ovipositor are given in Figs. 9–16.

**Legs.** The chaetotaxy is important. The position of the setae is determined in the condition of the legs extended laterally in a straight line at right angles with the body as generally adopted by modern dipterists. Setae changeful or equivocal in position are expressed, for example, pd–p or p–pv. Apart from the true apical setae the tibial setae which should be called preapical in the strict sense are also termed apical in this study. The height of femora or tibiae refers to that of the highest part of the femur or tibia. Main parts of the legs are given in Figs. 17 & 18.

**Wings.** The venation is given in Fig. 19. The posterior cross-vein (m–m) is described as oblique or erect to the 4th longitudinal vein (M1+2).

Fig. 8. Thorax in lateral view.
Fig. 9. Abdomen in lateral view. *Delia longitheca* sp. nov., ♂.
Fig. 10. Abdomen in dorsal view, showing measurements. *Meliniella watanabei* sp. nov., ♂.
Figs. 11–14. *Shakshainia rametoka* sp. nov., ♂. 11, hypopygium in lateral view; 12, hypopygium in dorsal view; 13, aedeagus; 14, 5th sternite in ventral view.

**Abbreviations.** The abbreviations used in the present paper are as follows:

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</tr>
<tr>
<td>ntlpl</td>
<td>Notopleural seta</td>
</tr>
<tr>
<td>mpl</td>
<td>Mesopleural seta</td>
</tr>
<tr>
<td>stpl</td>
<td>Sternopectinal seta</td>
</tr>
<tr>
<td>prpl</td>
<td>Proupleural seta</td>
</tr>
<tr>
<td>pstg</td>
<td>Prostigmatic seta</td>
</tr>
<tr>
<td>pre</td>
<td>Presutural seta</td>
</tr>
<tr>
<td>post</td>
<td>Postsutural seta</td>
</tr>
<tr>
<td>prse</td>
<td>Prescutellar seta</td>
</tr>
<tr>
<td>a</td>
<td>Anterior seta</td>
</tr>
</tbody>
</table>

Fig. 17. Leg (hind, left) in frontal view.

Fig. 18. Diagram showing cross-section of leg, with surface terminology.

Fig. 19. Wing.
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
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</tr>
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<tbody>
<tr>
<td>d</td>
<td>Dorsal seta</td>
<td>pd</td>
<td>Posterodorsal seta</td>
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<tr>
<td>p</td>
<td>Posterior seta</td>
<td>pv</td>
<td>Posteroventral seta</td>
</tr>
<tr>
<td>v</td>
<td>Ventral seta</td>
<td>h</td>
<td>Humeral cross-vein</td>
</tr>
<tr>
<td>av</td>
<td>Anteroventral seta</td>
<td>m-m</td>
<td>Posterior cross-vein</td>
</tr>
<tr>
<td>ad</td>
<td>Anterodorsal seta</td>
<td></td>
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</tbody>
</table>

Scales accompanying figures all show a length of 0.5 mm.

### Classification

**Section Calyptratae: Superfamily Muscoidea**

**Family Anthomyiidae**

Although the species of the Anthomyiidae were usually treated within the family Muscidae, they have recently been separated from the latter as a distinct family (Hennig, 1955 & 1966; Huckett, 1965b & 1971; Ackland, 1965a & 1967; Steyskal, 1967). According to Huckett (l.c.) the Scatophagidae are included in the family Anthomyiidae and placed as its subfamily, but in the present paper they are excluded from the Anthomyiidae as generally accepted. The Anthomyiidae in the present sense are usually divided into 2 subfamilies, Fucellinae and Anthomyiinae, the latter being usually subdivided into 2 tribes, Myiopinini and Anthomyiini, on the basis of the frons-width of the males. Nevertheless, in this study the family is not divided into subfamilies or tribes in accordance with Hennig (1966).

Structures common in both sexes may be more primitive than those characteristic only of one sex, and species with a narrow frons in the male may have derived from ancestors with a wide frons in either sex. A narrow frons in males must be, however, understood as a polyphyletic character, because species with a wide frons in the male are seen intragenerically in various genera, e.g. in *Chirosia* (incl. *Pycnoglossa*), *Eutrichota* (incl. *Pegomyza*), *Pegokylemyia* and *Paraprosalpia* (incl. *Pseudochirosia*). With this assumption the division of the Anthomyiinae into Myiopinini and Anthomyiini, based only on the width of male frons, will not be accepted. On the other hand there may be found some reliable characters other than the frons-width between the genus *Fucellia* and the rest of the family to separate them into different subfamilies, although this separation is reserved in this study. Further knowledge as to the phylogenetic significance of the characters of the Anthomyiidae is necessary in order to give a natural system to the family. The generic classification of this family is also variable according to authors. In the present study I have recognized 30 genera, which may be distinguishable by the following key.

#### Key to the genera (33)*

1. Frons wider or only a little narrower than one-third head-width. .............. 2
   - Frons distinctly narrower than one-third head-width. ..................... 7
2. Arista plumose. ................................................................. 3
   - Arista pubescent. .............................................................. 4
3. Frons slightly narrower than one-third head-width; interfrontalia with if. .... 27. *Mycophaga* Rondani

* Keys are merely ones of convenience. Among species not treated in this paper there might be ones which do not run out in the key with their own genera.
- Frons wider than one-third head-width; interfrontalia without if. .......................... 30. Eutrichota Kowarz pt.
4. Costa with spinular setae widely set on ventral surface. .............................. 1. Fucellia Robineau-Desvoidy
- Costa without spinular setae on ventral surface. ........................................ 5
5. Hind tibia with apical pv vestigial. ................... 2. Chiastocheta Pokorny
- Hind tibia with apical pv strong. ................................................................. 6
6. Interfrontalia with strong if; parafrontals with 2–3 strong ors; haustellum robust. 3. Chirosisia Rondani pt.
- Interfrontalia without if, at most with very fine or vestigial ones; parafrontals normally with no ors; haustellum not robust. 4. Shakhainia gen. nov.
7. Propleura haired. .......................................................... 7. Anthomyia Meigen
- Propleura bare. .......................................................................................... 8
8. Arista plumose; 5th sternite more or less heart-shaped and with a matt-like tuft of setulae along inner margin of each process. 28. Emmesomia Malloch
- Otherwise in combination of characters. .................................................................. 9
9. Lower calyptra distinctly protruded beyond the upper. ....................................... 10
- Lower calyptra not distinctly protruded beyond the upper. ................................. 12
10. Pteropleura with 1 or a few setae. 28. Emmesomia Malloch
- Pteropleura with no setae. ................................................................................ 11
11. Arista with the longest hairs at least about 3 times as long as basal diameter of arista. 25. Hydrophoria Robineau-Desvoidy
- Arista with the longest hairs at most about as long as basal diameter of arista. 29. Pegomya Robineau-Desvoidy pt.
12. Body densely covered with whitish grey pollen; mesonotum well marked with 3 broad black vittae; scutellum with black lateral markings. 12. Eustalomyia Kowarz
- Otherwise in colouration. .................................................................................. 13
13. Vibrissae separated from each other by a distance shorter than cheek-height. 13. Leucophora Robineau-Desvoidy
- Vibrissae separated from each other by a distance longer than cheek-height. 14
14. A₄ at most only a little longer than the width; epistoma projecting forwards beyond frons at lunule; palpi and haustellum slender; t₅ with neither av nor v. 16. Egle Robineau-Desvoidy
- Otherwise in combination of characters. .................................................................. 15
15. Parafrontals with ors even if minute. .................................................................. 16
- Parafrontals without ors. .................................................................................... 28
16. Abdomen strongly swollen on caudal half, club-shaped in profile; 5th sternite with a tuft of short setulae at inner margin of each process; haustellum with mentum not slender nor polished. 26. Phorbia Robineau-Desvoidy pt.
- Otherwise in combination of characters. .................................................................. 17
17. Mid tibia with av or v. ..................................................................................... 18
- Mid tibia with neither av nor v. ........................................................................... 21
- Hind tibia without apical pv. ............................................................................... 19
19. Interfrontalia without if, or t₅ with v. 17. Paregie Schnabl
- Interfrontalia with if; t₅ with av. ......................................................................... 20
- Fore tibia with no ad; t₅ with 1 pd. 20. Delta Robineau-Desvoidy pt.
21. Hind tibia with pv and/or apical pv. ................................................................... 22
- Hind tibia with neither pv nor apical pv. ............................................................. 26
22. Mesonotum with 2–4 well developed ph; interfrontalia with if lacking, if present then haustellum with mentum slender and polished. 15. Lasiomma Stein pt.
- Otherwise in combination of characters. ............................................................... 23
- Hind tibia with apical pv. ................................................................................... 24

13
- Notopleura with no accessory setulae. .................................. 25
25. Scutellum not haired ventrally; if haired then haustellum very robust or ors much longer than secondary ocellar setae. .......................... 3. Chirosia Rondani pt.
- Scutellum haired ventrally; haustellum not robust; ors much shorter than secondary ocellar setae. ..................................... 6. Craspedochaeta Macquart
- Legs wholly blackish. .................................. 27
27. Fifth sternite more or less heart-shaped, largely setose and not polished. .................................. 23. Nupedia Karl
- Fifth sternite not heart-shaped, largely devoid of setae and polished. .................................. 22. Pseudonupedia Ringdahl
28. Interfrontalia with if present, if not then t3 with pv and/or apical pv. .................................. 29
- Interfrontalia with if absent; t3 with neither pv nor apical pv even if with p. .. 41
29. Abdomen depressed at least basally; occiput setulose on upper part below postocular row of setulae; mesonotum with 2 strong pA (often in addition with 1–2 rather weaker ones); t3 with apical pv present even if minute. .......................... 15. Lasioptera Stein pt.
- Otherwise in combination of characters. .................................. 30
30. Abdomen conical or half-depressed; hypopygium with basal sclerite black and polished; t4 without pA; t4 with many (10–24) pv. .. 8. Acrostilpna Ringdahl pt.
- Otherwise in combination of characters. .................................. 31
31. Hind tibia with apical pv. .................................. 32
- Hind tibia without apical pv. .................................. 35
32. Mid tibia with pv. .................................. 10. Hyporites Pokorny
- Mid tibia without pv. .................................. 33
33. Prebasal sclerite of hypopygium with some strong setae along hind margin. .................................. 18. Bolanophila LIoy
- Prebasal sclerite of hypopygium with no strong setae. .................................. 34
34. Mesopleura with 1–2 strong anterior mpl. .......................... 5. Meliniella gen. nov. pt.
35. Arista with the longest hairs longer than A5-width. .................................. 14. Hylemya Robineau-Desvoidy
- Arista with the longest hairs much shorter than A5-width. .................................. 36
36. Haustellum with mentum polished; abdomen conical or half-depressed; 5th sternite strongly chitinized and shining, largely devoid of setae on inner half of each process. .................................. 11. Paraprosalpia Villeneuve
- Otherwise in combination of characters. .................................. 37
37. Interfrontalia with if absent; legs largely yellow. .......................... 30. Eutrichota Kowarz pt.
- Interfrontalia with if present, if not then legs blackish. .................................. 38
- Abdomen not so strongly swollen on caudal half and not club-shaped in profile. .................................. 39
- Hind tibia with more than 2 pd and usually with pv. .................................. 40
40. Occiput rather densely setulose on upper part below postocular row of setulae; anal sclerite in dorsal view rounded, if ovoid then t4 with 2 or more pd. .................................. 19. Pogohyplemyia Schnabl pt.
- Occiput bare or nearly so on upper part below postocular row of setulae, if rather densely setulose then anal sclerite in dorsal view ovoid and t4 with 1 pd. .................................. 20. Delia Robineau-Desvoidy pt.
41. Abdomen conical or slightly depressed; 5th sternite with processes nearly parallel-sided and with no strong setae along inner margin; surstyli club- or stick-shaped and cleft apically, with stiffish setulae or spine-like setae. .................................. 30. Eutrichota Kowarz pt.
- Otherwise in combination of characters...

Key to the genera (♀♂)

1. Frons much narrower than one-third head-width. .......................... 2
- Frons wider or only a little narrower than one-third head-width. .......... 5

2. Hind tibia with apical pv strong. .......................................... 10. Hyporites Pokorny
- Hind tibia with apical pv vestigial or lacking. ................................ 3

- Eyes practically bare. ............................................................ 4

- Haustellum with mentum polished; ovipositor with no spine-like setae on terminal sclerites. ................................................. 11. Paraprosalpia Villeneuve

5. Costa with spinular setae widely set on ventral surface. .................
- Costa without spinular setae on ventral surface. ............................. 6

6. Propleura haired. ................................................................. 7. Anthomyia Meigen
- Propleura bare. ........................................................................... 7

7. Pteropleura with 1 or a few setae ............................................. 28. Emmesomyia Malloch
- Pteropleura with no setae. .......................................................... 8

8. Arista with the longest hairs as long as or a little longer than A₃-width; t₄ black, with 2 pd and no pv; palpi blade-like. ........... 24. Pegoplatia Schnabl & Dziedzicki
- Otherwise in combination of characters. ........................................ 9

9. Lower calyptera distinctly protruded beyond the upper. .................. 10
- Lower calyptera not distinctly protruded beyond the upper. .............. 11

10. Arista with the longest hairs longer than A₃-width, or t₄ with av. .......
- Arista with the longest hairs much shorter than A₃-width; t₄ without av. ...... 25. Hydrophoria Robineau-Desvoidy pt.
- Arista with the longest hairs much shorter than A₃-width; t₄ without av. ...... 29. Pegomya Robineau-Desvoidy pt.

11. Haustellum with mentum conspicuously enlarged; interfrontalia with if fine or lacking; mesonotum with arc very fine and indistinguishable from accessory setulae; t₄ with strong apical pv. .......................... 18. Botanophila Lioy
- Otherwise in combination of characters. ........................................ 12

12. Interfrontalia without if, at most with very fine ones; parafrontals normally with no ors; t₄ with no pv, yet with strong apical pv. .... 4. Shakshainia gen. nov.
- Otherwise in combination of characters .......................................... 13

13. Interfrontalia without if. ........................................................... 14
- Interfrontalia with if. .................................................................... 18

14. Body densely covered with whitish grey pollen; mesonotum well marked with 3 broad black vittae; scutellum with black lateral markings. ........................................ 12. Eustalomyia Kowarz
- Otherwise in colouration. ............................................................. 15

15. Vibrissae separated from each other by a distance about as long as cheek-height. ................................................................. 13. Leucophora Robineau-Desvoidy pt.
- Vibrissae separated from each other by a distance distinctly longer than cheek-height. ................................................................. 16

- Costa haired ventrally; legs at least partly yellow, if wholly blackish then t₄ without av. ................................................................. 17

17. Arista plumose, if only pubescent then t₄ with av or fore tarsus with 3rd and 4th segments more or less broadened. ......................... 30. Entrichota Kowarz
- Arista not plumose; t₄ without av; fore tarsus with 3rd and 4th segments normal. ................................................................. 29. Pegomya Robineau-Desvoidy pt.
18. Ovipositor compressed on terminal segment.  ... 26. Phorbia Robineau-Desvoidy
- Ovipositor not compressed on terminal segment.  
  19. Arista with the longest hairs at least about as long as A₂-width.  
  - Arista with the longest hairs much shorter than A₂-width.  
  - Hind tibia without apical pv.  
  21. Arista with the longest hairs much longer than A₂-width; abdomen black in ground colour.  
  - Arista with the longest hairs about as long as A₂-width; abdomen yellow in ground colour.  
  22. Hind tibia with apical pv at least about as long as height of the tibia.  
  - Hind tibia with apical pv distinctly shorter than height of the tibia or absent.  
  23. Haustellum stout, at least as thick as f₁.  
  - Haustellum normal or slender.  
  24. Haustellum with mentum wholly pollinose.  
  - Haustellum with mentum largely polished.  
  25. Mid tibia with av or v.  
  - Mid tibia with neither av nor v.  
  26. Mid tibia with av, if the seta located more or less anteroventral then parafrontals with 4–5 ors.  
  - Mid tibia with av; parafrontals with at most 3 ors.  
  27. Occiput distinctly setulose on upper part below postocular row of setulae; t₂ with 2 or more pd.  
  - Occiput bare or nearly so on upper part below postocular row of setulae; t₂ with 1–2 pd.  
  28. Head in profile rounded except on flat ventral margin; A₃ only a little longer than the width; occiput setulose on upper part below postocular row of setulae; cheeks distinctly less high than A₂-width; epistoma projecting forwards about as far as frons at lunule; haustellum not robust or slender, with mentum pollinose.  
  - Otherwise in combination of characters.  
  29. Epistoma projecting forwards beyond frons at lunule; A₃ as long as or only a little longer than the width.  
  - Otherwise in combination of characters.  
  30. Haustellum slender, with mentum polished; stpl 2:2; t₂ with 2 ad and 2 pd; t₁ with apical pd strong; costa distinctly haired on ventral surface.  
  - Otherwise in combination of characters.  
  31. Mesonotum with 2 ph, if with only 1 ph then haustellum slender and with mentum polished and epistoma projecting forwards beyond frons at lunule; occiput densely setulose on upper part below postocular row of setulae.  
  - Otherwise in combination of characters.  
  32. Occiput distinctly setulose on upper part below postocular row of setulae; t₂ with 2 or more pd.  
  - Occiput bare or nearly so on upper part below postocular row of setulae, if distinctly setulose then t₂ with only 1 pd.  

1. Genus Fucellia Robineau-Desvoidy

Fucellia Robineau-Desvoidy, 1842:269. Type-species: Fucellia arenaria Robineau-Desvoidy, 1842.

According to Hennig (1966) and Hori & Kurahashi (1969) 15 species are known to occur in the Palearctic region, and of them 5 species in Japan. The Japanese species may be distinguished by the following key.
Key to the species (♀♂)

1. Mid tibia with av; t₄ swollen at base ventrally, thereon anteroventrally with a tuft of short setae and posteroventrally with a knob-like projection.

   4. fucorum (Fallén)
   - Mid tibia without av; t₄ not swollen at base ventrally, and without such setae or projection.

2. Legs wholly blackish; prebasal sclerite setose.

   8. kamtchatica Ringdahl
   - Legs at least partly yellowish; prebasal sclerite bare.

3. Hypopygium with anal sclerite conspicuously large.

   3. hypopygialis Ringdahl
   - Hypopygium with anal sclerite normal.

4. Wings with a dark brownish spot at apex; t₁ usually with 1 p–pv.

   1. apicalis Kertész
   - Wings without a spot-like marking; t₁ usually with 2 p–pv...

   2. boninensis Snyder

Key to the species (♀♀)

1. Legs wholly blackish.

2. Mid tibia with av.

   4. fucorum (Fallén)
   - Mid tibia without av.

3. Palpi largely or at least on apical half blackish; t₁ usually with 1 p–pv.

   1. apicalis Kertész
   - Palpi wholly or largely yellowish, at most slightly blackish at apex; t₁ usually with 2 p–pv.

4. Parafacials in profile at narrowest part much narrower than A₃-width; ovipositor with 8th tergite deeply cleft on cephalic margin into 3 long limbs.

   2. boninensis Snyder
   - Parafacials in profile at narrowest part only a little narrower than A₃-width; ovipositor with 8th tergite shallowly cleft on cephalic margin.

   3. hypopygialis Ringdahl

1. Fucellia apicalis Kertész


Material examined*. A lot of specimens (173♂♂, 226♀♀) have been examined, their localities being as follows: HOKKAIDO - Rishiri-to; Abashiri; Shiretoko; Akkeshi; Fuyujima; Tomakomai. HONSH'O - Noda & Omoto, Iwateken; Kobe, Hyogo-ken; Ise & Kumano, Mie-ken; Nagato, Yamaguchi-ken. SHIKOKU - Shōdo-shima; Uwajima; Tosashimizu. KYUSHU - Tsushima; Sasebo; Amakusa; Aoshima; Fukiage; Sata-misaki.

♂. Wings always with a distinct apical marking except in some specimens (7♂♂ from Noda & Omoto, Iwate-ken), which have a rather obscure one (owing to their young age?).

♀. Wings always with no markings; t₄ usually with 1–2 short av.

Distribution. Japan; Bonin Is.; China.

2. Fucellia boninensis Snyder


*) The specimens are collected by myself unless otherwise stated.
3. **Fucellia hypopygialis** Ringdahl


**Material examined.** HOKKAIDO - Abashiri, 1♂, 1♀, 25-v-62 (S. Takagi); Wakasakanai, 1♀, 3-viii-61 (S. Takagi); Akkeshi, 1♂, 18-vii-66; Zenibako, 10♂♂, 5♀♀, 23-vii-69.

♀. Mid tibia with 1-3 short av.

**Distribution.** Japan; Kamchatka; North America.

4. **Fucellia fucorum** (Fallén)


**Material examined.** HOKKAIDO - Rishiri-tó, 4♂♂, 1♀, 31-vii-69; Kitami-Esashi, 20♂♂, 4♀♀, 29-vii-69; Abashiri, 8♂♂, 4♀♀, 25-vii-62 (S. Takagi); Akkeshi, 3♂♂, 18-vii-66; Fuyujima, 18♂♂, 7♀♀, 28-vi-67; Shiretoko, 1♂, 1♀, 10-17-vii-65 (T. Kumata & I. Miyagi). SAKHALIEN - Chirie, 1♂, 6-viii-14 (S. Isshiki).

**Distribution.** Asia; Europe; North America.

5. **Fucellia kamtchatica** Ringdahl


**Material examined.** HOKKAIDO - Kitami-Esashi, 6♂♂, 1♀, 29-vii-69; Shiretoko, 1♂, 10-17-vii-65 (T. Kumata & I. Miyagi); Akkeshi, 6♂♂, 1♀, 18-vii-66; Fuyujima, 1♂, 28-vi-67; Zenibako, 40♂♂, 14♀♀, 23-vii-69; Ishikari-hama, 1♀, 9-vii-68. HONSHU - Omoto, Iwate-ken, 6♂♂, 5♀♀, 13-viii-69; Noda, Iwate-ken, 33♂♂, 10♀♀, 13-viii-69.

**Distribution.** Japan; Kamchatka; Aleutian Is.; Alaska.

2. Genus **Chiastocheta** Pokorny

*Chiastocheta* Pokorny, 1889:568. Type-species: *Aricia trollii* Zetterstedt, 1845.

This genus is a small group represented by 6 species with 2 other uncertain ones in the Palaearctic region (Hennig, 1966) and 2 endemic ones in the Nearctic region (Huckett, 1966b). The adult flies of the genus are commonly found on the flower-head of *Trollius*, in which the larvae of *Chiastocheta trollii* (Zetterstedt) are known to grow (Collin, 1954).
In Japan the following species is found on the flower-head of *Trollius riederianus* var. *japonicus*.

**1. Chiastocheta trollii** (Zetterstedt)


Material examined. HOKKAIDO - Mt. Daisetsu, 1♀, 1♂, 28-vii-59 (S. Ueda) & 6♀♂, 7♀♀, 20–21-vii-68; Mt. Shokambetsu, 3♂♂, 2♀♀, 1-vii-71.


Distribution. Japan; Europe.

3. Genus *Chirosia* Rondani


Only on the basis of the frons-width of the males the genera *Chirosia* and *Pyenoglossa* have been recognized as distinct from each other and often referred into different tribes. Recently, however, *Pyenoglossa* was suppressed as a synonym of *Chirosia* by Hennig (1966), whose opinion may be justified and is adopted in the present study. The larvae of some species are known to mine the leaves of ferns.

In the Palaearctic region are known to occur 15 species (Hennig, l.c.), of which 7 ones have been found also in Japan. In addition 5 other species will be described as new to science from Japan.

**Key to the species (♂♂)**

1. Frons wider than one-third head-width. .................................................. 2
   - Frons narrower than one-third head-width. ........................................... 4
2. Mid femur with some distinct *av*; *t* with 2 *pd*. .................................. 1. *parvicornis* (Zetterstedt)
   - Mid femur with no distinct *av*; *t* with 1 *pd*.................................... 3
3. Mesonotum with some setulae between rows of *pre aer*, which are separated from each other by a distance about as long as that between *de* and *aer*; *spl* 1:2. ............................ 3. *asperistilata* sp. nov.
   - Mesonotum with no setulae between rows of *pre aer*, which are separated from each other by a distance slightly longer than half of that between *de* and *aer*; *spl* 1:1. .................................. 2. *hiripedella* sp. nov.
4. Arista longly plumose. ................................................................. 4. *flavipennis* (Fallén)
   - Arista shortly pubescent, or nearly bare. ......................................... 5
5. Frons about as wide as *A*<sub>3</sub>-length. ........................................ 7. *migripes* Bezzi
   - Frons much narrower than *A*<sub>3</sub>-length. .................................... 6
6. Mid femur with some strong *av* .......................................................... 7
   - Mid femur with no strong *av* .......................................................... 9
7. Mid femur with no stout *pv*, at most with some slender ones. ................... 9. *yukara* sp. nov.
   - Mid femur with some stout *pv* .......................................................... 8
8. Hind femur with some distinct *pv*, which are longer than height of the femur; scutellum with some setulae on lateral margin below the primary setae. ............... 10. *nudisternata* sp. nov.
   - Hind femur with no distinct *pv*, at most with some fine ones, which are not longer
than height of the femur; scutellum with no setulae on lateral margin below the primary setae.

5. *cinerosa* (Zetterstedt)

9. Mid tibia without *ad*; *t₄* with *av* shorter than height of the femur; *pra* shorter than posterior *stpl*.

- Mid tibia with *ad*; *t₄* with *av* longer than height of the femur; *pra* at least as long as posterior *stpl*.

8. *sapporensis* sp. nov.

10. Mesonotum with rows of *pre acr* separated from each other by a distance about as long as that between *dc* and *acr*; *stpl* 1:2. 6. *hystrix* (Brischke)

- Mesonotum with rows of *pre acr* separated from each other by a distance much shorter than that between *dc* and *acr*; *stpl* 2:2 or 2:3.

11. Fore tibia with 1 distinct and 1–2 fine *ad*, and with apical *pv* strong.

- Fore tibia with no *ad*, at most with 1 fine one, and with apical *pv* weak or vestigial.

12. *similata* (Tienasu)

10. Mesonotum with rows of *pre acr* separated from each other by a distance about as long as that between *dc* and *acr*; *stpl* 1:2; scutellum bare ventrally.

Abdomen long-ovoid, with strong marginal setae, of which outer ones are about twice as long as the tergites; 5th sternite (Figs. 23 & 24) with many setae on outer margin of each process, which is large and rounded apically; hypopygium with slender surstyli (Figs. 20 & 21); distiphallus broad (Fig. 22).

Mid tibia with 1 *ad*, 2 *pd* and 2 *pv*; *t₃* with some *av*, 2 long and 2 shorter *ad*, 2–3 long and 1–2 shorter *pd* and no *pv*, in 1 specimen with 1 *p*.

♀. Only 1 specimen has been examined. Mid tibia with 1 short distinct *pv* or 2 minute ones.

Host plants. *Pteridium aquilinum*. In Europe some species of ferns, *Pteridium* (incl. *aquilinum*), *Asplenium*, and *Dryopteris* (incl. *dilatata*), are recorded as host plants of this species (see Hering, 1957 & Hennig, 1966).

Distribution. Japan; Europe.

1. *Chirosia parvicornis* (Zetterstedt)

(Figs. 20–24)


Material examined. HOKKAIDÔ — Sapporo, 1♂, 15-v-70; Eniwa, 2♀♂, 25-v-66. HONSHÔ — Shibahara, Fukushima-ken, 2♀♂, 18-vii-72 (M. Miyazaki), ex _Pteridium aquilinum_, as leaf-miner; Nishi-Nasuno, Tochigi-ken, 1♂, 1♀, 13-vii-72 (M. Miyazaki), ex _P. aquilinum_, as leaf-miner.

♂. Body-length 3.2–3.5 mm. Body blackish in ground colour, thinly covered with greyish pollen, which is a little tinged with brown; abdomen half-shining; wings slightly tinged with brown; calyptrae whitish, slightly tinged with yellow on margin.

Frons about 0.4 times as wide as head; interfrontalia about as wide as _A₄*_length; parafrontals with 2–3 *ori* and 2–3 *ors*; _A₃_ 1.5 times or a little more as long as wide; aristal pubescence distinct although short; haustellum robust.

Mesonotum with *pra* shorter than posterior *ntpl*; distance between rows of *pre acr* distinctly shorter than that between *dc* and *acr*; *stpl* 1:2; scutellum bare ventrally.

Abdomen long-ovoid, with strong marginal setae, of which outer ones are about twice as long as the tergites; 5th sternite (Figs. 23 & 24) with many setae on outer margin of each process, which is large and rounded apically; hypopygium with slender surstyli (Figs. 20 & 21); distiphallus broad (Fig. 22).

Mid tibia with 1 *ad*, 2 *pd* and 2 *pv*; *t₃* with some *av*, 2 long and 2 shorter *ad*, 2–3 long and 1–2 shorter *pd* and no *pv*, in 1 specimen with 1 *p*.

♀. Only 1 specimen has been examined. Mid tibia with 1 short distinct *pv* or 2 minute ones.

Host plants. _Pteridium aquilinum_. In Europe some species of ferns, _Pteridium_ (incl. _aquilinum_), _Asplenium_, and _Dryopteris_ (incl. _dilatata_), are recorded as host plants of this species (see Hering, 1957 & Hennig, 1966).

Distribution. Japan; Europe.

2. _Chirosia hirtipedella_ sp. nov.

(Figs. 25–29)

Type-material. HOKKAIDÔ — Sapporo, 1♂ (holotype), 11-v-66.
Figs. 20–24. *Chirosia parvicornis* (Zetterstedt), ♂: 20, hypopygium, dorsal view; 21, *ditto*, lateral view; 22, aedeagus; 23, 5th sternite, ventral view; 24, *ditto*, lateral view.


Figs. 30–33. *Chirosia asperistilata* sp. nov., ♂: 30, hypopygium, dorsal view; 31, *ditto*, lateral view; 32, aedeagus; 33, 5th sternite, ventral view. Scale, 0.5 mm (same for succeeding figures).

♂. Body-length 3.4 mm. Interfrontalia dark brownish, with pale brownish grey pollen; parafacials and cheeks dark brownish, with dull greyish pollen; occiput blackish, thinly with dull grey pollen; antennae and palpi black. Thorax dark brownish, covered with greyish pollen, which is more or less tinged with brown; mesonotum when viewed from behind half-shining and faintly vittate medially and on lateral margin. Abdomen dark brownish, thinly with brownish
grey pollen, and shining when viewed from behind. Legs dark brownish. Wings a little tinged with brown; calyptrae pale, slightly with a brownish yellow tinge; halteres yellowish. (The dark brownish ground colour of the body and legs may be due to the young age after the emergence, and the normal ground colour may be blackish.)

Head about as high as long, with swollen occiput, consequently rounded in profile; frons wide, about 0.41 times of head-width; interfrontalia slightly less than 3 times as wide as parafrontalia, with a pair of strong if; parafrontals with 2 strong and 1–2 minute ori, and with 3 ors, the upper reclinate one being shorter; A₃ shrunken, probably about 1.5 times as long as wide; arista minutely pubescent; profrons probably more or less narrower than A₃; cheeks a little less high than profrons-width; parafacials much narrowing ventrad; haustellum with mentum much enlarged.

Mesonotum with 3 pairs of fine pre acr and with no setulae between the rows, which are separated from each other by a distance slightly longer than half of that between dc and acr; 2nd ph like accessory setula; pra a little less than half of anterior npbl in length; stpl 1:1; mesopleura with no distinct anterior mpl, and with 1 strong and 1 weak pstg; scutellum on lateral margin near apical setae with 1–2 accessory setulae, between the apical setae with 1–2 accessory setulae, between the apical setae with 1 setula, and not haired ventrally.

Abdomen with marginal setae not much elongate, the outer ones being about as long as the tergites; 5th sternite and hypopygium as in Figs. 25–29.

Fore tibia with 1 ad, 1 pd and 1 pv; t₁ with no distinct av nor pv; t₂ with 1 ad, 1 pd and 1 p–pv; t₃ with 5 distinct av becoming longer towards apex of the femur, the longest one being a little longer than height of the femur, and with no distinct pv; t₄ with 1 av, 3 ad, 2 distinct and 1 shorter pd and no pv; fore tarsus a little longer than t₁; hind tarsus slightly shorter than t₃. Wings with costal thorns minute; costa haired on ventral surface; m-m straight.

♀. Unknown.

Distribution. Japan

In the wide frons and in the setal pattern of stpl in the male this species may resemble Chirosia hirtipes Stein from Tibet. It may, however, be readily distinguished from that species by some aspects: — Interfrontalia not so narrowing ventrad; abdomen not club-shaped; t₁ with pd; 5th sternite more pointed apically and less densely setose. Judging from the 5th sternite and the hypopygium this species may be more closely related to Chirosia cinerosa (Zetterstedt), although they are very different from each other in their external characters.

3. Chirosia asperistilata sp. nov.
(Figs. 30–33)

Type-material. HOKKAIDO — Sapporo, 1 ♂, 2-vi-67, & 1 ♂, 27-v-68; Józankei, 1♀, 24-v-68 (K. Kusigemati); Soranuma, 1 ♂, 11-vii-67; Eniwa, 3♂♂, 25-v-66, & 39♂♂ (one the holotype), 11♀♀, 27-v-71.

♂. Body-length ca. 5 mm, wing-length 4.4–5 mm. (In most of the specimens the abdomen is in poor condition because of shrinkage, still there are 2 rather good conditioned specimens, of which one is 5.2 mm in the body-length and 4.8 mm in the wing-length, and the other one is 5.3 mm in the body-length and 5 mm in the
wing-length.) Interfrontalia, parafacials and cheeks dark brownish to black in ground colour, with more or less brownish grey pollen; occiput blackish in ground colour, and a little brownish in pollinosity; antennae, palpi and haustellar mentum black, the last being pollinose. Thorax blackish in ground colour and greyish in pollinosity; mesonotum tinged with brownish yellow in pollinosity, when viewed from behind with rather broad median and lateral vittae. Abdomen blackish in ground colour, and shining though thinly covered with greyish pollen, which is tinged with brown. Legs black. Wings distinctly tinged with yellow; calypterae and halteres yellowish.

Head rounded in profile, only a little higher than the length; frons about 0.4 times as wide as head; interfrontalia a little more than twice of parafrontalina in width, with a pair of distinct or strong if; parafrontals with 1-2 ori and 1 procline and 1 (rarely 2) reclinate ors; Aa broadening apicad, about 1.4-1.5 times as long as wide; arista distinctly pubescent although the longest hairs being at most only a little longer than basal diameter of arista; profrons about 0.7-0.8 times as wide as Aa; cheeks about half as high as Aa-width; occiput usually with a few or some setulae on upper part below postocular row of setulae; palpi stick-like; haustellum with mentum much enlarged.

Mesonotum with 5-6 pairs of fine preacr and with some setulae between the rows, the distance between the rows being a little longer or shorter than that between dc and acr; 2nd ph like accessory setula; pra half to two-thirds of posterior ntpl in length; mesopleura with no distinct anterior mpl, and with 1 strong and 1 (sometimes 2) fine pstg; stpl 1:2; scutellum not haired ventrally, with 0-3 short setulae on lateral margin below the primary setae and on apical part between the apical setae respectively. Abdomen depressed except on rather swollen hypopygium, and about twice as long as wide, loosely narrowing caudad.

Fore tibia with 1 (sometimes 2) ad and 1 (sometimes 2) pv; f2 with no distinct av and on basal half with 2-4 distinct pv, which are as long as or a little longer than height of the femur; t2 with 1 ad, 1 pd, 1-2 p and 1 (sometimes 2) pv; f3 with 5-8 av, the longest one about 1.4 times as long as height of the femur, and on basal half or more with 2-5 pv, which are about as long as height of the femur; t3 with 2-5 av, 2-6 (2-3 strong and 0-4 weaker) ad, 2-4 (2-3 strong and 0-2 weaker) pd and 0-4 (usually 2-4) fine pv; fore tarsus a little longer than t1. Wings with costal thorns usually strong; costa haired ventrally; m-m nearly erect and straight.

♀. Interfrontalia with if usually as long as or a little longer than ori; antennae somewhat tinged with brown on two basal segments; Aa a little longer than 1.5 times of the width. Mid tibia with 1 ad, 1 pd, 2 p and 1-2 pv; t3 with 2-3 av, 3-5 (of them 2-3 stronger) ad, 3-5 (of them 2-3 stronger) pd and no pv, apical ad being stronger than that of male. Wings with m-m erect or a little leant inwards.


From any other known species with a wide frons in the male this species can be distinguished by the following aspects: — Body larger in size; parafrontals with short setulae although variable in number; mesonotum with preacr-rows more widely separated from each other and with some setulae between the rows; stpl 1:2; f2 with no distinct av; 5th sternite and hypopygium otherwise in structure. In spite of the dissimilarity in the external characters the present new species may be rather closely related to Chirosia flavipennis (Fallén) in having slender postgonites and broad praegonites in the male genitalia.
*4. Chirosia flavipennis (Fallén)  
(Figs. 34–38)


Material examined. HOKKAIDO — Shimamatsu, 1♂, 25-vii-65 (K. Kusigemati); Kunneppu, 3♀♀, 25-vii-66; Obihiro, 1♀, 15-vii-66; Kenebetsu, 1♀, 3-viii-71 (T. Kumata & M. Miyazaki); Teuri-to, 1♀, 3-viii-69 (T. Kumata). HONSHU — Naeba, Niigata-ken, 1♀, 14-viii-69 (T. Kocha); Tsumako, Gumma-ken, 1♂, 1♀, 11-vii-71 (T. Kocha).

♂. Body-length 5.8–6.8 mm; wing-length 5.1–5.9 mm. Body black in ground colour; mesonotum brownish grey pollinose; abdomen dark greyish pollinose, with a broad median vitta; wings strongly tinged with yellow or brownish yellow; calyptrae pale yellow; halteres yellowish at knob.

Figs. 34–38. *Chirosia flavipennis* (Fallén), ♂: 34, hypopygium, dorsal view; 35, ditto, lateral view; 36, aedeagus; 37, 5th sternite, ventral view; 38, ditto, lateral view.  
Figs. 39–44. *Chirosia cinerosa* (Zetterstedt), ♂: 39, hypopygium, dorsal view; 40, ditto, lateral view; 41, aedeagus; 42, 5th sternite (from Mt. Soranuma), ventral view; 43, ditto, lateral view; 44, 5th sternite (from Mt. Kiso-Komagatake), lateral view.
Head about 1.27-1.35 times as high as long; frons somewhat narrower than distance between posterior ocelli inclusive; interfrontalia about as wide as anterior ocellus, with if strong; parafrontals with 2 strong and some vestigial ori, and with 1 distinct ors; A₃ less than twice (about 1.7-1.9 times) as long as wide; arista with many long and straggling hairs; profrons about as wide as A₃; cheeks as high as or slightly higher than A₃-width; haustellum with mentum much enlarged.

Mesonotum with rows of pre acr separated from each other by a distance slightly less than half of that between dc and acr; pra not longer than half of posterior ntpl; stpl 1: 2; scutellum sparsely haired ventrally, with some setulae on lateral margin.

Abdomen depressed except on rather developed hypopygium, more than twice as long as wide; tergites with strong discal and marginal setae; 5th sternite and hypopygium as in Figs. 34-38.

Fore tibia with 3-4 ad and 1 pv; f₃ on apical third with some short av, of which 2-3 are strong, and on basal two-thirds with 4-5 robust pv; t₂ with 1 ad, 2-3 pd-p, and no pv; f₃ with about 10 av, and on basal two-thirds with about 4 slender pv; t₃ with 6-9 av, 4-6 ad, 4-5 pd and 7-9 pv. Wings with costal thorns distinct or strong; m-m somewhat oblique.

♀. Abdomen more thinly pollinose than in male, median vitta being faint although broad. Head about 1.2 times as high as long; frons about 0.4 times as wide as head; parafrontals with 1 proclinate and 2 reclinate ors, the upper reclinate one being shorter than the lower. Mesonotum with pra as long as or a little longer than half of posterior ntpl. Mid femur with pv not so robust as in male yet strong; t₃ with 4-5 av. Wings with m-m nearly upright and straight.

Distribution. Japan; Europe; North America.

*S. Chiroisina cinerosa (Zetterstedt)
(Figs. 39-44)


Material examined. HOKKAIDO — Sapporo, 2♀♂, 2-vi-67, 1♂, 27-v-68, & 1♂, 26-v-68 (H. Torikura); Nopporo, 1♂, 2-vi-68; Soranuma, 8♂♂, 17-vi-67; Eniwa, 6♂♂, 25-v-66 & 27-v-71; Mt. Shokametsu, 3♂♂, 1-vii-71. HONSHU — Takao-san, Tōkyo-to, 1♂, 5-v-69 (H. Takizawa); Mt. Kiso-Komagatake, Nagano-ken, 2♂♂, 25-vii-70; Mt. Hodaka, Nagano-ken, 1♀, 1-viii-70.

♀. Body-length 4.1-5.6 mm; wing-length 3.8-5.1 mm. Abdomen rather thinly pollinose and half-shining, with broad median vitta and rather broad fore marginal bands although the markings are not very sharp.

Frons narrow, about as wide as distance between posterior ocelli inclusive. Mesonotum with about 3 pairs of distinct pre acr, setae of the middle pair being strongest, distance between the rows being shorter than that between dc and acr; stpl 1: 2; scutellum not haired on ventral surface, and with no setulae on lateral margin. Abdomen with 5th sternite scarcely setose, the processes being more strongly pointed in the specimens from Hokkaido than in those from Honshu (Figs. 43 & 44). Fore tibia with 1 (rarely 2) ad, 1 (rarely 2) pd and 2-5 (usually 2-3) p-pv; f₃ with 3-5 strong av on apical third and 3-4 robust pv on basal half; t₃ with 6-12 fine pv.
♀. Abdomen very thinly pollinose and shining, with no markings. Frons about 0.39 times as wide as head; parafrontals with 1 procline and 2 reclinate ors. Stpt 1: 1. Mid femur with 1-3 av, which are weaker than those of male, and with 2-5 pv not robust; t₃ with some pv, which are shorter and finer than those of male.


Distribution. Japan; Europe; North America.

There is found a slight difference between the Japanese form and the North American one. According to Huckett (1949) the scutellum of this species has a few fine hairs on the ventral surface, but the Japanese form has no hairs on the ventral surface of the scutellum at least in the specimens examined. The ventral hairing of the scutellum may be variable as seen in *Chirosia betuleti* (Ringdahl) mentioned hereinafter.

*6. Chirosia hystrix* (Brischke) (Figs. 45-49)


Material examined. HONSHU — Hannō, Saitama-ken, 1♀, 2-v-68 (H. Taki-zawa).

♀. Length of head and thorax combined ca. 2.5 mm; wing-length 4 mm. Body blackish in ground colour and whitish grey in pollinosity; abdomen half-shining, with median vitta broad and faint. Wings with a brownish yellow tinge; calyptrae whitish; halteres yellow at knob

Head about 1.3 times as high as long; frons about three-fourths as wide as distance between posterior ocelli inclusive; interfrontalia about as wide as anterior ocellus, with if strong; parafrontals with 3 strong ori and 1 slender ors; A₃ about 1.7 times as long as wide; arista distinctly pubescent, the hairs being about as long as basal diameter of arista; profrons a little narrower than A₃-width; cheeks about as high as A₃-width, with lowest peristomal seta very strong, about four-fifths as long as vibrissal seta; upper part of occiput with only a few setulae below postocular row of setulae; haustellum more or less stout, yet not so strong as in _flavipennis_ or _cinerosa_.

Mesonotum with 3 pairs of _pre acr_, setae of the middle pair being strong, and with 2 accessory setulae between the rows, which are separated from each other by a distance somewhat shorter than that between _dc_ and _acr_; 2nd _ph_ distinguishable from accessory setulae although not strong; _pra_ long, about as long as anterior _ntpl_; _stpl_ 1: 2; scutellum not haired ventrally, with some setulae on lateral margin below the primary setae.

Abdomen with strong marginal and discal setae, which become longer laterad; 5th sternite and hypopygium as in Figs. 45-49.

Fore tibia with 1 _ad_ and 1 _pv_; t₂ with no distinct _av_, and on basal half with 4 _pv_, which are long although not robust; t₃ with 1 _ad_, 1 _pd_, 1 _p_ and 1 _pv_; t₄ with 8 long _av_, and on basal half with about 5 slender _pv_; t₅ with 4 _av_, 7 _ad_ (not uniform in length), 3 long and 2 shorter _pd_ and some fine and short _pv_. Wings with costal thorns distinct although not very strong.

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♀. Unknown to me. According to HOCKETT (1949) and HENNING (1966), abdomen shining, with no markings, 5th tergite being polished; t₃ with no pv.


Distribution. Japan; Europe; North America.

This species may be more closely related to *C. betuleti* rather than to any other known species of the genus in having the following aspects: — Body rather densely whitish grey pollinose; calyptrae whitish; head distinctly higher than its length; pra about as long as anterior st₁; haustellum less robust. It can be, however, distinguished from that species by the mesonotum with rows of *pre acr* more widely separated from each other and by the setal pattern of *st₁* arranged in 1:2.

![Figs. 45–49. Chirosgia hystrix (Brischke), ♂: 45, hypopygium, dorsal view; 46, ditto, lateral view; 47, aedeagus; 48, 5th sternite, ventral view; 49, ditto, lateral view.](image1)

![Figs. 50–53. Chirosgia nigripes Bezzi, ♂: 50, hypopygium, dorsal view; 51, ditto, lateral view; 52, aedeagus; 53, 5th sternite, ventral view.](image2)

![Figs. 54–57. Chirosgia sapporensis sp. nov., ♂: 54, hypopygium, dorsal view; 55, ditto, lateral view; 56, aedeagus; 57, 5th sternite, ventral view.](image3)
*7. Chirosia nigripes Bezzi  
(Figs. 50-53)


Material examined. HOKKAIDO — Toyotomi, 1♂, 10-vii-68.

♂. Body-length 3.5 mm; wing-length 3.1 mm. Body blackish in ground colour and densely grey pollinose; interfrontalia blackish on upper half and dark brownish on lower half, with pale grey pollen; parafrontals blackish, with whitish grey pollen; parafacials and cheeks dark brown in ground colour and silvery or whitish grey in pollinosity; occiput black, with whitish grey and a little bluish pollen; antennae and palpi black; haustellum with mentum black and thinly pollinose. Mesonotum with median and lateral vittae, the median one being brownish pollinose. Abdomen with median vitta broad, obscure-margined and brownish pollinose. Legs blackish, femora more or less dark brownish. Wings with a brownish yellow tinge; calyptrae pale, somewhat tinged with yellow; halteres yellow at knob.

Head about 1.24 times as high as long; frons about as wide as A₂-length; interfrontalia about 2.5 times as wide as parafrontalia, with if strong; parafrontals with 2 strong and a few vestigial ori, and with 1 strong ors, which is directed inwards, and still between the ors and the upper ori on the right parafrontalia with 1 strong seta, which may be regarded as proclinate one though directed inwards; A₃ about 1.8 times as long as A₂; arista distinctly pubescent although the hairs being short, about as long as basal diameter of arista; profrons and cheeks respectively narrower and less high than A₂-length; occiput bare on upper part below postocular row of setulae.

Mesonotum with 3-4 pairs of distinct pra acr, distance between the rows shorter than that between dc and acr; 2nd ph like accessory setula or only a little developed; pra about half as long as posterior ntpl; stpl 1:2, the lower posterior about half as long as the upper; scutellum not haired ventrally, and in the present specimen with or without 1 setula on lateral margins and with no setulae between the apical setae.

Abdomen subcylindrical, about twice as long as wide; 5th sternite (Fig. 53) with processes short; cercal plate (Fig. 50) emarginate apically; surstyli swollen at apex, and thereon inside concave.

Fore tibia with 1 ad and 1 pv; t₂ with 3-4 pv on basal half; t₃ with 1 pd and 2 p-pv, and without ad; t₅ with 5 av on apical two-thirds, and with 3-4 pv on basal half or a little more; t₇ with 3 av, 5 ad, 4 pd, and 4 pv. Wings with costal thorns minute; m-m straight.

♀. Unknown.

Distribution. Japan; Italy.

This species may be included in the same group with Chirosia albifrons Tiensuu and Chirosia albitarsis (Zetterstedt), both of which have not been found in Japan, by the male having the frons with intermediate width, t₅ with no ad, cercal plate emarginate apically and 5th sternite similar-shaped. Judging from the 5th sternite and hypopygium the known species most closely related to this group may be Chirosia similata (Tiensuu), although the latter has a narrow frons in the male.
8. Chirosia sapporensis sp. nov.  
(Figs. 54–57)

Type-material. HOKKAIDO — Sapporo, 1 ♂ (holotype), 9-v-66 (T. Kocha).

♀. Body-length 4.8 mm; wing-length 4 mm. Blackish in ground colour and dull greyish in pollinosity; interfrontalia with greyish pollen which is tinged with brown; parafacials somewhat yellowish in pollinosity; cheeks with pollen more or less tinged with brown; antennae blackish; haustellum with mentum pollinose. Mesonotum brownish grey pollinose and hardly vittate, at most blackish laterally when viewed from behind. Abdomen thinly pollinose and half-shining, with median vitta narrowing caudad on each tergite and triangulate; basal sclerite of hypopygium shining black. Legs blackish brown; fore tarsus dark brown basally and brown apically. Wings tinged with yellow although not so strongly as in flavipennis; calyptrae yellowish; halteres brownish at base and yellowish at knob.

Head about 1.3 times as high as long; frons a little wider than anterior ocellus; interfrontalia slightly narrower than parafrontalia at level of ors, and with a pair of strong if, some vestigial hair-like setulae being present below the if; parafrontals with 3 strong and some vestigial ori, and with 1 strong ors at middle between anterior ocellus and if; A₃ about 1.4 times as long as wide; arista very minutely pubescent; profrons about 0.8 times as wide as A₃; cheeks slightly less high than A₃-width; haustellum rather stout, yet not so robust as in flavipennis.  
Mesonotum with 4 pairs of fine pre acr and with no setulae between the rows, which are separated from each other by a distance about half as long as that between de and acr; 2nd ph fine; pra weaker and a little shorter than posterior ntpl; mesopleura with 1 strong and 1–2 fine pstg; stpl 1:2; scutellum not haired on ventral surface, with some setulae on lateral margin below the primary setae. Abdomen depressed, about 1.8 times as long as wide and slightly narrowing caudad.

Fore tibia with 1–2 pv, and with no ad nor pd, apical pv being distinct though not very strong; f₂ with no distinct av, and with 4–5 pv on basal half, the longest one being slightly shorter than height of the femur; t₂ with 2 pd and 3 p–pv, and without ad; f₃ with a row of about 10 av becoming longer towards apex of the femur, the longest one slightly shorter than height of the femur, and with some slender pv on basal half; f₄ with 4–5 short and fine av, 5 ad, 4 pd and 5–6 short and fine pv; fore tarsus a little longer than t₁; hind tarsus nearly as long as t₄. Wings with costal thorns short; m–m straight.

♀. Unknown.


In the shape of the 5th sternite and the profile of the hypopygium C. sapporensis remarkably resembles the North American Chirosia filicis (Huckett), from which it can be, however, readily distinguished by the dissimilar dorsal view of the hypopygium, shorter pra, distinct apical pv and absence of ad on t₁, and short costal thorns on the wings.

9. Chirosia yukara sp. nov.  
(Figs. 58–62)

Type-material. HOKKAIDO — Mt. Soranuma, 4 ♂♂ (one the holotype), 17-vi-67,
& 2♂, 11-vii-67; Mt. Shokambetsu, 1♂, 1-vii-71.

♂. Body-length 4.4-5.4 mm; wing-length 4.1-4.9 mm. Blackish in ground colour; interfrontalia black, with whitish grey pollen; parafacials and cheeks more or less tinged with yellow in pollinosity; antennae and palpi black; haustellum with mentum black and thinly pollinose. Mesonotum thinly covered with brownish grey pollen, median and lateral vittae being faintly visible when viewed from behind. Abdomen thinly pollinose, more or less brownish in pollinosity; median vitta broad although faint and obscure-margined. Legs black. Wings, calyptrae and halteres strongly yellowish.

Figs. 58-62. Chirosia yukara sp. nov., ♂: 58, hypopygium, dorsal view; 59, ditto, lateral view; 60, aedeagus; 61, 5th sternite, ventral view; 62, ditto, lateral view.
Figs. 63-67. Chirosia nudisternata sp. nov., ♂: 63, hypopygium, dorsal view; 64, ditto, lateral view; 65, aedeagus; 66, 5th sternite, ventral view; 67, ditto, lateral view.
Figs. 68-71. Chirosia betuleti (Ringdahl), ♂: 68, hypopygium, dorsal view; 69, ditto, lateral view; 70, aedeagus; 71, 5th sternite, ventral view.
Head about 1.1–1.2 times as high as long; frons as wide as or slightly wider than distance between posterior ocelli inclusive; interfrontalia twice or a little more as wide as parafrontalia, and with a pair of strong \( \text{if} \); parafrontals with 2 (sometimes 3) strong and a few or some vestigial \( \text{ori} \), and with 1 distinct \( \text{ors} \); \( A_9 \) about 1.4–1.5 times as long as wide; arista distinctly pubescent although the hairs being not longer than diameter of aristal base; profrons and cheeks about 0.7–0.8 times as wide and high respectively as \( A_9 \)-width; occiput with no setulae on upper part below postocular row of setulae; haustellum with mentum much enlarged.

Mesonotum with 4–6 pairs of \( \text{pre acr} \), the setae of 1–2 pairs being rather distinct, and with no setulae between the rows, which are separated from each other by a distance as long as or a little longer than half of that between \( dc \) and \( acr \); 2nd \( \text{ph} \) like accessory setula; \( pra \) strong although shorter than half of posterior \( ntpl \); mesopleura with 1 strong and 0–1 fine \( pstg \); \( stpl \) 1:2; scutellum with or without 1–2 setulae on lateral margin below the primary setae and between apical setae respectively, and not haired on ventral surface.

Abdomen depressed basally, about 2.3–2.8 times as long as wide, and slowly narrowing caudad; discal and marginal setae strong although not so stout as in \( \text{flavipennis} \); 5th sternite and hypopygium as in Figs. 58–62.

Fore tibia with 1 \( \text{ad} \), 1–2 (usually 1) \( \text{pd} \) and 1–2 \( \text{pv} \); \( f_2 \) with a row of rather short \( \text{av} \), the setae on basal half being fine, and the setae (about 5–7 in number) on apical half being strong or stout although at most as long as height of the femur, and on basal half with 3–5 slender \( \text{pv} \); \( f_2 \) with 1 \( \text{ad} \), 1–2 (usually 2) \( \text{pd} \), 1 \( \text{p} \) and 1–2 \( \text{pv} \); \( f_3 \) with a row of about 10 strong \( \text{av} \), the longest one being as long as or a little shorter than height of the femur, and with no distinct \( pv \) except preapical one; \( t_3 \) with 4–7 (usually 4–5) \( \text{av} \), of which distal one is the strongest, and with 4–5 (2–3 strong and 1–2 weak) \( \text{ad} \), 3–4 \( \text{pd} \) and 5–7 fine \( \text{pv} \); hind tarsus about 0.8 times as long as \( t_3 \). Wings with costal thorns short although more or less stronger than costal setulae; costa haired on ventral surface rather anteriorly; \( m-m \) straight.

♀. Unknown.


At first sight this species resembles \( C. \text{cinerosa} \), from which it can be, however, readily distinguished by \( f_2 \) with no robust \( pv \), \( f_3 \) with \( av \) not longer than height of the femur, and the 5th sternite not pointed at apex in each process. Although readily distinguishable from \( C. \text{parvicornis} \) by the narrower frons of the male, \( C. \text{yukara} \) bears a striking resemblance to that species in the shape of the 5th sternite and the aedeagus.

10. **Chirosia nudisternata** sp. nov.

(Figs. 63–67)

Type-material. **HOKKAIDŌ** — Mt. Soranuma, 4♀♂ (one the holotype), 17-vi-67, & 1♂, 15-vi-68 (K. Kusigemati); Mt. Shokambetsu, 1♂, 1-vii-71; Yukomambetsu, 1♂, 8-vii-62 (S. Takagi). **HONSHŌ** — Mt. Yatsugatake, Nagano-ken, 1♂, 1♀, 18–20-vii-70.

♂. Body-length 4.8–5.7 mm; wing-length 4.2–5 mm. Blackish in ground colour; interfrontalia black, with whitish grey pollen; parafacials and cheeks whitish grey and slightly yellowish in pollinosity; occiput more or less brownish in pollinosity; antennae blackish, often slightly brownish on the 2nd segment
apically; palpi black; haustellum with mentum black and thinly pollinose. Thorax black in ground colour and brownish grey in pollinosity; mesonotum when viewed from behind with rather broad and faintly visible median and lateral vittae. Abdomen brownish grey pollinose, shining in some lights, and with broad and faint median vitta; 5th sternite with processes largely polished on apical half. Wings and calyptre strongly yellow; halteres brownish or reddish at base and yellowish at knob.

Head about 1.2 times as high as long; frons a little narrower than distance between posterior ocelli inclusive; interfrontalia usually about as wide as parafrontalia, with a pair of strong \( \text{if} \); parafrontals with 2 strong and a few or some vestigial \( \text{ori} \) and 1 distinct \( \text{ors} \); \( A_3 \) about 1.5-1.6 times as long as wide; arista distinctly pubescent although the hairs being not longer than basal diameter of arista; profrons and cheeks respectively about 0.6-0.8 times as wide and high as \( A_3 \)-width; occiput bare on upper part below postocular row of setulae, or at most thereon with 1-2 setulae; haustellum with mentum much enlarged.

Mesonotum with 3-6 irregular pairs of \( \text{pre acr} \), of which a few pairs are rather strong, and usually with a few setulae between the rows, which are separated from each other by a distance a little longer or shorter than half of that between \( dc \) and \( acr \); 2nd \( ph \) fine, like accessory setula or slightly longer; \( \text{pra} \) strong although short, about half as long as posterior \( ntpi \); \( stpl \) 1:2, often with rather distinct additional posterior one; scutellum with a few setulae on lateral margin below the primary setae and with 1 or a few setulae between the apical setae, and not haired on ventral surface. Abdomen depressed except on rather swollen hypopygium, and about 2-2.25 times as long as wide, becoming narrower caudad.

Fore tibia with 2-3 (only 1 on the right body-side in the holotype) \( ad \) and 1-3 (usually 2) \( p-pv \), and in 2 paratypes with 1 strong \( pd \) on one body-side; \( f_2 \) with a row of \( av \), of which some (6-8) ones on apical half to two-thirds are strong or stout although the longest one is a little shorter than height of the femur, and on basal half to two-thirds with 3-4 robust \( pv \), the longest one about 1.5 times as long as height of the femur; \( t_2 \) with 1 (rarely 2) \( ad \), 1 \( pd \), 1-2 (usually 1) \( p \) and 1-2 \( pv \); \( f_2 \) with a row of 7-10 strong \( av \), the longest one being more or less longer than height of the femur, and on basal half to two-thirds with some slender \( pv \), the longest one rather distinctly longer than height of the femur; \( t_2 \) with 4-5 \( av \), 5-6 \( ad \) (not uniform in length), 3 strong and 1-4 weak \( pd \) and 6-10 fine \( pv \); hind tarsus about 0.8 times as long as \( t_2 \). Wings with costal thorns distinct though short; costa haired ventrally; \( m-m \) straight.

\( \Phi \). On the basis of a single specimen the female characters will be given as follows: — Interfrontalia dark brownish on lower half and blackish on the upper; abdomen more thinly pollinose than in male and shining. Head only a little higher than the length, about 1.1 times so; frons about 0.36 times as wide as head; interfrontalia slightly more than twice as wide as parafrontalia; parafrontals with 2 strong and 1-2 vestigial \( ori \), and with 1 procline and 1 reclinate \( ors \) (in addition with 1 short setula above the reclinate \( ors \) on the right parafrontalia in this specimen); profrons about four-fifths of \( A_3 \) in width; cheeks about two-thirds as high as \( A_3 \)-width; upper part of occiput with a few setulae below postocular row of setulae. Mesonotum with no setulae between rows of \( acr \); \( stpl \) 1:2. Abdomen not depressed, about twice as long as wide, and long ovoid when viewed from above.
Fore tibia with 1 ad, and on the right body-side with 1 pv (absence of pv on the left may not be normal); t2 with 6-7 av on apical half and 3 pv on basal half, these setae being not so strong as those of male and the longest ones of av and pv being about as long as height of the femur; t3 with 1 ad, 1 pd, 1 p and 1 pu; t4 with 8-9 av and 3 pv; t5 with 3 av, 2 long and 3 short ad, 3-4 long and 1 short pd and only 1 fine pv.


*C. nudisternata* may be placed between *flavipennis* and *cinerosa* by having the male 5th sternite similar to that of *flavipennis* in the outline and to that of *cinerosa* in the setal pattern and by having the male genital structures showing an intermediate state. This species, however, can be readily distinguished from *flavipennis* by the arista merely pubescent and from *cinerosa* by the longer pv on f3 in the male and the setal pattern of stpt arranged in 1:2 in the female.

*11. Chirosia betuteti* (Ringdahl) (Figs. 68-71)


Material examined. HOKKAIDO - Sapporo, 1 ♂, 27-v-68; Nopporo, 1 ♂, 14-v-69, & 1 ♂, 5-v-70; Eniwa, 1 ♂, 25-v-66; Mt. Soranuma, 1 ♂, 27-v-66, & 2 ♂♂, 17-vi-67; Shikotsu-ko, 1 ♂, 2♀♀, 18-v-71; Mt. Shokambetsu, 1 ♂, 1-vii-71; Mt. Daisetsu, 1 ♂, 22-vii-68. HONSHU - Mt. Yatsugatake, Nagano-ken, 2 ♂♂, 4-vi-67 (T. Kocha).

♂. Body-length 3.8-6.6 mm (mostly 4.5-6 mm); wing-length 3.2-5.4 mm. Blackish in ground colour and whitish- or bluish-grey in pollinosity. Interfrontalia sometimes brownish in ground colour. Mesonotum usually with a brownish tinge in pollinosity, and when viewed from behind with obscure median and lateral vittae. Abdomen rather distinctly pollinose, with median vitta narrow or broad and not sharp; 5th tergite usually shining although thinly pollinose. Wings with a brownish tinge, darker at base; calyptrae whitish, slightly yellowish marginally.

Head about 1.2-1.3 times as high as long; frons about 1.5-2 times as wide as anterior ocellus; interfrontalia at most half as wide as anterior ocellus, and with if as strong as or distinctly weaker than ors; parafrontals with 3-5 (usually 4-5) strong and no or a few fine or vestigial ori and with 1 strong ors; Aa about 1.4-1.6 times as long as wide; arista very minutely pubescent; profrons usually about as wide as Aa; cheeks as high as or somewhat less high than Aa-width; occiput with many setulae on upper part below postocular row of setulae; haustellum with mentum not so enlarged.

Mesonotum with 3 pairs of strong pre acr and often in addition with 1-2 pairs of fine ones, setae of the 1st pair being separated from each other by a distance as long as half or slightly more of that between dc and acr; in larger specimens some setulae often present between the rows of pre acr; 1-2 secondary ph rather well developed; pra about as long as anterior ntpl; stpl 2:3, the lowest posterior being weaker than the uppers, sometimes only a little stronger than accessory setulae; scutellum with some (in smaller specimens) or many (in larger ones) fine accessory setulae on dorsal surface laterally and on lateral margin, often (in 7 specimens of the 12 examined ones) with 1 or a few fine hairs on ventral surface.
Abdomen depressed, about 2-2.7 (usually 2.2-2.4) times as long as wide, and slowly narrowing caudad; 5th sternite and hypopygium as in Figs. 68-71.

Fore tibia usually with no ad, and with 1-3 pv, apical pv being weak; t₃ with no distinct av, and with 4-8 distinct pv on basal half to two-thirds, the longest one distinctly longer than height of the femur in most cases; t₄ with 1 ad, 1 pd and 3-4 ṗ pv; t₅ with a row of 7-11 strong av, the longest one being slightly or distinctly longer than height of the femur, and with 2-6 distinct or strong ṗ pv on middle half or basal two-thirds, the longest one being shorter or longer than height of the femur; t₆ with 5-9 av, 5-7 ad (not uniform in length), 3-6 (of them 3 longer than the rest) pd and many (7-16) ṗ pv; fore tarsus about as long as t₄; hind tarsus a little shorter than t₆. Wings with costal thorns short; m-m nearly straight.

♀. Abdomen very thinly pollinose and shining, without markings. Wings yellowish rather than brownish.

Frons about one-third as wide as head; interfrontalia about 2.5-3 times as wide as parafrontalia; parafrontals with 3 ors, and with 1-2 minute setulae outside ors; occiput somewhat swollen; haustellum with mentum rather enlarged. Mesonotum with 1-2 short secondary pk; stpt 2: 2, the lower anterior being fine though distinguishable from accessory setulae, and the lower posterior fine or strong; scutellum with or without a fine hair on ventral surface. Abdomen long-ovoid, about 1.6-1.7 times as long as wide.

Fore tibia with 1 ad and 1-2 pv, apical pv being strong; t₃ without pv; fore tarsus a little longer than t₁.

Distribution. Japan; Europe.

*12. Chiroxys similata (Tiensuu)
(Figs. 72-75)


Material examined. HOKKAIDO — Sapporo, 1 ♂, 17-v-60 (S. Takagi), & 23 ♀♀, 2-vi-68 (K. Kusigemati); Nopporo, 1 ♂, 14-v-69, & 1 ♂, 17-v-70.

♂. Body-length 5-6.4 mm; wing-length 4.5-5.2 mm. Black in ground colour and whitish grey or bluish grey in pollinosity. Interfrontalia, parafacial and cheeks sometimes brownish in ground colour. Mesonotum with or without a brownish tinge in pollinosity. Abdomen densely pollinose, half-shining in some lights, with median vitta narrow and sharp or obscure. Wings more or less tinged with brown or brownish yellow; calyptrae whitish, only a little yellowish marginally.

Head about 1.2-1.3 times as high as long; frons twice as wide as anterior ocellus, or nearly so; interfrontalia narrow, at most half as wide as anterior ocellus, and with if strong; parafrontals with 3-4 (usually 3) ors and 1 strong ors; A₃ about 1.5 times as long as wide; arista very minutely pubescent, nearly bare; profrons usually a little narrower than A₃; cheeks less high than profrons-width; occiput with many setulae on upper part below postocular row of setulae; haustellum with mentum not so enlarged.

Mesonotum with 3 pairs of strong and a few pairs of fine pre acr, and with or without a few setulae between the rows; distance between the rows of pre acr about two-thirds of that between dc and acr; 1 distinct secondary ph present; prea about
as long as anterior \textit{ntpl}; \textit{stpl} 2: 2 or 2: 3, the lower anterior and the lowest posterior being often very fine; scutellum with some or many setulae on dorsal surface laterally and on lateral margin, and with some fine hairs on ventral surface.

Abdomen depressed, slowly narrowing caudad, and about 2.5–2.9 times as long as wide; 5th sternite and hypopygium as in Figs. 72–75.

Fore tibia with 1 distinct \textit{ad} (usually in addition with 1–2 weaker \textit{ad} on apical third), and with 1 (rarely 2 or 3) \textit{pv}, apical \textit{pv} being rather well developed although shorter than apical \textit{pd}; \textit{t}_9 with no distinct \textit{av}, and with 4–5 strong \textit{pv} on basal half, the longest one distinctly longer than height of the femur; \textit{t}_9 with 1 \textit{ad}, 1 \textit{pd} and 2–4 (usually 3) \textit{p–pv}; \textit{f}_3 with a row of 7–11 strong \textit{av}, the longest one slightly or distinctly longer than height of the femur, and on basal half to two-thirds with 4–5 strong \textit{pv}, which are nearly as long and strong as \textit{av}; \textit{t}_3 with 4–7 \textit{av}, 5 \textit{ad}, 5–6 \textit{pd} (not uniform in length) and many (9–14) \textit{pv}; fore tarsus a little longer than \textit{t}_1; hind tarsus about four-fifths of \textit{t}_3 in length. Wings with costal thorns distinct.

♀. Unknown.

Distribution. Japan; Europe.

It may not be easy to distinguish \textit{C. similata} from \textit{C. betuleti} unless the hypopygial structure is seen. Nevertheless some external characters of the male of the present species may be useful to separate it from \textit{betuleti}:—Abdomen pollinose on 5th tergite as densely as on preceding tergites; profrons a little narrower than \textit{A}_3; \textit{t}_1 always with \textit{ad}, and with strong apical \textit{pv}; fore tarsus a little longer than \textit{t}_1.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figs.png}
\caption{Figs. 72–75. \textit{Chirosia similata} (Tiensuu). \textit{♀}: 72, hypopygium, dorsal view; 73, \textit{ditto}, lateral view; 74, aedeagus; 75, 5th sternite, ventral view.}
\end{figure}

\textbf{4. Genus \textit{Shakashainia} gen. nov.}

Type-species: \textit{Shakashainia rametoka} sp. nov.

This genus is erected for the reception of a single new species on the basis of the combination of the following characters:—

♀ & ♂. Frons wider than one-third head-width; interfrontalia without \textit{if}, at most with very fine or vestigial ones; parafrontals normally with no \textit{ors}; haustellum not robust or slender, with mentum pollinose. Propleura, pteropleura and prosternum bare; mesopleura with a strong anterior \textit{mpl}; scutellum haired on ventral surface. Mid tibia without \textit{av} or \textit{v}; \textit{t}_9 with strong apical \textit{pv}. Wings with costa haired on ventral surface; lower calytra smaller than the upper.
♂. Abdomen subcylindrical; prebasal sclerite of hypopygium bare and concealed beneath 5th tergite; surstyli cleft apically; praegonites and distiphallus not reduced.

Each of the characters mentioned above is seen in various genera of this family, but the combination of the wide-fronted head and the absence of ors is characteristic of the present new genus and may afford a sound basis to recognize this genus as distinct. Without consideration given to this combination of characters the genus may be closer to Meliniella gen. nov. described hereinafter rather than to any other known genera in having the haustellum normal and with pollinose mentum, a strong anterior mpl on the mesopleura, a strong apical pv on t₈, the apically cleft surstyli of the male, and the distiphallus of the male without a projection at base.

1. Shakshainia rametoka sp. nov.
(Figs. 3 & 11-14)

Type-material. HOKKAIDO — Shikotsu-ko, 7♀♂, 18-v-71; Sapporo, 3♀♂, 20-iv-59 (S. Ueda), 1♀, 20-v-59 (S. Ueda), 2♀♂, 9–15-v-65 (T. Kocha), 2♀♂, 1♀, 11-v-66, 1♂, 1-v-68 (T. Kocha), 1♀, 1-vi-68 (H. Torikura), 1♀, 18-v-68 (H. Torikura), 2♀♂, 3-v-69, & 2♀♂, 3-v-70; Jōzankei, 1♀, 26-v-68 (K. Kusigemati), 2♀♂, 15-vi-66, 1♀, 4-v-69; Mt. Soranuma, 1♀, 19-v-68 (S. Umezawa); Hiroshima-mura, 1♀, 11-vi-66; Eniwa, 4♀♂, 25-v-66, 1♀, 27-v-71; Nopporo, 1♀, 18-v-66, 2♀♂, 6-v-68, 2♀♂, 1♀, 14-v-69, 8♀♂, 3♀♂, 5–17-v-70; Mt. Shokambetsu, 1♀, 1-vii-71.

♂. Body-length 5.8–6.9 mm; wing-length 4.8–5.6 mm. Blackish in ground colour. Interfrontalia black, with whitish grey pollen often more or less tinged with yellow; parafrontals, parafacials and cheeks black in ground colour, with a yellowish tinge in pollinosity; occiput black, with greyish pollen, which is more or less tinged with brown or yellow; antennae and palpi black; haustellum with mentum black and pollinose. Thorax black in ground colour and brownish grey pollinose; mesonotum when viewed from front with brownish pollinose median vitta, and when viewed from behind with broad median and lateral black vittae and with narrow and faint sublateral ones. Abdomen black in ground colour, whitish grey and more or less bluish in pollinosity, which is often faintly tinged with yellow, and in some lights with tessellations; median vitta rather broad and usually distinct when viewed from behind; tergites more or less darkened on fore margin when viewed from behind; hypopygium pollinose; 5th sternite black and shining. Legs black. Wings rather distinctly tinged with brown or brownish yellow; calyptrae whitish, slightly tinged with yellow marginally; halteres yellow at knob.

Head (Fig. 3) distinctly protruded forwards at lunule, and only a little higher than the length, about 1.1–1.15 times as high as long; frons about 0.38–0.4 times as wide as head; interfrontalia as wide as or a little narrower than A₈-length, and without if, at most in some specimens with fine or microscopical ones, which are paired or not; parafrontals with 4–9 (usually 5–7) strong ori from the level near lunule to the level near anterior ocellus, in some specimens the uppermost one being proclinate and may be referred to reverted ors; A₈ about 2–2.25 times as long as wide; arista rather distinctly swollen at base, and practically bare; profrons about 1.2–1.5 times as wide as A₈; cheeks about as high as A₈-width, with genal
setae in a row, space between eyes and genal setae being broadly maintained caudad; epistoma distinctly behind frons at lunule, about as far as anterior eye-margin; occiput swollen, with some setulae on upper part below postocular row of setulae; ocellar setae longer and stronger than ori; ocellar triangle with 3-5 (usually 4) long and 0-3 shorter secondary ocellar setae, the longer ones being a little longer than half of ocellar setae; post-ocellar setae divergent, and as long as or a little longer than secondary ocellar setae; inner vertical setae more or less longer and stronger than ocellar setae; outer vertical setae a little shorter than ori; palpi stick-like and only a little shorter than A2 and A3 combined; haustellum rather small for the head-size, about as long as A3.

Mesonotum with 3-4 pairs of pra acr, which are fine and like accessory setulae, the rows being very narrowly separated from each other; 1 ph present; pra about as long as anterior ntpl; notopleura sometimes with 1-2 accessory setulae; mesopleura with a strong anterior mpl, and with 1 strong and 1 weaker pstg; stpl 2:2, the lower anterior being more or less shorter and weaker than the upper; scutellum sparsely setulose on dorsum laterally, with a few setulae between the apical setae, and haired on ventral surface.

Abdomen slightly depressed, subcylindrical, twice or a little more as long as wide, and becoming narrower caudad; tergites with strong marginal setae longer laterad, and with a few strong lateral setae shorter than the marginal ones; 5th sternite (Fig. 14) flat and strongly chitinized, with processes tapering apicad; hypopygium with very large cercal plate and deeply cleft surstyli; praegonites and postgonites (Fig. 13) with no strong setae.

Fore tibia with 1 distinct ad near apical third (rarely with 1 additional ad near apical fourth) and 1-2 (usually 2) strong pv, sometimes with 1 distinct or strong d near basal third, and with 4 strong apical setae (ad, d, pd and pv); t3 with no distinct av, and on basal two-thirds with some (4-8) slender pv, the longest one being a little longer than height of the femur; t2 with 1 ad, and with 3 strong and 0-2 (usually 1) additional pd-pv; f3 on apical two-thirds with 4-7 (usually 5-6) av, the longest one being rather distinctly longer than height of the femur, and with a few or some pv near middle and 1 or a few stronger pv near apex, the longest preapical one being as long as or somewhat longer than height of the femur; t4 with 3-5 (usually 3) av, 3-6 (2-3 long and 1-4 shorter) ad, 3-5 (2-4 long and 1-2 shorter) pd and no pv, and with 5 strong apical setae (av, ad, d, pd and pv); hind tarsus distinctly longer than t4, about 1.3 times; pulvilli small. Wings with costa haired on ventral surface; costal thorns distinguishable from costal setulae although short; m-m only a little curved inwards.

♀. Body-length 6.8-8.2 mm; wing-length 5.6-6.6 mm. In general appearance there are found no distinct differences from the male. Eyes more or less relatively smaller than those of male, and consequently frons, profrons and cheeks more or less relatively wider and higher than those of male respectively. Mesonotum with pra as long as or a little shorter than anterior ntpl. Abdomen depressed, and ovoid when viewed from above.


5. Genus *Meliniella* gen. nov.

Type-species: *Meliniella sikisima* sp. nov. This genus is characterized by the combination of the following aspects:--
♂. Frons much narrower than one-third head-width; interfrontalia with if even if they are fine; epistoma distinctly behind frons at lunule; occiput setulose on upper part below postocular row of setulae; haustellum not robust or lengthened, with mentum pollinose. Mesonotum with pra longer than posterior mpl; mesopleura with anterior mpl at least distinguishable from accessory setulae; scutellum haired or bare on ventral surface. Abdomen with hypopygium polished on pre-basal sclerite and on cephalic margin of basal sclerite, or wholly pollinose; postgonites narrow and not projected at setal base; praegonites not reduced; distiphalus not reduced, without a projection at base. Hind tibia with or without pv, and with strong apical pv. Wings with costa haired ventrally; lower calyptra smaller than the upper.

♀. The females of this genus are unknown except for that of M. sikisima. Frons not narrower than one-third head-width; interfrontalia with strong if; parafrontals with 3 strong ors; t₃ with apical pv strong as in male, and with no pv.

Apart from the preceding Shakshainia, which is separable from Meliniella by the wide frons of the male and by the absence of if and ors in both sexes, the present genus closely resembles Craspedochoeta in general appearance. However, it may be separated from the latter by the narrow postgonites and by the distiphalus lacking a projection at base. In this sense Melinia [=Craspedochoeta] bisinuata Tiensuu will be transferred to this genus. Hereinafter will be described 3 new species under the genus.

### Key to the species (♂♀)

1. Notopleura with a few or some accessory setulae. ........................................... 2
   - Notopleura with no accessory setulae. .................................................. 3
2. Larger and hairy species, body-length about 7 mm; 2nd ph well developed; abdomen with tufts of setae on 3rd and 4th sternites. .... 2. miyazakii sp. nov.
   - Smaller and not so hairy species, body-length 4.4-5.3 mm; 2nd ph fine; abdomen with no tufts of setae on 3rd and 4th sternites. .... 3. bisinuata (Tiensuu)
3. Abdomen stout, shorter than head and thorax combined; arista with the longest hairs more or less longer than basal diameter of arista; t₃ with apical pv about half as long as apical av. ........................................... 1. sikisima sp. nov.
   - Abdomen elongate, longer than or at least as long as head and thorax combined; arista with the longest hairs shorter than basal diameter of arista; t₃ with apical pv about as long as apical av. ............................ 4. watanabei sp. nov.

1. **Meliniella sikisima** sp. nov.
   (Figs. 1, 2 & 76-83)

Type-material. HONSHU — Mt. Hakkoda, Aomori-ken, 1♂, 19-viii-66; Mt. Hodaka, Nagano-ken, 5♀♂, 1-viii-70; Mt. Chôgatake, Nagano-ken, 1♀♂, 1♀, 30-vii-70; Mt. Shirouma, Nagano-ken, 4♀♂, 1♀, 5-viii-70; Mt. Yatsugatake, Nagano-ken, 1♂, 20-vii-70; Mt. Kiso-Komagatake, Nagano-ken, 1♀♂, 1♀, 27-vii-70.

♂. Body-length 6.1-8.4 mm; wing-length 5.7-7.5 mm. Body black in ground colour and densely covered with whitish grey pollen, which is more or less tinged with blue. Interfrontalia black, with whitish pollen; parafrontals, parafacials and cheeks silvery white in pollinosity, pollen of the last being sometimes slightly tinged with yellow; face with a brownish tinge in pollinosity; occiput more
or less tinged with brown in pollinosity especially on lower part; antennae and palpi black; haustellum with mentum black and distinctly pollinose. Mesonotum variously vittate according to visual angles, when viewed from behind with narrow median and broad lateral vittae, the median one somewhat broadening caudad. Abdomen sometimes with a faint yellowish tinge in pollinosity, and tessellated in some lights; hypopygium densely pollinose like preceding segments; median vitta rather broad; fore marginal bands not present. Wings tinged with yellow, strongly at base; veins yellow on basal half and brown on apical half; calyptrae strongly yellow; halteres brown at base and yellow at knob.

Figs. 76–83. Meliniella sikisima sp. nov., ♂: 76, hypopygium, dorsal view; 77, ditto, lateral view; 78, ditto, caudal view; 79, surstylus, inside view; 80, aedeagus; 81, distiphallus, dorsal view; 82, 5th sternite, ventral view; 83, ditto, lateral view.

Head (Fig. 2) about 1.2 times as high as long; frons about 1.5–1.8 times as wide as distance between posterior ocelli inclusive; interfrontalia wider than anterior ocellus, often twice as wide as the latter, with a pair of strong if, and usually with a few or some fine or vestigial setulae near if; parafrontals with 3 strong (the middle one being often weakened) ori and above them often with 1 weaker one, some vestigial setulae being present outside these ori, and without ors; A₃ as long as or somewhat longer than twice the width; arista distinctly pubescent, the longest hairs being more or less longer than basal diameter of arista; profrons 1.4–1.9 (usually 1.5–1.6) times as wide as A₃; cheeks as high as or a little higher than profrons-width, with genal setae in a row; palpi shorter than A₃ and A₃ combined; haustellum with mentum more or less shorter than palpi.
Mesonotum with 3–5 irregular pairs of distinct pre acr, the rows being very narrowly separated from each other and almost contiguous near the suture; 2nd ph fine and like accessory setula; pra more or less longer than anterior ntpl; notopleura with no accessory setulae; mesopleura with 1–2 strong anterior mpl, and with 2 strong (1 long and 1 shorter) pstg and some (4–9) associated fine setulae, of which 1–2 are often seta-like; stpl 2:2, the lower anterior shorter and weaker than the upper although much stronger than accessory setulae; scutellum not setulose on dorsal centre, and very sparsely haired or entirely bare on ventral surface.

Abdomen stout and conical, about 2.3–2.6 times as long as wide, being widest on 2nd segment and becoming narrower caudad; lateral margins of tergites approximate to each other on ventral side and nearly contiguous on 3rd and 4th segments; prebasal sclerite entirely exposed and fused to basal sclerite, rarely with 1–2 fine setulae; 5th sternite (Fig. 82) with setae directed inwards; anal sclerite much prolonged caudo-laterally and thereon with some short and strong setae; cercal plate folded back near apex laterally; surstyli (Figs. 78 & 79) much complicated; aedeagus as in Figs. 80 & 81.

Fore tibia with 1–2 ad (the proximal one shorter) and 2–3 strong pv, and with strong apical a, pd and pv; apical ad fine, apical p rather strong, and accessory setulae on posteroventral surface rather lengthened; f3 with a row of short and strong a although the row is often interrupted near the apical third, on apical half with 2–5 short and strong av, the longest one being at most as long as height of the femur, and on basal two-thirds with 4–6 long pv, the longest one being 1.5 or more times as long as height of the femur, accessory setulae on posteroventral surface rather lengthened; t2 with 1–2 (usually 1) ad, 1 pd and 2–6 (usually 4–5) p–pv; f3 with rows of long av and pv, the pv-row being interrupted near the apical third, and with an oblique row of many (15–20) long and rather strong setae from posteroventral at base to posterodorsal at basal fourth to third; t3 with a row of about 10 long and slender av, accessory setulae just above the row being rather lengthened and forming a row, and with 3–4 strong and some rather distinct ad, with 6–8 pd (not uniform in length), the seta near apical third being the strongest and about one-third as long as the tibia, and usually with some fine pv; t4 with apical pv about half as long as apical av though strong; hind tarsus shorter than t3, about four-fifths of the latter. Wings with costa haired ventrally; costal thorns distinct or rather strong though usually not very long; m–m upright and nearly straight.

♀. Body-length 6.5–8.7 mm; wing-length 5.9–7.7 mm. Interfrontalia black to reddish brown in ground colour and often tinged with yellow or brown in pollinosity; parafacials and cheeks often somewhat reddish in ground colour. Abdomen less densely pollinose than in male, half-shining in some lights; median vitta absent, if present very obscure.

Head about 1.1–1.2 times as high as long; frons as wide as or a little wider than one-third head-width; interfrontalia about twice as wide as parafrontalia; parafrontals with 3 strong normal ors, the upper reclinate one being more or less shorter than the lower (in 3 specimens with 1 additional proclinate ors at the level between the 2 reclinate ones on right or left body-side); profrons about 1.5–2 times as wide as Ap9; cheeks less high than profrons-width. Abdomen depressed or not, according to drying condition, and ovoid when viewed from above; tergites
with rather strong discal and lateral setae and strong marginal setae.

Fore tibia usually with 2 ad and 2 pv; t4 usually with 2 ad, 1 pd and 3-4 p-pv; t5 with 5-8 av, which are more or less shorter and stronger than those of male, and with no pv; t3 on posterior side near base with setae less numerous and weaker than those of male; accessory setulae onlegs not lengthened. Wings with costal thorns usually somewhat stronger than those of male.


2. Meliniella miyazakii sp. nov.

(Figs. 84-92)

Type-material. HONSHÔ — Mt. Seppiko, Hyôgo-ken, 1 ♂ (holotype), 19-iv-66 (M. Miyazaki).

♂. A stout and hairy species. Body-length 7 mm; wing-length 6.3 mm. Body including appendages black in ground colour. Interfrontalia whitish grey pollinose; parafacials silvery white in pollinosity; cheeks whitish grey and slightly brownish yellow in pollinosity; haustellum with mentum pollinose. Thorax bluish grey pollinose, more or less tinged with brown in pollinosity on pleura; mesonotum when viewed from front with narrow paramedian vittae between acr and dc from anterior margin of mesonotum to near 2nd post dc, and with sublateral and lateral dark markings, and when viewed from behind with 3 broad black markings, which are separated from each other by a narrow grey vitta along dc and when viewed from front at low angle are largely brownish pollinose; scutellum brownish pollinose, and when viewed from behind wholly blackish. Abdomen rather densely pollinose, with broad median vitta and distinct fore marginal bands, the markings on 4th and 5th tergites being triangulate; hypopygium pollinose. Wings strongly tinged with brownish yellow; calyptrae yellow; halteres brownish at base and brownish yellow at knob.

Head about 1.26 times as high as long; frons about 1.5 times as wide as anterior ocellus; interfrontalia about half of anterior ocellus in width, with a pair of strong and a single distinct if respectively a little above and below the middle between anterior ocellus and uppermost ori, and with some vestigial setulae at narrowing part; parafrontals with 8-9 long and strong and some short and fine ori; left parafrontalia with 1 distinct procline ors at the level a little below the paired if; head in profile with distance between anterior ocellus and tip of profrons much longer than that between tip of profrons and vibrissal base and about 1.6 times as long as the latter; antenal base situated near middle of head-height; A9 about 1.5 times as long as wide; arista gradually narrowing apicad and practically bare; profrons and cheeks respectively a little narrower and less high than A9; cheeks with genal setae in a few rows; epistoma as far as anterior eye-margin; palpi stick-like, about as long as A9 and A8 combined, and with many slender setae; haustellum with mentum about as long as A8; labella rather large; postocular row being composed of long and short setae reciprocally, the longer ones being about as long as outer vertical setae.

Thorax rather densely setulose, primary setae long; mesonotum with 3 irregular pairs of distinct pre acr, setae of the middle pair the strongest, about as long as anterior ntpl, the rows very narrowly separated from each other; post acr except a prescutellar pair like accessory setulae; 2 well developed and 2 rather
strong ph present; pra about as long as anterior ntpl; notopleura with 2 accessory setulae near base of anterior ntpl; mesopleura with 3 strong anterior mpl, and with 2 normal pstg and 7–8 rather long associated setulae; stpl 1:3, with many slender accessory setulae; scutellum rather densely setulose dorso-laterally and bare on dorsal centre, rather densely haired on ventral surface.
Abdomen cylindrical, about 1.8 times as long as wide, and when viewed from above distinctly narrowing caudad; 3rd sternite with many short setae directed downwards; 4th sternite with tufts of many long setae directed cephalad; 5th sternite and hypopygium as in Figs. 85–89, 91 & 92; anal sclerite prolonged and curled up inwards at caudo-lateral parts and thereon with many slender setae; cercal plate quadrate, densely covered with minute hairs, and with a bifurcated apical projection.

Fore tibia with 1 pd and 3 pv, and without ad, apical ad distinct although not very strong, apical pv strong; t3 with no distinct av and with a row of slender pv, which are longer than height of the femur; t4 with about 10 pd–pv and without ad; t5 with a row of long av becoming stronger towards apex of the femur, the strongest one about 1.4 times as long as height of the femur, and with no distinct pv except for some preapical ones; t6 with 5–6 av, 4–5 ad, 5–6 pd and no pv, and with 5 strong apical setae (av, ad, d, pd and pv). Wings with costa haired ventrally; costal thorns vestigial and indistinguishable from costal setulae; m–m nearly upright and very slightly sinuate.

♀. Unknown.


This species shares some aspects with members of some other genera: — A bifurcated apical projection on the cercal plate and apically cleft surstyli are often seen in Pegohylemyia; the presence of more than 2 ph is seen in Lasiomma; the combination of a short and pollinose mentum of the haustellum, a strong apical pv on t3 and strong anterior mpl on the mesopleura is also seen in Craspedochaeta; the broad distiphallus of this species is similar to those of certain species of Chirosia. The present species, however, cannot be referred to Pegohylemyia because of the strong apical pv on t3 and of the well-developed praegonites and distiphallus, to Lasiomma because of the stout abdomen and the peculiar cercal plate, to Craspedochaeta because of the surstyli with no spine-like setae and the distiphallus without a projection at base, and to Chirosia because of the smaller haustellum, the ventrally haired scutellum and the apically cleft surstyli. At present I am inclined to the opinion that this new species is to be included in Meliniella.

*3. Meliniella bisinuata (Tiensuu) comb. nov.
(Figs. 93–97)


Material examined. HOKKAIDO — Sapporo, 4♂♂, 27-v-68 & 2-vi-68 (K. Kusigemati), & 1 ♂, 27-v-68.

♂. Body-length 4.4–5.3 mm. Abdomen with broad median vitta and broad fore marginal bands; 5th tergite and hypopygium shining black although thinly pollinose; prebasal sclerite and cephalic margin of basal sclerite polished. Wings strongly tinged with brown, much darkened at base; calyptrae whitish and more or less tinged with yellow.

Interfrontalia with if not strong; parafrontals with 7–9 ori almost up to the level of anterior ocellus, the uppermost one probably corresponding to ors; A3 about 1.4–1.5 times as long as wide; profrons and cheeks respectively a little narrower and less high than A2-width. Thorax with 2–4 accessory setulae on notopleura; mesopleura with anterior mpl distinguishable from adjacent setulae
even if fine; \textit{stpl} 1: 2. Abdomen slightly depressed and subcylindrical, about 2.3–2.6 times as long as wide, and slowly narrowing caudad; 5th sternite and hypopygium as in Figs. 93–97.

Figs. 93–97. \textit{Meliniella bisinuata} (Tiensuu), ♂: 93, hypopygium, dorsal view; 94, \textit{ditto}, lateral view; 95, aedeagus; 96, distiphallus, dorsal view; 97, 5th sternite, ventral view.

Figs. 98–102. \textit{Meliniella watanabei} sp. nov., ♂: 98, hypopygium, dorsal view; 99, \textit{ditto}, lateral view; 100, aedeagus; 101, 5th sternite, ventral view; 102, \textit{ditto}, lateral view.

Figs. 103–107. \textit{Craspedochoeta angulata} (Tiensuu), ♂: 103, hypopygium, dorsal view; 104, \textit{ditto}, lateral view; 105, aedeagus; 106, 5th sternite, ventral view; 107, \textit{ditto}, lateral view.
Fore tibia with 1 ad and 2-3 pv; f2 with some slender pv on basal half; t2 with 1 ad, 1 pd and 3-4 p-pv; f3 with rows of slender av and pv, the pv abruptly shortened near apical third and becoming longer again towards apex of the femur; t3 with 3-6 av, 2 long and 3 shorter ad, 3-6 pd (of them 2-3 longer) and 5-9 pv, apical pv well developed and not weaker than apical av. Wings with costal thorns minute.

♀. Unknown.

Distribution. Japan; Finland; Sweden.

By the surstyli with no spine-like setae and by the distiphallus lacking a projection at the base this species may be included in this genus.

4. Meliniella watanabei sp. nov.

(Figs. 98-102)

Type-material. HOKKAIDO — Mt. Shokambetsu, 4♀♂ (one the holotype), 1-ⅷ-71; Rishiri-tô, 1♀, 3-ⅷ-65 (T. Kocha); Sapporo, 1♀, 6-ⅷ-68; Jôzankei, 15-ⅷ-66; Shimamatsu, 1♂, 10-ⅷ-68 (K. Kusigemati); Mt. Kariba, 9♀♂, 19-23-ⅷ-73. HONSHÔ — Mt. Yatsugatake, Nagano-ken, 1♀, 3-ⅶ-67 (T. Kocha).

♂. Body-length 5.4-7.6 mm; wing-length 4.5-6.2 mm. Body blackish in ground colour and whitish grey in pollinosity. Interfrontalia, parafacials and cheeks blackish or sometimes dark brownish in ground colour and whitish grey in pollinosity; parafacials with silvery grey reflections; antennae and palpi black; haustellum with mentum black and pollinose. Thorax whitish grey and more or less bluish in pollinosity, which is usually tinged with brown especially on mesonotum; mesonotum often with a brownish pollinose median vitta, and when viewed from behind with rather broad median and lateral vittae and faint sublateral ones. Abdomen rather densely covered with whitish grey pollen, which is more or less tinged with blue and sometimes yellow or brown; median vitta narrow or moderate in width; fore marginal bands usually absent except on 5th tergite which is rather broadly darkened on fore margin; hypopygium thinly pollinose, prebasal sclerite and cephalic margin of basal sclerite polished. Wings with a brownish yellow tinge, rather strongly yellow at base; calyptrae and halteres at knob yellow.

Head about 1.24-1.3 times as high as long; frons usually a little wider than distance between posterior ocelli inclusive; interfrontalia very narrow, at most about half as wide as anterior ocellus, with if fine and often vestigial; parafrontals with 4-6 strong and often 1-2 fine ori, and often with 1 vestigial ors near anterior ocellus or between anterior ocellus and uppermost ori; A3 usually about 1.6-1.8 times as long as wide; arista minutely pubescent; profrons as wide as or a little wider than A3; cheeks as high as or a little higher than A3-width, with genal setae in 1 row; palpi about as long as A3 and A3 combined; haustellum normal.

Mesonotum with 3-4 pairs of pre acr and with no setulae between the rows, which are separated from each other by a distance about half of that between dc and acr; 2nd ph fine and like accessory setula; pra more or less longer than anterior mpl; notopleura with no accessory setulae; mesopleura with 1-2 distinct anterior mpl, and with 1 strong and 1 weaker pstg and 1-5 associated setulae; stpl 2:2; scutellum not setulose on dorsal centre, and very sparsely haired ventrally (1-5 hairs being visible). Abdomen only a little depressed on basal half and subcylindrical, elongate, about 2.7-3 times as long as wide, and at least as long
as head and thorax combined; 5th sternite and hypopygium as in Figs. 98–102.

Fore tibia with 1 ad and 2–3 pv; f₂ with no distinct av and on basal half with 3–5 pv, which are longer than height of the femur; t₂ with 1 ad, 1 pd and 3–6 (usually 4–5) p–pv; f₃ with rows of long av and pv, a few pv near apical third being usually weakened; t₃ with 3–6 av, 4–7 (usually 5–6) ad, 5–8 (usually 6–7) pd and about 10 pv, and often with 1 long and strong p near middle on one body-side (never on each leg in the present specimens), apical av, ad, d, pd and pv all being long and strong; hind tarsus as long as or a little shorter than t₃. Wings with costa haired ventrally; costal thorns strong though rather weak in smaller specimens; m-m erect and nearly straight.

♀. Unknown.


Judging from the fine if, the subcylindrical abdomen, the 5th sternite with a projection at inner margin of each process and the shape of the surstyli this species may be more closely related to bisinuata than to any other known species, though it can be readily distinguished from bisinuata by the notopleura with no accessory setulae and by the 5th sternite more densely setose.

6. Genus Craspedochoeta Macquart

_Craspedochoeta_ Macquart, 1850:241. Type-species: _Anthomyia punctipennis_ Wiedemann, 1830.

_Melinia_ Ringdahl, 1929:270, as subgenus of _Hylemyia_, nec Costa, 1859 in Hymenoptera. Type-species: _Aricia pullula_ Zetterstedt, 1845.

This genus will be defined by the combination of the following aspects: — Interfrontalia with if; haustellum with mentum pollinose and not enlarged or lengthened; propleura not setulose; mesopleura with anterior mpl at least more or less distinct; t₃ with strong apical pv; surstyli concave near apex inside and thereon with a few or some spine-like setae; postgonites subquadrate except on prolonged apex; distiphallus with a projection at base.

By the introduction of the above definition for the genus _Melinia bisinuata_ Tiensuu, which is treated under _Craspedochoeta_ by Hennig (1966), is excluded from this genus and transferred to the preceding _Meliniella_. On this occasion the following species will be recorded from Japan.

*1. _Craspedochoeta angulata_ (Tiensuu) (Figs. 103–107)


Material examined. HOKKAIDO — Sapporo, 1♀, 8-v-68, 2♂♂, 12-v-68 (K. Kusigemati), & 1♀, 21-v-69.

♀. Body-length 3.7–5.1 mm; wing-length 3.3–4.2 mm. Body blackish in ground colour and densely whitish grey pollinose. Mesonotum with a trace of 3 narrow vittae between rows of _acr_ and along rows of _dc_. Abdomen with median vitta broad or moderate in width, and obscure-margined; fore marginal bands absent, if present very narrow; basal sclerite shining on cephalic margin. Wings more or less tinged with brownish yellow, rather distinctly yellow at base; calyptrae whitish, faintly tinged with yellow marginally.
Frons as wide as or a little wider than anterior ocellus; interfrontalia with \( if \) strong; parafrontals nearly contiguous to each other, with 3-4 \( ori \) and 1 short \( ors \); \( A_9 \) about 2-2.2 times as long as wide; arista shortly pubescent, the longest hairs as long as or a little longer than basal diameter of arista; profrons as wide as or slightly narrower than \( A_9 \); cheeks as high as or slightly higher than \( A_9 \)-width, with genal setae in 1-2 rows.

Mesonotum with \( pra \) about as long as posterior \( ntpt \); notopleura with no accessory setulae; mesopleura with anterior \( mpl \) distinct or fine, but always distinguishable from adjacent setulae, and with 2 (1 strong and 1 weak) \( pstg \) and 1-2 associated setulae; \( stpt \) 1:2, if 2:3 the lowest posterior is fine; scutellum distinctly haired on ventral surface.

Abdomen depressed especially on basal half, about 2.1-2.4 times as long as wide, and a little narrowing caudad; 5th sternite and hypopygium as in Figs. 103-107.

Fore tibia with 1-2 short \( ad \) and 2 \( pv \), in 1 specimen with 1 \( pd \) on left bodieside; \( f_2 \) with a row of short and fine \( av \) and with a row of distinct \( pv \) becoming shorter and finer towards apex of the femur, in 1 specimen with 1 strong \( av \); \( t_2 \) with 1 \( ad \), 2-3 \( pd \) and 2-4 \( pv \); \( f_2 \) with rows of long \( av \) and \( pv \), a few \( pv \) near apex being shortened; \( t_2 \) with 5-9 \( av \), 5-6 \( ad \), 4-5 \( pd \) and 5-10 \( pv \), apical \( pv \) being strong though shorter than apical \( av \). Wings with costa haired ventrally; costal thorns minute though distinguishable from costal setulae; \( m-m \) slightly oblique on anterior half.

♀. Unknown.

Distribution. Japan; Finland.

There are found no serious differences between the Japanese form based on the present material and the European one given by Tiensuu (1938) except for the chaetotaxy of the legs: — In the European form \( t_1 \) with 2 \( pd \) and 3 \( pv \), on the other hand in the Japanese one \( t_1 \) with 1-2 \( ad \) and 2 \( pv \), and usually with no \( pd \).

7. Genus Anthomyia Meigen


Key to the species (♂♀)

1. Arista with the longest hairs at least twice as long as basal diameter of arista; \( f_5 \) with no \( pv \) except for a few preapical ones and some \( p-pv \) near base. ................. 2
   - Arista with the longest hairs at most slightly longer than basal diameter of arista; \( f_5 \) with some \( pv \) apart from preapical ones and \( p-pv \) near base. ................. 3

2. Mesonotum with a pair of large presutural spots, which are fused anteriorly; \( pra \) a little longer than posterior \( ntpl \); postgonites with a hook-shaped seta. . . . 4. Sp. A
   - Mesonotum with no presutural markings, at most with a pair of small ones; \( pra \) as long as or a little shorter than posterior \( ntpl \); postgonites with a blade-like seta. ........................................ 3. *ilocata* Walker

3. Mesonotum with postsutural markings fused in a band with four clefts on posterior margin; \( pra \) as long as or a little shorter than posterior \( ntpl \); postgonites with a blade-like seta. ........................................ 1. *pluvialis* (Linne)
   - Mesonotum with postsutural markings separated into 3 large spots, or nearly so; \( pra \) a little longer than posterior \( ntpl \); postgonites with a normal seta. ........................................ 2. *procellaris* Rondani

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Key to the species (♀♂)

1. Arista with the longest hairs 3–4 times as long as basal diameter of arista; mesopleura with no accessory setulae near pstg. ........................................... 2
   - Arista with the longest hairs only a little longer than basal diameter of arista; mesopleura with 1–3 accessory setulae near pstg. ........................................... 3

2. Mesonotum with a pair of large presutural spots, which are fused anteriorly; scutellum almost blackish, only with a very small greyish spot at apex; pra a little longer than posterior ntpl. ............................ 4. Sp. A
   - Mesonotum with or without a pair of small presutural spots; scutellum blackish on basal half or less; pra as long as or a little shorter than posterior ntpl. ........................................... 3. illocata Walker

   - Mesonotum with 3 spot-like or vitta-like postsutural markings. ............................ 4

4. Mesonotum with a pair of large presutural spots; pra a little longer than posterior ntpl. ............................ 2. procellaris Rondani
   - Mesonotum with or without a pair of small presutural spots; pra as long as or a little longer than posterior ntpl. ........................................... 1. pluvialis (Linne)

1. Anthomyia pluvialis (Linné)

(Fig. 108)


Material examined. HOKKAIDO — Sapporo, 1 ♀, 12-viii-67; Nopporo, 1 ♂, 6-v-68, 1 ♂, 14-v-69, & 14 ♂♂, 25-v-70; Teine, 1 ♀, 15-v-59 (S. Ueda). HONSHU — Urabandai, Fukushima-ken, 1 ♀, 2-ix-66.

♂. Mesonotum with a pair of large presutural spots and with postsutural markings fused in a band with four clefts on posterior margin; scutellum black laterally, these black markings being often fused basally. Abdominal margkins on 3rd and 4th tergites fused anteriorly, or entirely separated from each other.

Head about 1.4–1.5 times as high as long; frons as wide as or slightly narrower than anterior ocellus; parafrontals broadly contiguous to each other, with 3–4 ori and 1 vestigial ors; interfrontalia with a pair of fine if. Mesonotum with pra as long as or a little shorter than posterior ntpl; mesopleura with 1–3 accessory setulae near pstg. Postgonites (Fig. 108) with a blade-like seta.

Fore tibia with 1 (rarely 2) pv; t2 with 1 ad, 2 pd and 2-3 pv; t3 with 1 av, 3–8 (usually 5–6) ad, 2 normal and often 1–2 additional pd and 2–6 pv.

♀. Mesonotum with or without a pair of small presutural spots, and with 3 rather small postsutural markings, of which the lateral ones are restricted from base of pra or sa to base of 1st pa and hardly visible when viewed from above, and of which the median one is vitta-like; scutellum with lateral markings not reaching to bases of discal setae. Abdominal markings not fused to each other.

Head about 1.3 times as high as long; frons a little wider than one-third head-width; parafrontals with 2 ori and 3 ors. Fore tibia with 1 ad and 1 pv; t2 with 1 av, 5–6 ad, 2 pd and no pv.

Distribution. Holarctic and Ethiopian regions.

So far as I know, Wu (1939) and James (1947, through Hennig, 1968) gave Japan as a locality of pluvialis; however, their records might be based on specimens of the following species, procellaris Rondani.

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The Japanese form does not entirely agree with definitions of *pluvialis* given by authors in the following aspects: — ♂: Mesonotum with postsutural markings fused to each other; the longest aristal hairs not much shorter than basal diameter of arista; frons at most about as wide as anterior ocellus; parafrontals broadly contiguous to each other. In the shape of postsutural markings on the mesonotum the present form agrees with the Ethiopian species, *Anthomyia tempestatum* Wiedemann. It, however, may be identified with *pluvialis* by the genital structures agreeing well with those of the species figured by Tiensuu (1935), Séguy (1929) and Hennig (1968).

Fig. 108. *Anthomyia pluvialis* (Linne), ♂: prae- and postgonites.
Figs. 109–114. *Anthomyia procellaris* Rondani, ♂: 109, hypopygium, dorsal view; 110, ditto, lateral view; 111, distiphallus; 112, prae- and postgonites; 113, 5th sternite, ventral view; 114, ditto, lateral view.

*2. Anthomyia procellaris* Rondani
(Figs. 109–114)


Material examined. HOKKAIDO — Sapporo, 6♂♂, 2-vi-68 (K. Kusigemati); Józankei, 1♀, 26-v-68 (K. Kusigemati). HONSHÔ — Takao-san, Tōkyō-to, 1♀, 23-v-67.

♂: Mesonotum with a pair of large presutural spots, and with postsutural markings completely separated into 3 large spots, or nearly so; scutellum largely blackish, with a small greyish apical marking, which is sometimes deeply sunk, yet
not reaching to base of scutellum. Abdominal markings on 3rd and 4th tergites fused anteriorly.

Head about 1.4–1.5 times as high as long; frons usually about half as wide as anterior ocellus; parafrontals broadly contiguous to each other, with 3–4 ori and 1 vestigial ors; interfrenalia with or without a single vestigial if, which is indiscernible unless carefully examined; aristal hairs not longer than basal diameter of arista. Mesonotum with pra a little longer than posterior ntpl, usually 1.2–1.3 times as long as the latter; mesopleura usually with 1–3 accessory setulae near pstg. Hypopygium and 5th sternite as in Figs. 109–114; postgonites with a normal seta.

Fore tibia with 1 pv; t2 with 1 ad, 2 (rarely 3) pd and 2 (rarely 3) pv; t3 with 1 av, 5–9 ad, 2 long and 1–2 additional pd and 3–9 pv.

♀. Mesonotum with black markings more or less smaller than in male, yet distinctly larger than those of female of pluvialis; scutellum with lateral markings expanded to bases of discal setae. Abdominal markings on 3rd and 4th tergites fused anteriorly.

Head about 1.35 times as high as long; frons a little wider than one-third head-width; parafrontals with 2 ori and 3 ors. Fore tibia with 1 ad and 1 pv; t3 with 1 av, 5–6 ad, 2 pd and no pv.

Distribution. Holarctic and Ethiopian regions.

Though Hennig (1968) has treated procellaris as a synonym of pluvialis, it may be reasonable to recognize them as distinct from each other on account of their sympatric distribution and the constant morphological differences.

3. Anthomyia illocata Walker
(Figs. 115–119)


Material examined. Honsitô — Yokohama, Kanagawa-ken, 1 ♂, 3-x-70 (T. Kocha); Kamakura, Kanagawa-ken, 1 ♀, 26-iv-70 (H. Torikura). Kyôshô — Kagoshima, 1 ♀, 13-v-59 (K. Kamijo), & 1 ♂, 15-iv-67 (T. Kocha); Eboshi-dake, 1 ♀, 4-v-69 (K. Kusigemati); Amami-Ôshima, 2 ♀, 1 ♂, 13-23-iii-70 (H. Takizawa), & 1 ♂, 1 ♀, 27-iv-67; Yoron-tô, 2 ♀, 4♂, 17-iii-70 (H. Takizawa).

♀. Body-length 3.6–5.9 mm; wing-length 3.6–5.2 mm. Mesonotum with a broad black band behind the suture and usually with no presutural spots (in 1 specimen from Yokohama with a small spot at base of 1st pre dc); scutellum black on basal half; these markings strongly brownish pollinose. Abdomen yellowish in ground colour near base.

Head about 1.6–1.7 times as high as long; parafrontals usually contiguous to each other, with 2–3 (usually 2) ori and usually with 1 minute ors; interfrenalia often with a pair of fine if; A3 about 2.3–2.8 (usually 2.5–2.6) times as long as wide; arista with the longest hairs about 2–3 times as long as basal diameter of arista; profrons usually a little narrower than A3; cheeks about 1.6–1.9 times as high as A3-width. Mesonotum with no accessory setulae between rows of acr; pra as long as or a little shorter than posterior ntpl; mesopleura usually with no accessory setulae near pstg. Hypopygium and 5th sternite as in Figs. 115–119;
postgonites with a lobe-like seta.

Fore tibia with 1 pd; t₂ with 1 short ad, which is often very fine or lacking, and with 1 pd, 1 ♂ (practically pd) and 2-3 pv; t₃ with 1 av, 5-6 ad, 2 pd and 0-5 (usually 3-4) pv.

♀. Mesonotum with or without a faint spot at base of 1st pre de; scutellum black on basal third to half. Head about 1.4-1.5 times as high as long; frons about 0.28-0.30 times as wide as head; parafrontals with 1 ori and 3 ors; arista with the longest hairs about 3 times as long as basal diameter of arista. Mesonotum sometimes with a few setulae between rows of pre acr. Fore tibia with 1 (rarely 2) ad and 1 pv; t₂ with 1-3 pv; t₃ with no pv.

Distribution. Japan; Oriental and Australian regions.

Material examined. HOKKAIDO — Sapporo, 1 ♂, 2-vi-67, & 1 ♀, 22-vi-67 (T. Kumata).
♂. Length of head and thorax combined 3.1 mm; wing-length 4.8 mm. Mesonotum with 2 large presutural spots, which are fused anteriorly, extending to anterior margin of thorax, and with a broad postsutural band on more than anterior half of scutum, the posterior margin of the band waving; scutellum wholly black; this and the black markings of mesonotum more or less brownish pollinose. Abdomen in ground colour somewhat yellowish near base only ventrally. Legs dark brownish, not yellowish at all.

Head about 1.5 times as high as long; frons a little wider than anterior ocellus; parafrontals broadly contiguous to each other, with 3 ori and without ors; interfrontalia without if; A₃ about 2.3 times as long as wide; arista with the longest hairs about twice as long as basal diameter of arista. Mesonotum with no accessory setulae between rows of acr; pra a little longer than posterior ntpl; mesopleura with no accessory setulae near pstg. Hypopygium and 5th sternite as in Figs. 120-125; postgonites with a hook-shaped seta.

Fore tibia with 2 pv; t₂ with 2 pd and 3 pv, and with 1 short and fine ad on the right body-side; t₃ with 1 av, 7 ad, 2 pd and 0–1 fine pv. Wings with costal thorns vestigial.

♀. Mesonotum with postsutural band more or less narrower than that of male; scutellum with a small grey spot at apex. Head about 1.4 times as high as long; frons about one-third head-width; parafrontals with 2 ori and 3 ors; arista with hairs longer than in male; occiput with many setulae in a row on upper part below postocular row of setulae. Fore tibia with 1–2 ad and 1 pv; t₂ with 1 ad, 2 pd and 2 pv; t₃ with 1 av, 5 ad, 2 pd and no pv.

In general appearance this species is similar to illocata, from which it can, however, be distinguished by the characters mentioned in the key. Some species which have a band-like marking on the mesonotum are known from Africa, namely, A. abyssinica Jeannicke, A. amoena (Macquart), A. fasciata Walker, A. griseobasis Malloch and A. spinigera Malloch. At present it is uncertain to me whether this species should be identified with one of them.

5. Anthomyia sp. B

Material examined. SHIKOKU—Mt. Tsurugi, 1♀, 16-vii-71. KYOTOSHI—Hikosan, 1♀, 15-v-67; Amami-Ōshima, 1♀, 23-iii-70 (H. Takizawa).

♀. Body-length 6–6.7 mm; wing-length 5.7–6.1 mm. Mesonotum with a pair of large presutural spots, which are widely set apart from each other and not extending to the anterior margin of the thorax, and with a broad postsutural band, which is a little protruded cephalad and caudal at middle; scutellum largely black, with a grey spot at apex.

Head about 1.4 times as high as long; frons 0.34–0.35 times as wide as head; parafrontals with 2 ori and 3 ors; A₃ about 2.6 times as long as wide; arista with the longest hairs only a little longer than basal diameter of arista; occiput with many setulae in 2–3 rows on upper part below postocular row of setulae. Mesonotum with some accessory setulae between rows of pre acr; pra as long as anterior ntpl or nearly so; mesopleura with a few accessory setulae near pstg.

Fore tibia with 1 ad and 1 pv; t₂ with 1 ad, 2 pd and 2 pv; t₃ with 1 av, 5–9 ad, 2 long and 0–1 additional pd and no pv. Wings with costal thorns minute; m-m a little oblique and slightly or hardly sinuate.

This species may be distinguishable from illocata and sp. A by the wider
frons, the shorter aristal hairs and the large and not fused presutural spots on the mesonotum.

8. Genus *Acrostilpna* Ringdahl

*Acrostilpna* Ringdahl, 1929:269, as subgenus of *Hylemyia*. Type-species: *Aricia latipennis* Zetterstedt, 1838.

This genus is represented by 7 species, all of which are known to occur in North America and 4 species in the Palaearctic region. On this occasion will be recorded from Japan the following 3 species: — *A. latipennis* (Zetterstedt), *A. atricauda* (Zetterstedt) and *A. collini* Ringdahl.

In the characters of the 5th sternite and hypopygium *atricauda* and *collini* may be more closely related to *Crinurina cuneicornis* (Zetterstedt), the type-species of *Crinurina* Karl, than to *latipennis*, the type-species of *Acrostilpna*. On the basis of the bare propleura this genus is separated from *Crinurina*, but this character alone may not be sufficient to recognize it as a distinct genus. In this study *Acrostilpna* is tentatively recognized since I have examined no specimens of *C. cuneicornis*.

**Key to the species (♂ & ♀)**

1. Hind femur with av and pv near base to apex. ..... 1. *latipennis* (Zetterstedt)
   - Hind femur with av and pv only on apical half. .............................. 2
2. Mid tibia with av; ta with apical pv long and strong. ..... 3. *collini* Ringdahl
   - Mid tibia without av; ta with apical pv short and fine. . . 2. *atricauda* (Zetterstedt)

*1. Acrostilpna latipennis* (Zetterstedt)  
(Figs. 126–130)


Material examined. **HOKKAIDO** — Nopporo, 2♂, 25-v-70; Mt. Soranuma, 1♀, 17-vi-67, 1♀, 15-vi-68 (K. Kusigemati), & 1♀, 24-vii-69; Rishiri-to, 1♀, 10-vii-68 (H. Takizawa); Shikaribetsu-ko, 1♀, 14-vi-66. **HONSHU** — Mt. Naeba, Niigata-ken, 1♂, 8-vii-72 (H. Takizawa); Mt. Yatsugatake, Nagano-ken, 1♂, 20-vii-70; Mt. Senjō, Nagano-ken, 1♀, 10-vii-71.

♂. Body-length 6.6–7.6 mm. Mesonotum whitish grey or bluish grey in pollinosity, with faint or distinct brownish pollinose vittae along rows of *dc*. Abdomen pale yellowish grey or bluish grey pollinose; median vitta rather broad or moderate, narrowing caudad on each tergite; fore marginal bands narrow to rather broad, or lacking; basal sclerite polished; anal sclerite pollinose. Wings tinged with yellow, strongly at base; calyptrae yellowish.

Frons about 1.5–2 times as wide as anterior ocellus; interfrontalia with *if* distinct or strong; parafrontals nearly contiguous to each other, with 4–5 *ori*; *A₃* about 2–2.6 times as long as wide. Mesonotum with 2nd *ph* slightly developed or like accessory setula; *pra* a little longer than anterior *ntpl*; *stpl 2:3*. Abdomen more or less depressed, about 2.4–2.7 times as long as wide, and slowly narrowing caudad; tergites with strong discal setae; 5th sternite and hypopygium as in Figs. 126–130.

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Fore tibia with 1 ad and 2-3 pv, and with 3 strong apical setae (d, pd and pv); f2 on apical third with a few or some short and strong av, and on basal two-thirds with 5-7 long pv; t2 with 2 ad, 3-4 pd and 2-5 pv; f3 with rows of long and strong av and pv; t3 with 4-6 av, 5-6 ad, 3-4 long and some short pd and 10-14 pv, and with apical pv long and strong. Wings with costal thorns distinct; m-m straight or slightly concave inwards.

♀. More or less yellowish in pollinosity. Mesonotum with distinct brownish pollinose vittae along rows of dc. Abdomen half-shining in some lights; median vitta very broad; fore marginal bands broad, occupying anterior two-thirds of 3rd and also of 4th tergite and entire 5th tergite. Thorax with stpt 2:2. Fore tibia with 1 ad and 1-2 pv; t3 with 2 ad, 3 pd and 2-3 pv; t3 without pv. Wings with costal thorns strong.

Distribution. Japan; Europe; North America.

![Figs. 126-130. Acrostilpna latipennis (Zetterstedt), ♂: 126, hypopygium, dorsal view; 127, ditto, lateral view; 128, aedeagus; 129, 5th sternite, ventral view; 130, ditto, lateral view.](image)

\*2. Acrostilpna atricauda (Zetterstedt)
(Figs. 131–135)


Material examined. HOKKAIDO — Mt. Daisetsu, 1♀, 26-vii-67 (M. Miyazaki); Yukomambetsu, 1♀, 8-vii-62 (S. Takagi); Mt. Kariba, 2♂♂, 19-23-vii-72. HONSHŪ — Mt. Yatsugatake, Nagano-ken, 1♂, 21-vii-70; Mt. Senjō, Nagano-ken, 2♂♂, 10-vii-71

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(M. Suwa & H. Takizawa).

♂. Body-length 6-8 mm. Mesonotum brownish pollinose except for pale greyish humeral calli and notopleura, and when viewed from behind with narrow median and broad lateral vittae. Abdomen pale grey or bluish grey in pollinosity, which is more or less tinged with yellow or brown; median vitta broadened cephalad and more or less triangulate on each tergite; fore marginal bands usually distinct; basal sclerite polished; anal sclerite thinly pollinose. Wings distinctly tinged with brown or brownish yellow, at base strongly yellow; calyptrae yellowish.

Frons usually less than twice as wide as anterior ocellus; interfrontalia with

Figs. 131-135. *Acrostilpna atricauda* (Zetterstedt), ♂: 131, hypopygium, dorsal view; 132, ditto, lateral view; 133, aedeagus; 134, 5th sternite, ventral view; 135, ditto, lateral view.
if rather fine; A<sub>3</sub> 2–2.4 times as long as wide; profrons more or less wider than A<sub>3</sub>; cheeks as high as or slightly higher than A<sub>3</sub>-width. Mesonotum with rows of pre acr narrowly separated from each other; 2nd ph more or less distinct; pra as long as or a little longer than anterior ntpl; stpl 2:3; mesopleura with 1–2 (usually 1) strong anterior mpl. Abdomen conical, with discal setae only a little stronger than accessory setulae; 5th sternite and hypopygium as in Figs. 131–135.

Fore tibia with 1–2 pv and no ad, and with weak or vestigial apical setae except for strong dorsal one; f<sub>2</sub> near base with some short av, which are not longer than height of the femur, and on basal two-thirds with 7–8 pv, the longest one distinctly longer than height of the femur; t<sub>2</sub> with 1 ad, 1 (none in 2 specimens) pd and 2–3 p–pv; f<sub>3</sub> with some long and some short av and pv on apical half; t<sub>3</sub> with 5–9 av, 5–7 ad, 5–7 (of them 3 long) pd and many (about 20) pv, the pv-series being duplicated on basal half; t<sub>3</sub> with apical pd much shorter and weaker than apical d, at most half as long as the latter, and with apical pv minute or vestigial. Wings with costal thorns short or minute; m–m straight or slightly sinuate.

♀. Mesonotum paler than in male in pollinosity, with brownish pollinose vittae along rows of de. Abdomen half-shining though distinctly pollinose, when viewed from behind triangularly darkened on each tergite except on 5th tergite which is almost blackish. Fore tibia with 1 ad and 1 pv, apical pd and pv being strong; t<sub>2</sub> with 2 ad and 2 pd and 1 pv; t<sub>3</sub> with no pv.

Distribution. Japan; Scandinavia; North America.

*3. Acrostilpna collini Ringdahl
(Figs. 136–141)


Material examined. HONSHU — Mt. Yatsugatake, Nagano-ken, 1♀, 21-vii-70.

♀. Body-length 6.8 mm. Abdomen whitish grey and slightly yellowish in pollinosity; median vitta distinct and moderate in width; fore marginal bands absent.

Frons about twice as wide as anterior ocellus; parafrontals very narrowly separated from each other by linear interfrontalia, and with 5–6 ori, 1 distinct ors being present on the left body-side; interfrontalia with a single if in the present specimen; A<sub>3</sub> about 2.4 times as long as wide; epistoma projecting beyond frons at lunule. Mesopleura with 2 strong anterior mpl, and near pstg with 1 accessory setula; stpl 2:2. Abdomen depressed except on caudal segments which are somewhat swollen, nearly parallel-sided and about 2.5 times as long as wide; 5th sternite and hypopygium as in Figs. 136–141.

Fore tibia with 1 pv and no ad, apical pv being weak or vestigial; t<sub>2</sub> with 1 av, 2 ad, 3–4 pd and 2–3 pv; f<sub>3</sub> with 6–8 av and pv on apical half; t<sub>3</sub> with 7 av, 7 ad, 6–7 pd and about 20 pv, the pv-series being duplicated on basal half, apical pv long and strong. Wings with costal thorns distinct though short; m–m slightly oblique and hardly sinuate.

♂. Unknown to me. According to Huckett (1946) the species collini possesses a more extensive series of anteroventral bristles on hind femur than atricauda or restorata, but in no case the series extends to the proximal region as in latipennis and replicata.
Figs. 136–141. *Aerostilpna collini* Ringdahl, ♀: 136, hypopygium, dorsal view; 137, *ditto*, lateral view; 138, aedeagus; 139, ejaculatory apodeme; 140, 5th sternite, ventral view; 141, *ditto*, lateral view.

Distribution. Japan; Sweden; North America.

9. Genus *Alliopsis* Schnabl & Dziedzicki

*Alliopsis* Schnabl & Dziedzicki, 1911:92. Type-species: *Aricia glacialis* Zetterstedt, 1845.

This genus is a small group represented by 8 species, which are all distributed in the Nearctic region (Huckett, 1965a and 1966b), and of which 2 species in the Palaearctic region (Hennig, 1967). In the course of the present study the following 2 undetermined species have been found from Japan.

**Key to the species (♀♂)**

1. Prosternum with some setulae on each lateral side; interfrontalia with *if*...1. Sp. A
   - Prosternum with no setulae; interfrontalia without *if*...2. Sp. B
1. *Alliopsis* sp. A

Material examined. **HOKKAIDO** — Mt. Daisetsu, 1♀, 21-vii-68.

♀. Body-length 7 mm; wing-length 7 mm. Body including appendages black in ground colour. Mesonotum largely brownish in pollinosity, with rather broad median and paramedian vittae. Abdomen pale greyish pollinose and half-shining, with median vitta brownish pollinose. Wings tinged with brown, distinctly along veins, and much darkened at base; calyptrae rather distinctly yellow marginally.

Eyes densely haired; frons about as wide as $A_3$; interfrontalia slightly narrower than distance between posterior ocelli inclusive, with a pair of *if*, of which one is distinct and the other is very fine and vestigial; parafrontals with about 8 strong and many finer *ori* and without *ors*; $A_3$ about 1.5 times as long as wide; arista practically bare; profrons much wider than $A_3$, about 1.5 times as wide as the latter; parafrontals at narrowest part slightly narrower than $A_3$; cheeks about as high as profrons-width, with genal setae in about 4 rows; epistoma distinctly behind frons at lunule.

Mesonotum with 3 pairs of rather distinct *pre acr* and with many accessory setulae between and along the rows; 2nd *ph* well developed, as strong as the 1st; *pra* longer than anterior *mpl*; mesopleura with no strong anterior *mpl*, and with numerous accessory setulae near *psig*; prosternum with some setulae on each lateral side. Abdomen depressed and ovoid, about 1.3 times as long as wide.

Fore tibia with 1 *ad*, 3 *pd* and 1 *pv*, and with 3 strong apical setae (*d*, *pd* and *pv*); $t_2$ with 2 *ad*, 3 *pd* and 3 *pv*; $t_3$ with 3 *av*, 3–4 *ad*, 3 strong and 2–3 weaker *pd*, and 4 *pv*. Wings with costa sparsely haired on ventral surface from base to near costal thorns; costal thorns short though more or less stronger than costal setulae; *m-m* nearly upright and straight.

In having setulose prosternum and *if* this species may be similar to the North American *A. obesa* Malloch, from which it may, however, be distinguishable by the epistoma which is not protruded forwards as far as the frons at lunule.

2. *Alliopsis* sp. B.


♀. Body-length 6.5 mm; wing-length 6.5 mm. Similar to the preceding species in general appearance. Frons a little narrower than $A_3$ and slightly wider than distance between posterior ocelli inclusive; interfrontalia about twice as wide as anterior ocellus, without *if*; $A_3$ about 1.5 times as long as wide; profrons about 1.4 times as wide as $A_3$; parafrontals at narrowest part slightly narrower than $A_3$. Mesonotum with 2nd *ph* as strong as the 1st on the right body-side, yet like accessary setula on the left; prosternum with no setulae. Abdomen depressed and ovoid, about 1.2 times as long as wide.

Fore tibia with 1 *ad*, 3 *pd* and 1 *pv*, and with 3 strong apical setae; $t_2$ with 2 *ad*, 4–5 *pd* and 1 or 3 *pv*; $t_3$ with 3 *av*, 3 strong and some finer *ad*, 3 strong and some finer *pd* and some *pv*. Wings with *m-m* nearly upright and straight.

This species may resemble *A. glacialis* (Zetterstedt) in the bare prosternum, the absence of *if* on the interfrontalia, and the presence of 3 strong apical setae on $t_1$. However, it may be different from *glacialis* by the epistoma situated behind the frons at lunule and by the wings with *m-m* hardly sinuate. *A. glacialis* var.
uralica is described by Schnabl (1916) from Tobolsk, yet I have little knowledge of it.

10. Genus Hyporites Pokorny

*Hyporites* Pokorny, 1893:54. Type-species: *Eriphia montana* Schiner, 1862.

This genus has been represented by a single species, *H. montanus*, distributed in Europe. On this occasion will be recorded from Japan 2 other species, of which one is described as new to science and the other is unnamed as no specimens of the male are seen.

1. *Hyporites shakshain* sp. nov.

(Figs. 142–146)

Type-material. HOKKAIDO — Jōzankei (Hōheikyō), 1 ♂ (holotype), 16–vi–66 (M. Miyazaki).

♂. Body-length 7.1 mm. Body including appendages black in ground colour. Interfrontalia whitish pollinose; parafacials and cheeks whitish grey and faintly yellowish in pollinosity; occiput whitish grey and more or less bluish in pollinosity; haustellum black and polished. Thorax whitish grey and slightly bluish in pollinosity; mesonotum faintly brownish pollinose along rows of *acr* and *dc*, and weakly vittate, when viewed from behind with obscure median and sublateral and rather distinct lateral vittae; scutellum slightly brownish in pollinosity. Abdomen whitish grey pollinose, half-shining in some lights; median vitta not very distinct. Wings whitish basally, tinged with brown on apical half; calyptrae whitish; halteres dark reddish brown at base and brownish yellow at knob.

Head about 1.24 times as high as long; frons less than twice as wide as anterior ocellus, about 1.7 times; interfrontalia about as wide as anterior ocellus, with a pair of *if*, which are rather strong, yet more or less shorter than secondary ocellar setae; parafrontals with 6–7 strong and some fine or minute *ori*, and without *ors*; *A₃* about 1.4 times as long as wide; arista nearly bare; profrons about 1.3 times as wide as *A₃*; parafacials at narrowest part about as wide as *A₃*; cheeks about 1.2 times as high as profrons-width; epistoma projecting forwards as far as frons at lunule; occiput swollen on lower part, and with 7–8 setulae on either side of upper part below postocular row of setulae; palpi long, with many long setae on ventral margin; haustellum long and strongly chitinized, tapering apicad.

Mesonotum with 5 strong and 4 fine *pre acr*, which are irregularly paired and the rows are very narrowly separated from each other; 1 strong and 2 rather distinct *ph* present; *prea* about as long as 1st *ia*; notopleura with no accessory setulae; mesopleura with no distinct anterior *mpl*, and with 1 long and 1–2 shorter *pstg*, near which 7 associated fine setulae are present; *stpl* 2: 3 or 2: 4.

Abdomen stout, club-shaped in profile, about 3 times as long as wide; anal sclerite very large and in profile distinctly protruded beyond dorsal line of the abdomen; 5th sternite and hypopygium as in Figs. 142–146.

Fore tibia with 1 strong and 2 weak *ad*, 1 *pd* and 2 *pv*, and with 4 long and strong apical setae (*ad, d, pd* and *pv*); *f₃* with a row of strong and rather short *a*, and on basal two-thirds with 8–9 long and strong *av* and *pv*; *t₃* with 1–2 *av*, 2 *ad*, 3 *pd* and 2 *pv*; *f₃* with rows of long and strong *av* and *pv*, the longest ones being
twice or slightly more as long as height of the femur; t₃ with 3 strong and some weak av, 6 strong and some weaker ad, of which distal 2 strong ones are displaced rather on the anterior surface, 5 strong and a few weak pd, the seta near apical third being the longest, about 0.4 times as long as the tibia, and about 10 fine pv; apical pv of t₃ more than twice as long as height of the tibia. Wings with costal thorns minute though distinguishable from costal setulae; costa haired on ventral surface near hk; m-m oblique and strongly sinuate.

♀. Unknown.


This species may be readily distinguished from montanus by the narrower profrons and cheeks, by the sinuate surstyli, and by the cercal plate gradually narrowing apicad.

2. Hyporites sp. A

Material examined. HOKKAIDO — Mt. Daisetsu, 3♀♂, 17–24-vii-68.

♀. Body-length 9–10 mm; wing-length 8–9 mm. Body including appendages black in ground colour. Interfrontalia whitish grey pollinose; parafacials brownish yellow in pollinosity, with golden reflections in some lights; cheeks yellowish grey and more or less brownish in pollinosity. Thorax brownish grey pollinose. Abdomen yellowish grey in pollinosity; median vitta rather broad, interrupted on hind margin of each tergite. Wings strongly tinged with brown;
calyptrae pale yellow; halteres dark brown at base and yellow or brownish yellow at knob.

Head about 1.25–1.3 times as high as long; frons less than twice (about 1.8 times) as wide as anterior ocellus; interfrontalia about as wide as anterior ocellus, and with a pair of fine if; parafrontals with 6–7 strong and some fine or minute ori, and without ors; A₉ about 1.5 times as long as wide; arista practically bare; profrons about 1.3–1.5 times as wide as A₉; cheeks about 1.3–1.4 times as high as profrons-width, with genal setae in a row.

Mesonotum with pra as long as ia; mesopleura with many (8–13) accessory setulae near pstg; stpl 2:3 or 2:4. Abdomen depressed or not so according to drying condition, and ovoid when viewed from above; 5th tergite more or less compressed as in Paraprosalpia.

Fore tibia with 2–3 ad, 1–2 pd and 2 pv; t₉ with 2 av, 2–3 ad, 3 pd and 2–4 pv, and in 1 specimen with 1 a near apical third; t₉ with 3 av, 7 ad, of which distal 2–3 are displaced rather on anterior surface, 6 pd and 4–5 short pv, in 1 specimen with pv indiscernible; t₉ with av and pv less than twice as long as height of the femur. Wings with costal thorins more or less distinct though short; m–m oblique and strongly sinuate.

This species is recognized as distinct from the preceding shakshain by the darker colouration, the finer if and the shorter setae on the hind femur. However, there may be the possibility that they are conspecific.

11. Genus Paraprosalpia Villeneuve


Paraprosalpia Villeneuve, 1922:511, as subgenus of Prosalpia. Type-species: Prosalpia (Paraprosalpia) rambolitensis Villeneuve, 1922.


The Palaearctic species of this genus were recently revised by Hennig (1966), who suppressed Pseudochirosia Ringdahl, which was originally erected as a distinct genus and often included in the tribe Myiopinini against the tribe Anthomyiini (Séguy, 1937; Huckett, 1965a & 1965b), as a synonym of Paraprosalpia. According to him the former has in reality no significant differences from the latter except for the wide frons in the males and it should conveniently be recognized as a subgenus. According to him 22 species, of which 20 species belong to the subgenus Paraprosalpia, are distributed in the Palaearctic region. From Japan will be recorded 3 described and 1 new species, which all belong to the subgenus Paraprosalpia.

Key to the species (♂♂)

1. Prosternum with some setulae on each lateral side; t₉ with no pv; hind tarsus on 2nd, 3rd and 4th segments with setae much longer than the claws. .................. 4. pilitarsis (Stein)
   – Prosternum with no setulae; t₉ with 1–2 strong pv; hind tarsus on 2nd, 3rd and 4th segments with setae much shorter than the claws. .................. 2

2. Calyptrae only a little yellowish marginally; cheeks with genal setae in about 3 rows; arista very minutely pubescent and nearly bare...3. billbergi (Zetterstedt)
1. Body thinly pollinose; calyptrae only a little yellowish marginally; arista very minutely pubescent and nearly bare. \( \text{3. billbergi (Zetterstedt)} \)
- Body densely pollinose; calyptrae strongly yellowish; arista distinctly pubescent although shortly. \( \text{2. silvestris (Fallén)} \)
2. Fore tarsus with 2nd and 3rd segments much broader than the other segments; \( t_1 \) with 4 strong apical setae; parafrontals usually with no \( ors \), at most with only 1 \( ors \). \( \text{2. silvestris (Fallén)} \)
- Fore tarsus with 2nd and 3rd segments slightly broader than the other segments; \( t_1 \) with 3 strong apical setae; parafrontals with 2 \( ors \). \( \text{1. silvatica sp. nov.} \)

1. \( \text{Paraprospalpia silvatica sp. nov.} \)
(Figs. 147–151)

Type-material. HOKKAIDO – Mt. Shokambetsu, 29°58' (one the holotype), 7♀, 1-vii-71; Sapporo, 1♀; Nopporo, 5♂♂, 6♀; Shikotsu-ko, 1♀; Mt. Soranuma, 3♂♂, 6♀; Mt. Apoi, 3♂♂, 1♀; Obihiro, 2♂♂; Mt. Poroshiri, 1♀; Shikaribetsu-ko, 1♂; Nukabira, 1♂, 2♀♀; Akkeshi, 10♂♂, 3♀♀; Daikokujima, 1♂; Nemuro, 1♂; Kawayu, 1♀; Kuneppu, 2♀♀; Wakkanai, 1♀; Rishiri-tō, 2♂♂, 1♀; Bifuka, 5♀♀; Moshibi, 3♀♀; Toikambetsu, 1♀; Toyotomi, 1♂; Horokanai, 1♀; Mt. Daisetsu, 8♂♂, 13♀♀; Mt. Yūbari, 1♂; Mt. Ashibetsu, 1♀; Niseko, 1♀.

♂. Body-length 6–9 mm; wing-length 5.5–7.6 mm. Body blackish in ground colour and yellowish grey or brownish yellow in pollinosity. Interfrontalia, parafacials and cheeks black or sometimes brownish in ground colour, and usually with yellowish tinge in pollinosity; antennae and palpi black; haustellum black and polished. Mesonotum pale yellowish grey to brownish yellow in pollinosity, and variously vittate according to view points, when viewed from behind with narrow or rather broad median, narrow sublateral and broad lateral vittae, paramedian ones being visible in some lights between \( acr \) and \( dc \) and along rows of \( dc \). Abdomen rather dense and more or less yellowish in pollinosity; median vitta moderate in width; tergites sometimes with narrow bands on fore and hind margins; basal sclerite largely polished, only a little pollinose on caudal margin; anal sclerite polished on cephalic margin. Wings with a brownish yellow tinge, strongly yellow at base; calyptrae strongly yellow; halteres brownish at base and yellowish at knob.

Frons about as wide as distance between posterior ocelli inclusive and more or less wider than \( A_3 \); interfrontalia about two-thirds as wide as frons and a little narrower than \( A_3 \), \( if \) usually strong; parafrontals with 2–4 \( ori \) and no \( ors \); \( A_3 \) about 2–2.5 (usually 2.2–2.4) times as long as wide; arista shortly and distinctly pubescent, the longest hairs being about as long as basal diameter of arista; profrons about 1.3–1.7 times as wide as \( A_3 \); cheeks usually more or less higher than profrons-width, with genal setae in a row.

Mesonotum with 3–4 irregular pairs of \( pre acr \), of which 1–3 pairs are composed
of strong setae, and with or without a few accessory setulae between the rows, which are very narrowly separated from each other; 1 ph present; pra as long as 1st post dc or 1st ia; stpl 1: 2 or 1:3; scutellum bare on dorsal centre.

Abdomen conical, about 2-2.4 times as long as wide; 5th sternite (Figs. 150 & 151) more or less concave on inner margin near apex of each process; hypopygium and aedeagus as in Figs. 147-149.

Figs. 147-151. Paraprosalpia silvatica sp. nov., ♂: 147, hypopygium, dorsal view; 148, ditto, lateral view; 149, aedeagus; 150, 5th sternite, ventral view; 151, ditto, lateral view.

Fore tibia with 2 ad, 1 pv and sometimes 1 pd, apical pd being weak and apical p strong; f₂ on basal two-thirds with 6-10 short and strong av, the longest one being half to two-thirds as long as height of the femur, and on basal two-thirds or a little more with 5-10 strong pv, the longest one more or less longer than height of the femur; t₂ with 2 ad, 2 pd and 1 pv, and with or without 1 av; f₃ with a row of strong av, the longest one usually about 1.5 times as long as height of the femur, and with a row of shorter pv, the longest one two-thirds to four-fifths as long as height of the femur (rarely as long as the latter); t₃ with 2-3 (usually 2) av, the proximal one displaced a little to anterior surface, 2-4 ad (not uniform in length), 2-4 pd and 1-2 (usually 1) pv. Wings with costal thorns usually rather strong; costa on ventral surface haired rather densely from base to outlet of subcosta and sparsely beyond the outlet; m-m slightly oblique and nearly straight or rather distinctly sinuate.

♀. Abdomen with median vitta very obscure and merging into dark reflections in some lights; 5th tergite densely pollinose like preceding tergites.
Frons about 1.6–1.9 (usually 1.6–1.7) times as wide as distance between posterior ocelli inclusive; interfrontalia as wide as or slightly wider than distance between posterior ocelli inclusive; parafrontals with 1 proclinate and 1 reclinante ors.

Mid tibia always with 1 av; $t_3$ with some $pv$ which are much longer than height of the femur; fore tarsus with 2nd and 3rd segments slightly broadened. Wings with $m-m$ hardly sinuate.


In a key to the Palaearctic species of *Paraproralpia* given by Hennig (1966) this species runs out near *borealis* (Stein), from which it may, however, be readily distinguishable by the parafrontals with less than 6 ors in either sex, $t_2$ with only 1 $pv$ in either sex and fore tarsus of the female with 5th segment not broadened. In a key to the North American species of the genus given by Hukett (1950 & 1965a) the present new species comes near *angustitarsis* (Malloch), from which it may be distinguished by the fore tarsus of the female with 2nd and 3rd segments slightly broadened and $f_3$ of the male with no $pv$ longer than height of the femur (in *angustitarsis* with $pv$ presumably longer than height of the femur).

*2. Paraproralpia silvestris* (Fallén)
(Figs. 152–158)


♀. Body-length 7.5–9.5 mm. Body black in ground colour, and rather densely covered with whitish grey or pale grey pollen, which is usually more or less tinged with brown or yellow. Mesonotum rather distinctly tinged with brown in pollinosity except on humeral calli and notopleural depressions. Abdomen with median vitta rather narrow and sharp; basal and anal sclerites polished. Wings with a brownish yellow tinge, strongly yellow at base; calyptrae yellow.

Frons about as wide as distance between posterior ocelli inclusive; interfrontalia about two-thirds of frons in width, with a pair of strong $if$; parafrontals with 3–5 (usually 3–4) ors, and usually with no $ors$, only in 1 specimen from Mt. Senjō with 1 proclinate $ors$; profrons about 1.2–1.6 (usually 1.4–1.5) times as wide as $A_9$; cheeks more or less higher than profrons-width, with genital setae in a row. Mesonotum with $pra$ about as long as 1st $ia$; $stpl$ 1:3 or 2:3. Abdomen with 5th sternite (Figs. 156–158) hardly concave on inner margins of processes; hypopygium and aedeagus as in Figs. 152–155.

Fore tibia with 2 $ad$, 1 $pd$ and 1 $pv$, and with 4 strong apical setae ($d$, $pd$, $p$ and $pv$); $t_3$ with 2–3 (usually 2) $ad$, 2 $pd$, 1 $pv$ and often 1 $av$; $t_4$ with 5–9 strong $pv$, the longest one being longer than height of the femur, usually about 1.4–1.5 times of the height; $t_5$ with 2–3 (usually 2) $av$, the proximal one displaced a little to anterior
surface, 3–5 $ad$, 3–4 $pd$ and 1–2 (usually 1) $pv$. Wings with costal thorns distinct though short; $m-m$ oblique and usually more or less sinuate.

♀. More distinctly yellowish pollinose than in male; abdomen with median vitta rather broad and obscure, merging into dark reflections in some lights; 5th tergite densely pollinose like preceding tergites.

Frons more or less wider than distance between posterior ocelli inclusive, about 1.2–1.5 times of the distance; parafrentals with 3–5 (usually 4–5) $ori$, and usually with no $ors$, only in a few cases with 1 proclinate $ors$ on one or either side. Mid tibia always with 1 $av$; $f_3$ with the longest $pv$ about twice as long as height of the femur; fore tarsus with 2nd and 3rd segments much broadened.

Distribution. Japan; Kamchatka; Europe; North America.

Figs. 152–158. *Paraprotopsalpia silvestris* (Fallén), ♂: 152, hypopygium, dorsal view; 153, *ditto*, lateral view; 154, aedeagus; 155, praegonite, variation in setal pattern; 156, 5th sternite (from Mt. Daisetsu), ventral view; 157, *ditto*, lateral view; 158, 5th sternite (from Mt. Yatsugatake), lateral view.
3. Paraprosalpia billbergi (Zetterstedt)
(Figs. 159–163)

Anthomyza billbergi Zetterstedt, 1838:678. Paraprosalpia (Paraprosalpia) billbergi:
Hennig, 1966:86.

Material examined. HOKKAIDÔ — Shikotsu-ko, 1♂, 18-v-71; Mt. Soranuma, 1♂, 19-v-68 (S. Umezawa), & 1♀, 17-vi-67; Mt. Daisetsu, 1♂, 7♀, 20–21-vii-68.
♂. Body-length 6.6–6.7 mm. Body black in ground colour, and whitish grey in pollinosity. Abdomen with median vitta more or less distinct or obscure; basal and anal sclerites polished. Wings tinged with brown, rather distinctly at base; calypttrae whitish, only a little yellowish marginally.

Frons as wide as or a little narrower than distance between posterior ocelli inclusive; interfrontalia a little wider than anterior ocellus, with a pair of strong if; parafrontals with 6–8 ori and no ors; cheeks with genal setae in about 3 rows.

Mesonotum with 1 strong and 1–2 fine ph; pra slightly longer than anterior ntpl; stpl 1.2. Abdomen with 5th sternite and hypopygium as in Figs. 159–163.

Fore tibia with 1 ad and 1 pv, and with 4 strong apical setae (ad, d, p and pv); t₂ with 1–2 ad, 2 pd and 3–4 pv, and in 1 specimen with 1 av; t₃ with some pv, the longest one as long as or a little longer than height of the femur; t₄ with 2–3 av, 4–5 ad, 3 pd (in 1 specimen with 2 additional ones) and 1–2 pv. Wings with costal thorns vestigial; m-m oblique and slightly sinuate.


Frons about twice as wide as distance between posterior ocelli inclusive; interfrontalia about as wide as distance between posterior ocelli inclusive, with if weaker than those of male; parafrontals with 2 procline and 1 reclinate ors; A₃ about 1.3–1.5 times as long as wide.

Mid tibia always with 1 av; t₄ with the longest pv about twice as long as height of the femur; fore tarsus with 2nd and 3rd segments much broadened.

Distribution. Japan; Europe.

Having compared the present Japanese specimens with 2 British ones (1♂, 1♀) determined as billbergi by Ackland I have found no serious differences between them except for the 5th tergite of the female being less polished in the Japanese form.

4. Paraprosalpia pilitaris (Stein)
(Figs. 164–168)


Material examined. HONSHÎ — Mt. Senjô, Nagano-ken, 4♂♀, 10-vii-71.
♂. Body-length 5.5–7.7 mm. Abdomen pollinose on hypopygium as densely as on preceding segments. Wings tinged with dark brown, strongly at base; calypttrae whitish, at most very faintly yellowish on margin.

Frons as wide as or slightly narrower than A₃ which is about as wide as distance between posterior ocelli inclusive; interfrontalia about half as wide as frons; A₃ about 1.8 times as long as wide; cheeks with genal setae in a few rows.

Mesonotum with 3 pairs of pre acr, distance between the rows being as long
as or slightly shorter than that between $dc$ and $acr$; $pra$ as long as or a little longer than posterior $ntpl$; $stpl$ 1:2; mesopleura with no distinct anterior $mpl$; prosternum with some setulae on each lateral side. Abdomen somewhat depressed, with 5th sternite and hypopygium as in Figs. 164–168.
Fore tibia with 1 pv, and with or without 1 short ad, 2 strong apical setae (d and pv) present; t₂ on basal half with some pv more or less longer than height of the femur, and with no distinct av; t₃ with 1 ad, 1 pd, 2–3 (usually 2) pv and no av; t₄ with a row of av becoming longer and stronger towards apex of the femur, the longest one about 1.7–2 times as long as height of the femur, and with no pv; t₅ with 2–3 (usually 2) av, 2 ad, 1 (in 1 specimen 2–3) pd and no pv; hind tarsus shortened on 2nd, 3rd and 4th segments, and thereon with setae as long as or longer than the segments combined.

♀️ Unknown to me. According to Hackett (1950) and Hennig (1966) the female of this species can be distinguished from those of the allied species by the hind femur with no pv, by the setulose prosternum, and by the parafacials at the narrowest part not wider than the 3rd antennal segment.

Distribution. Japan; Europe; North America.

12. Genus Eustalomyia Kowarz

Eustalomyia Kowarz, 1873:461. Type-species: Musca hilaris Fallen, 1823.

Judging from the genital structures of the male this genus may be closely related to Leucophora Robineau-Desvoidy as pointed out by Hennig (1967), and it differs from the latter mainly in the characteristic markings on the body, the wider epistoma and the spineless ovipositor. These genera seem to differ in their biology. So far as known, Eustalomyia is associated with crabronid wasps and the larvae may live on preys caught by the wasps; on the other hand Leucophora is associated with andrenid bees and the larvae live on pollen or honey stored by the bees.

According to Hennig (1967) 8 species belong to Eustalomyia, and of them 3 species are endemic in Ethiopia, 1 species is endemic in China, and the rest 4 species are found in Europe (3 of them are found also in North America). The Chinese species is, however, suppressed as a synonym of vittipes (Zetterstedt) as discussed hereinafter. In this study have been found from Japan 4 species which are common to Europe.

Key to the species (♂♂ & ♀♀)

1. Arista longly plumose, the longest hairs being slightly shorter or much longer than A₄-width; scutellum bare on dorsal centre; in female stpl 1:1; in male t₄ with at most some weaker pv apart from 1–3 strong ones. ................. 2
   - Arista shortly plumose or minutely pubescent, the longest hairs being distinctly shorter than A₄-width; scutellum setulose on dorsal centre; in female stpl 1–2:2–3; in male t₄ with numerous weaker pv apart from 1–3 strong ones. ...... 3
2. Palpi yellow; legs at least partly yellow; pra at most as long as posterior ntpl. .......... 2. vittipes (Zetterstedt)
   - Palpi black; legs wholly black; pra distinctly longer than posterior ntpl. .................. 1. hilaris (Fallén)
3. Arista shortly plumose, the longest hairs being about 3 times as long as basal diameter of arista; in male t₄ with 5–7 av, and with 2–3 strong and 15–20 weaker pv; in female t₄ with 1 ad. .................. 3. festiva (Zetterstedt)
   - Arista minutely pubescent, the longest hairs being shorter than basal diameter of arista; in male t₄ with 12–13 av, and with 1 strong and about 40 weaker pv; in female t₄ with 2–3 ad. .................. 4. histrio (Zetterstedt)
*1. Eustalomyia hilaris (Fallén)
(Figs. 169–173)


Material examined. HONSHU — Okukinu, Tochigi-ken, 1♀, 23-vii-69 (T. Kocha); Mt. Shiomi, Nagano-ken, 1♂, 15-vii-72 (H. Takizawa); Mt. Chausu, Shizuoka-ken, 1♂, 27-vii-70 (H. Takizawa).

♀. Body-length 9.5 mm. Abdomen with fore marginal bands broad and expanding caudad beside median vitta. Legs black. Arista with the longest hairs rather distinctly longer than A₄-width; parafrontals with 8 ori and no ors. Mesonotum with 3 pairs of strong pre acr; 1 strong and 1–2 rather distinct ph; pra a little shorter than anterior ntpl; notopleura with no accessory setulae; mesopleura with some (4–8) accessory setulae near pslp; stpl 1:3; scutellum not setulose on dorsal centre. Fore tibia with apical ad rather long and slender; t₂ with 3–4 av, 5–6 (of them 2–3 stronger) ad, 3 strong and 0–1 weaker pd, and 2–3 strong and 1–2 weaker pv.

♀. Body-length 8.5 mm. Interfrontalia about as wide as parafrontalia at level of lower reclinate ors; parafrontals with 3 strong ori; arista with the longest hairs slightly shorter than A₄-width. Mesonotum with 1 strong ph; pra as long or a little shorter than anterior ntpl. Fore tibia with 2 ad and 1 pv; t₂ with 1 strong ad, and in addition with 0–1 short ad in the present specimen; t₃ with no pv.

Distribution. Japan; Europe.

*2. Eustalomyia vittipes (Zetterstedt)
(Figs. 174–177)


Material examined. HOKKAIDO — Nopporo, 1♂, 9-vi-67; Mt. Soranuma, 2♀, 30-viii-67 (K. Kusigemati); Mt. Apoi, 1♀, 21-vi-59 (S. Ueda); Tokachi-Iwanai, 1♀, 29-vi-73 (T. Hattori). HONSHU — Mt. Zaō, Yamagata-ken, 1♂, 8-ix-66; Nippara, Tōkyō-to, 1♀, 19-vii-71 (H. Takizawa); Mt. Mitō, Tōkyō-to, 2♀, 27-v-68 (H. Takizawa); Mt. Mitake, Tōkyō-to, 1♀, 26-v-67; Yashajin-tōge, Yamanashi-ken, 1♂, 6-vi-67 (T. Kocha).

♂. Body-length 7.2–9.6 mm. Interfrontalia and cheeks brownish to black in ground colour; palpi yellow. Abdomen with fore marginal bands broad and more or less expanding caudad beside median vitta, the latter is narrow and not very sharp. Legs variously darkened; trochanters yellowish; f₁ blackish on dorsal and posterior surfaces, yellowish or blackish on anterior surface, and more or less yellowish on apical and basal parts; t₂ and t₃ largely yellow and partly darkened on dorsal surface of apical fourth to third, or largely darkened and only at basal and apical parts yellow; t₁ yellow; t₂ and t₃ yellowish to dark brownish.

Arista with hairs much longer than A₄-width; frons about 1.4–1.6 times as wide as distance between posterior ocelli inclusive; interfrontalia narrower than anterior ocellus; parafrontals with 5–7 ori, and with 1 vestigial ors near anterior ocellus. Mesonotum with 6–8 pairs of pre acr, of which about 3 pairs are com-

Figs. 174–177. *Eustalomyia vittipes* (Zetterstedt), ♀: 174, hypopygium, dorsal view; 175, *ditto*, lateral view; 176, aedeagus; 177, 5th sternite, ventral view.
posed of setae rather stronger than those of the remaining pairs; 1 \( ph \) present; \( pra \) lacking in 1 specimen from Mt. Mitō, but usually present and as long as or a little shorter than posterior \( ntpl \); notopleura with no accessory setulae; mesopleura sometimes with 1 or a few accessory setulae near \( pstg \); \( stpl \) 1:3 or 1:4; scutellum not setulose on dorsal centre. Fore tibia with apical \( ad \) more or less developed; \( t_a \) with 3–4 \( av \), 4–6 \( ad \), 3–4 strong and a few or some weak \( pd \), and 1 or a few strong and some weaker \( pv \).

\( \varphi \). Body-length 6.1–8.4 mm. Eyes most narrowly separated at vertex by a distance as long as 0.31–0.36 times of head-width; interfrontalia as wide as or distinctly narrower than parafrontalia at level of lower reclinate \( ors \) (Table 1); parafrontals with 3–4 strong \( ori \). \( Stpl \) 1:1. Mid tibia with 1 \( ad \), 1 \( pd \) and 3 \( p-pv \); \( t_a \) with no \( pv \).

**Distribution.** Japan; China; Europe; North America.

According to the redescription of \( lepraota \) Séguy based on the holotype (\( \varphi \)) and given by Hennig (1967) there are no significant differences between \( lepraota \) and \( vitti pes \) except for the interfrontal width. Hennig (l.c., p. 106) states: “Bei \( vitti pes \) bleibt die Mittelstrieme an der schmalsten Stelle nur sehr wenig hinter der Breite einer Orbite zurück, während bei \( lepraota \) die einzelne Orbite hier etwas 1 1/2 mal so breit ist die Mittelstrieme.” He has given also the following comments: — “…Danach bestehen zwischen diesen beiden Arten, wenigstens im weiblichen Geschlecht, nur ganz geringfügige Unterschiede. Mir scheint es daher zweifelhaft, ob \( lepraota \) als eine von \( vitti pes \) verschiedene Art angesehen werden kann, zumal diese über die ganz holarktische Region verbreitet ist.” In the present specimens the interfrontal width shows a graded series of variations as shown in Table 1. It is the opinion here adopted that \( lepraota \) should be suppressed as a synonym of \( vitti pes \).

<table>
<thead>
<tr>
<th>Specimen No.</th>
<th>Locality</th>
<th>Width of Pf to colour of If</th>
<th>Body-length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mt. Apoi</td>
<td>1.5 Dark brownish</td>
<td>6.1</td>
</tr>
<tr>
<td>2</td>
<td>Tokachi-Iwanai</td>
<td>1.3 Dark brownish</td>
<td>8.4</td>
</tr>
<tr>
<td>3</td>
<td>Mt. Soranuma</td>
<td>1.5 Blackish</td>
<td>6.3</td>
</tr>
<tr>
<td>4</td>
<td>ditto</td>
<td>1.3 Blackish</td>
<td>6.6</td>
</tr>
<tr>
<td>5</td>
<td>Nippara</td>
<td>1 Blackish</td>
<td>7.6</td>
</tr>
<tr>
<td>6</td>
<td>Mt. Mitaka</td>
<td>1.2 Blackish</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**Table 1.** Some female characters of \( Eustalomyia vitti pes \).

\( Pf \): Parafrontalia; \( If \): Interfrontalia.

**3. Eustalomyia festiva** (Zetterstedt)

(Figs. 178–182)

\( Aricia festiva \) Zetterstedt, 1845:1424. \( Eustalomyia festiva \): Hennig, 1967:103.

Material examined. \( \text{HOKKAIDO — Jōzankei, } 1 \varphi, 4-ix-67 \) (M. Suzuki), \& 1 \( \varphi \), 3-ix-69; Otoineppu, 1 \( \varphi \), 15-viii-72 (Sk. Yamane); Sōunkyō, 1 \( \delta \), 6-viii-60 (S. Ueda), \& 1 \( \delta \), 7-viii-60 (S. Takagi); Horoka, 1 \( \delta \), 13-vii-59 (S. Takagi).

\( \delta \). Body-length 9.1–10.7 mm. Abdomen with fore marginal bands narrow and not expanding caudad beside median vitta, and with hind marginal bands more

or less broader than fore marginal ones. Legs blackish, at most slightly yellowish on femora apically.

Aristal hairs not longer than $A_3$-width, at most about 3 times as long as basal diameter of arista; parafrontals contiguous to each other, with 6–9 ori and no ors. Mesonotum with many (9–14) pairs of pre acr, of which 3–4 pairs are composed of rather strong setae; 1 strong and 1–2 rather distinct $ph$ present; $pra$ about as long as anterior ntpl; notopleura with no accessory setulae; mesopleura with 1–5 accessory setulae near $pstmt$; stpl 2:3 or 2:4; scutellum densely setulose on whole dorsal surface. Hind tibia with 5–7 av, 3–4 long, 2–4 shorter and some fine $ad$, 4–7 $pd$, and 2–3 strong and many (about 15–20) weaker $pv$.

♀. Interfrontalia narrowest at level of proclinate ors, and at this part wider than parafrontalia. Hind tibia with no $pv$.

Distribution. Japan; Europe; North America.

*4. Eustalomyia histrio (Zetterstedt)
(Figs. 183–187)


Material examined. HOKKAIDO—Sapporo, 1 ♀, 23-v-61 (T. Kumata); Mt. Soranuma, 1 ♀, 1-viii-68; Mt. Apoi, 1 ♀, 21-vi-59 (K. Kamijo).

♀. Body-length 10.2 mm. Abdomen with fore marginal bands narrow and not expanding caudad beside median vitta, and with hind marginal bands broader than fore marginal ones. Legs blackish, at most slightly yellowish on femora apically.

Arista minutely pubescent; parafrontals contiguous to each other, with 8–9 ori and no ors. Mesonotum with 7 strong and 5 finer pre acr, which are irregularly paired, the rows being narrowly separated from each other; 1 strong and 2 rather distinct $ph$ present; $pra$ about as long as anterior ntpl; notopleura with 2 accessory setulae; mesopleura with many (9) accessory setulae around $pstmt$; stpl 2:3 or 2:4; scutellum densely setulose on whole dorsal surface. Fore tibia with apical $p$ strong although more or less shorter than apical $pd$; $t_3$ with 12–13 av, 3–4 long and 3–4 short $ad$, 4 long and 3 short $pd$, and 1 strong and numerous (about 40) weaker $pv$.

♀. Body-length 9.7–10 mm. Interfrontalia nearly parallel-sided, and nearly twice as wide as parafrontalia at level of lower reclinate ors; parafrontals with 4 ori. Notopleura with or without 1–3 accessory setulae; mesopleura with about 10–15 accessory setulae around $pstmt$; stpl 2:2 or 2:3. Mid tibia with 2 strong and 0–1 weaker $ad$, 2–3 $pd$ and 4–5 $pv$; $t_3$ with no $pv$.

Distribution. Japan; Europe; North America.

13. Genus _Leucophora_ Robineau-Desvoidy

_Leucophora_ Robineau-Desvoidy, 1830:562. Type-species: _Leucophora cinerea_ Robineau-Desvoidy, 1830.

According to Hennig (1967) 19 species of this genus are distributed in the Palaearctic region. From Japan will be recorded the following 7 species.
Key to the species ($\delta\delta$)

1. Arista plumose, the longest hairs being longer than $A_3$-width; $A_3$ more than twice as long as wide. ........................................ 1. grissella Hennig
   - Arista shortly or minutely pubescent, the longest hairs being at most about as long as basal diameter of arista; $A_3$ less than twice as long as wide. ................. 2
2. Mid tibia with $av$ or $v$, if without any then $t_3$ with apical $pd$ strong. ............... 3
   - Mid tibia without $av$ or $v$; $t_3$ with apical $pd$ weak or vestigial. .................. 6
3. Mid tibia with $av$, if without it $t_3$ with apical $pd$ strong; interfrontalia with $if$. .................................................. 5. unilineata (Zetterstedt)
   - Mid tibia with $v$; $t_3$ with apical $pd$ weak or vestigial; interfrontalia without if. .................. 4
4. $Pva$ shorter than posterior $ntpl$; cheeks with genal setae in 1 row. ................................. 3. unistriata (Zetterstedt)
   - $Pva$ longer than posterior $ntpl$; cheeks with genal setae in 2 rows even if the upper row being composed of only a few setae. .................. 5
5. Notopleura with some accessory setulae; $t_1$ with 1 distinct $ad$ and 1 strong $pv$; $f_4$ with strong $pv$. ........................................... 2. personata (Collin)
   - Notopleura with no accessory setulae; $t_1$ with 1 minute $ad$ and 2 strong $pv$; $f_4$ without strong $pv$. ........................................... 4. obtusa (Zetterstedt)
6. Prosternum with a pair of setae; parafrontals with 1 $ors$; haustellum slender and about as long as palpi. ................................. 3. serieca Robineau-Desvoidy
   - Prosternum with no setae; parafrontals with no $ors$; haustellum normal and shorter than palpi. .................. 7. sponsa (Meigen)

*1. Leucophora grissella Hennig
   (Figs. 188–190)

Musca grisea Fallén, 1823:57, nec Fabricius, 1805. Leucophora grissella Hennig, 1967:120.

Material examined. HONSHU — Mt. Bandai, Fukushima-ken, 1♀, 28-vii-71; Sai-ko, Yamanashi-ken, 1♂, 9-vi-67 (T. Kocha); Mt. Hodaka, Nagano-ken, 1♂, 3-viii-70.

♂. Body-length 7.3–8.1 mm. $A_3$ about 2.1–2.9 times as long as wide; arista plumose, the longest hairs about 1.3–1.4 times as long as $A_3$-width; interfrontalia with fine $if$; parafrontals with 1 procline $ors$. Mesonotum with $pra$ lacking; scutellum bare on dorsal centre. Fore tibia with 1 short $ad$ and 1–2 strong $pv$, and with strong apical $pd$, in the specimen from Sai-ko 1 strong $pd$ being present on the right $t_4$ at apical third; $t_2$ with neither $av$ nor $v$; $t_3$ with 3–4 $av$, 3–4 $ad$, 3–4 $pd$ and 3–4 $pv$. Wings with costa haired on ventral surface.

♀. Body-length 6.3 mm. Frons about 0.35 times as wide as head; interfrontalia with $if$ invisible in the present specimen; parafrontals with 2 procline and 1 reclinate $ors$. Hind tibia with no $pv$.

Distribution. Japan; Europe.

*2. Leucophora personata (Collin)
   (Figs. 191–193)


Material examined. HOKKAIDO — Eniwa, 1♂, 12-vi-68.

♂. Body-length 7.5 mm. Frons a little wider than distance between posterior ocelli inclusive; interfrontalia about 1.5 times as wide as anterior ocellus,
Figs. 188-190. *Leucophora grisella* Hennig. ♀: 188, hypopygium, dorsal view; 189, distiphallus, ventral view; 190, 5th sternite, ventral view.
Figs. 197 & 198. *Leucophora sericea* Robineau-Desvoidy, ♂: 197, ovipositor, dorsal view; 198, ditto (terminal segment), lateral view.

without if; parafrontals with 1 proclinate ors; arista minutely pubescent. Meso-notum with pra about as long as anterior nфpl; notopleura with some (4–5) accessory setulae; scutellum rather densely setulose on dorsal surface. Abdomen slightly
less than twice as long as wide. Mid femur with 1 strong *av* near basal fourth; *t₃* with 1 strong *v* slightly displaced to anteroventral surface; *f₂* on basal two-thirds with 6–7 *pv* somewhat weaker than *av*; *t₃* with apical *pd* short and fine. Wings with costa bare ventrally.

♀. Unknown to me. According to Collin (1921) the female of this species can be distinguished from that of *L. unistrigata* (Zetterstedt) by the following aspects: — "Pre-alar bristle strong though only about half the length of supraalar. Postical cross-vein oblique. The middle four bristles on hind-margin of last visible abdominal segment much further from the margin than the others."

Distribution. Japan; Europe.

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### *3. Leucophora sericea* Rambineau-Desvoidy
(Figs. 194–198)


♀. Body-length 6.7–7.5 mm. Strongly tinged with yellow in pollinosity; abdomen with median vitta much narrowing caudad and on each tergite interrupted or nearly so at hind margin.

Frons more or less narrower than distance between posterior ocelli inclusive; interfrontalia with a pair of fine *if* or with a single one; parafrontals with 1 proclinate *ors*; cheeks with genal setae fine; aristal pubescence distinct though short; haustellum slender.

Mesonotum with 2nd *ph* more or less distinct; *pra* as long as or a little longer than posterior *ntpl*; mesopleura with 1 or a few strong anterior *mpl*; prosternum with a pair of setae; scutellum rather densely setulose dorsally.

Mid tibia without *av* or *v*; *f₂* with no strong *av*; *f₃* with no *pv* except for a few ones near base and apex.

♀. Mesonotum with 2nd *ph* fine; *pra* shorter than posterior *ntpl*; *stpl* 1:1.

Distribution. Japan; Manchuria; Tibet; Europe.

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### *4. Leucophora obtusa* (Zetterstedt)
(Figs. 199–201)


Material examined. HONSHŌ — Mt. Tanzawa, Kanagawa-ken, 1♂, 29-iv-70 (H. Takizawa).

♂. Body-length 6.4 mm. Palpi yellowish basally and dark brownish apically. Abdomen with narrow and sharp median vitta.

Parafrontals with 1 proclinate *ors*; interfrontalia without *if*; cheeks with genal setae long and in 2 rows. Thorax hairy; 1 strong and 2 rather strong *ph* present; 3 pairs of *pre acr* being composed of strong setae; *pra* more or less longer than posterior *ntpl*, yet weaker than the latter; mesopleura with no distinct anterior *mpl*; *stpl* 1:2; scutellum setulose on dorsal surface except basally.
Abdomen hairy; 1st sternite densely setulose.

Fore tibia with 2 \( pv \), and with 1 \( ad \) which is very minute and only a little stronger than accessory setulae, apical \( pd \) being vestigial; \( t_2 \) on posteroventral surface with a row of slender setae and with many hair-like setulae; \( t_3 \) with 1 \( v \), 1 \( ad \), 1 \( p \) and 1 \( pv \); \( f_2 \) with a row of slender \( av \) and a row of rather long hair-like \( pv \).

♀. Unknown to me. According to Hennig (1967) the female of this species differs from those of allied species in having the 1st abdominal sternite setulose and the fore tibia with a distinct apical \( ad \).

Distribution. Japan; Europe; North America.

Figs. 199–201. *Leucophora obtusa* (Zetterstedt). ♀: 199, hypopygium, dorsal view; 200, distiphallus, ventral view; 201, 5th sternite, ventral view.
Figs. 202–204. *Leucophora unilineata* (Zetterstedt). ♀: 202, hypopygium, dorsal view; 203, distiphallus, ventral view; 204, 5th sternite, ventral view.

*5. Leucophora unilineata* (Zetterstedt) (Figs. 202–204)


♂. Body-length 5.8-8.8 mm. Body hairy, more densely in larger specimens, and whitish grey in pollinosity. Mesonotum with median vitta brownish pollinose. Abdomen with median vitta moderate in width and brownish pollinose; tergites more or less brownish in pollinosity on fore margins.

Frons as wide as distance between posterior ocelli inclusive, or nearly so; interfrontalia a little wider than anterior ocellus, with a pair of slender if; parafrontals with many (7-14) long ori and usually with 1 slender ors; A₃ about 1.4-1.6 times as long as wide; arista minutely pubescent; profrons twice or slightly more as wide as A₃; cheeks about 2.2-2.7 times as high as A₄-width, with genal setae in a few rows.

Mesonotum with 2nd ph well developed or fine; pra longer than posterior mpt, sometimes nearly as long as anterior one; a few distinct and some or many finer pre acr present and irregularly paired, the strongest one often as long as or longer than pra though less stout than the latter; notopleura with no accessory setulae; mesopleura with no distinct anterior mpt; stpt 1:2; prosternum with no setulae; scutellum densely setulose on dorsal surface. Abdomen with marginal setae strong.

Fore tibia with 1-4 (usually 2-3) pv and no ad, apical pd being strong; t₃ with 1 ad, 1 pd, 2-5 (usually 3-4) f-pv and 1-2 (usually 1) av, the latter sometimes lacking; t₄ with a row of strong av longer than height of the femur, and with a row of fine and slender pv; t₅ with some (4-7) av, the distal one being strongest though not longest, 3-5 ad, 3-6 pd and many (7-15) slender pv, apical pd being strong. Wings with costa not haired ventrally beyond outlet of subcosta.

♀. Body-length 6.6-8.2 mm. More brownish pollinose and less densely haired than in male. Frons about twice as wide as distance between posterior ocelli inclusive; interfrontalia about half of frons in width, with if fine. Mesonotum with 2nd ph fine and like accessory setula; stpt 1:1. Fore tibia with 1 pv and usually with 1 short ad; t₂ with 1-2 av, 1 ad, 1 pd, 1 p and 0-1 pv; t₃ with no pv except for a few preapical ones; t₄ with av less in number (2-4) than those of male and with no pv.

Distribution. Japan; Kamchatka; Europe; North America.

This species is variable in size and in the hairing of the body, and sometimes very similar to obtusa in general appearance. However, it can be readily distinguished from that species by the presence of if, the strong apical pd on the fore tibia, and the strong apical pd on the hind tibia.

*6. Leucophora unistriata (Zetterstedt)
(Figs. 205-207)


Material examined. HOKKAIDÔ — Sapporo, 7♀♀, 20-v-8-vi-60 (S. Sakagami); 1 ♀, 12-v-68 (T. Kocha); Nopporo, 1 ♀, 3-vi-73; Józankei, 1 ♂, 10-vi-66; Shikotsu-ko, 7♂♂, 1 ♀, 18-v-71.

♂. Body-length 5-6.5 mm. Pale greyish in pollinosity. Abdomen usually brownish pollinose on fore margin of each tergite. A₄ often reddish brown apically.
Frons about twice as wide as anterior ocellus; interfrontalia without if; parafrontals with 8--11 ori, of which the uppermost one is sometimes situated from the next one at a distance longer than that between the lower ones, so that it might be referred to urs; cheeks with genal setae in a row. Mesonotum with pra much shorter than posterior stpl and often indistinguishable from accessory setulae; prosternum usually bare, but in 2 specimens of the present ones with a pair of setae.

Fore tibia with 1 pv and with or without 1 minute ad; t2 with a few short and strong av on basal third and with a row of long pv; t3 with 3--8 (usually 5--6) av, 3--5 (usually 3--4) ad, 3--5 (usually 3--4) pd and 4--8 (usually 5--7) pv; t1 and t3 with apical pd weak or vestigial.

♀. Body-length 4.7--5.6 mm. More brownish yellow in pollinosity. Frons more or less wider than distance between posterior ocelli inclusive; interfrontalia as wide as or a little wider than anterior ocellus. Prosternum with no setae; stpl 1:1. Abdomen with 1st sternite bare in 1 specimen, yet in the others with a few or some setulae on each lateral side. Fore tibia always with 1 distinct ad; t3 with no pv.

Figs. 205--207. Leucophora unistrigata (Zetterstedt), ♂: 205, hypopygium, dorsal view; 206, distiphallus, ventral view; 207, 5th sternite, ventral view.
Figs. 208--210. Leucophora sponsa (Meigen), ♂: 208, hypopygium, dorsal view; 209, distiphallus, ventral view; 210, 5th sternite, ventral view.
According to Huckett (1940) and Hennig (1967) the female of this species has the 1st abdominal sternite which is not setulose, but the female of the Japanese form has the sternite setulose except in 1 specimen from Sapporo. Nevertheless, the present female specimens may be identified with unistriata by the following characters: — Interfrontalia without if; cheeks with genal setae in a row; pra fine and like accessory setula; 5th tergite with marginal setae in a straight line; t₄ with 1 strong v.

*7. *Leucophora sponsa* (Meigen)

(Figs. 208-210)


**Material examined.** HOKKAIDO — Sapporo, 2♀♂, 5-8-v-68, 1♂, 21-v-69, & 1 ♀, 15-v-70; Józankéi, 4♂♂, 2-v-68; Shikotsuko, 2♂♂, 18-v-71. HONSHU — Kyōto, 1♀, 2-iv-68.

♀. Body-length 5-7.5 mm. Whitish grey and somewhat bluish in pollinosity. Mesonotum with median vitta brownish pollinose; scutellum brownish pollinose at least on apical part. Abdomen with median vitta moderate in width and brownish pollinose; tergites brownish pollinose on fore and hind margins.

Frons as wide as distance between posterior ocelli inclusive, or nearly so; interfrontalia as wide as or a little wider than anterior ocellus, and with if; parafrontals with 6-9 ori and no ors; cheeks with genal setae in a few rows. Mesonotum with pra as long as or a little longer than posterior ntpl. Abdomen with marginal setae strong.

Fore tibia with 1-2 pv and 1 vestigial ad; t₄ with 1 ad, 1 pd and 2-4 p–pv, and with neither av nor v; t₅ with 3-5 strong and often a few or some fine av, 3-6 (usually 4-5) ad, 3-4 pd and 7-11 pv, and usually with 1 strong p near basal third.

♀. Unknown to me. Frons very wide and about one-fourth as wide as head (after Collin, 1921).

**Distribution.** Japan; Europe.

### 14. Genus *Hylemya* Robineau-Desvoidy


Following Ackland (1967) and Hennig (1968–1969) I use the name of *Hylemya* for the restricted species-group defined by the following characters: — Arista plumose, the longest hairs being at least as long as A₃-width; interfrontalia with if; parafrontals without ors in male; mesonotum with ph not duplicated; mesopleura with a well developed anterior mpl; stptl 2:2 or 2:3; hypopygium of male with surstyli simple and with praegonites and distiphallus not reduced; t₄ at least with a few pv in male; wings with costa haired on ventral surface; lower calyptra not protruded beyond the upper.
Many species have been described or treated under the name of *Hylemya* (or *Hylemyia*). However, in the sense adopted here this genus is represented only by 10 species, of which 6 species are found in the Palaearctic region, 2 in North America (one common to the Palaearctic region), other 2 in the Oriental region and the rest one in Formosa. The following 2 species will be recorded from Japan for the first time.

**Key to the species (♂♂)**

1. Mid and hind femora largely yellow and only darkened apically; parafrontals contiguous to each other; occiput bare on upper part below postocular row of setulae; t₁ with apical *pd* vestigial. 2. *nigrimana* (Meigen)
   - Mid and hind femora wholly blackish or dark brownish; parafrontals narrowly separated from each other; occiput distinctly setulose on upper part below postocular row of setulae; t₁ with apical *pd* usually strong. 1. *latifrons* Schnabl

**Key to the species (♀♀)**

1. Mid and hind femora largely yellow and only darkened apically; ovipositor short; viviparous. 2. *nigrimana* (Meigen)
   - Mid and hind femora wholly blackish or dark brownish; ovipositor long; oviparous. 1. *latifrons* Schnabl

*1. Hylemya latifrons* Schnabl
(Figs. 211–214)


♂. Body-length 4.5–6 mm. Abdomen with fore marginal bands usually absent. Legs blackish or dark brownish; t₂ and t₃ sometimes yellowish though more or less darkened.

Head about 1.2–1.4 times as high as long; frons as wide as or a little wider than anterior ocellus; interfrontalia half or at most same width of anterior ocellus; A₃ about 2–2.3 times as long as wide; arista with the longest hairs about 1–1.5 times as long as A₃-width; occiput distinctly setulose on upper part below postocular row of setulae. Fore tibia with apical *pd* usually strong.

♀. Body-length 4–6 mm. Fore tibia blackish or dark brownish; t₂ and t₃ usually yellowish although more or less darkened at apical and basal parts. Occiput sparsely setulose or nearly bare on upper part below postocular row of setulae. Abdomen with long ovipositor, to which ann egg is often adhering in the specimens examined.

Distribution. Japan; Kamchatka; Manchuria; Europe; North America.

Material examined. 


♂. Body-length 7.5–9 mm. Mesonotum in pollinosity yellowish grey and more or less tinged with brown; median vitta brownish pollinose; scutellum not yellow at any part in ground colour, and yellowish grey in pollinosity, somewhat brownish pollinose at base dorsally, and when viewed from behind with a continuation of mesonotal median vitta. Abdomen in pollinosity pale grey and tinged
with yellow; median vitta narrow and brownish pollinose; tergites without marginal bands; 5th sternite with processes sometimes brownish or yellowish apically; cercal plate brownish or yellowish. Wings rather distinctly tinged with brownish yellow, rather strongly yellow at base; calypters pale yellow. Fore femur almost blackish; f₂ and f₃ yellowish, only darkened apically; tibiae yellowish, at most slightly darkened at apex especially on t₁.

Frons very narrow, about half as wide as anterior ocellus; parafrontals broadly contiguous to each other; interfrontalia with a pair of if or only a single one; A₃ about 2.2–2.7 times as long as wide; arista with the longest hairs about 1.6–1.8 times as long as A₃-width; occiput not setulose on upper part below postocular row of setulae.

Mesonotum with 3 pairs of pre acr and 4–7 pairs of post acr; pra a little shorter than posterior ntpl, about two-thirds to four-fifths of the latter; mesopleura with 1 strong and often 1 rather strong anterior mpl. Abdomen conical; 5th sternite (Fig. 218) sparsely setulose along inner margin of each process; surstyli (Figs. 215 & 216) with many short setae.

Fore tibia with 1 ad and 1–2 pv, apical pd being vestigial and indistinguishable from accessory setulae; t₂ with 1 ad, 1 pd, 1–2 (usually 1) p and 1–3 (usually 2) pv; t₃ with 2–3 (usually 2) av, 4 ad, 3 pd, and 2–6 pv in basal half and 1 short pv in apical fourth. Wings with costal thorns strong; m-m strongly sinuate.

Q. Body-length 6.2–7.7 mm. Interfrontalia usually reddish brown near lunule; occiput sometimes with a few setulae on upper part below postocular row of setulae. Abdomen with median vitta wider than that of male; ovipositor short.

Distribution. Japan; Europe.

Having compared the 5th sternite and the hypopygium of the present form with those of H. strenua figured by Ackland (1967:122), I have failed to find a good difference between them. Nevertheless, by having largely yellowish femora the present form is different from strenua and may be identified with nigrimana. This species may be also closely related to H. detracta (Walker) recorded from Nepal and the East Indies; it may, however, be distinguished from the latter by the acr more numerous and the arista with shorter hairs (cf. Ackland, 1967:123).

15. Genus Lasiomma Stein

_Lasiomma_ Stein, 1916:168, as subgenus of Chortophila Rondani. Type-species: _Aricia nitidicauda_ Zetterstedt, 1855.

In Japan 7 species of the genus are known to occur (Suwa, 1971a). On this occasion another species will be added to the fauna.

**Key to the species (δδ)**

1. Hind tibia with apical pv longer than height of the tibia. ................................. 2
   - Hind tibia with apical pv shorter than height of the tibia or practically absent... 3
2. Apical pv of t₂ distinctly longer than height of the tibia; parafrontals without ors. ................................. 4. _todocola_ Suwa
   - Apical pv of t₂ only a little longer than height of the tibia; parafrontals with ors. ................................. 3. _abietis_ (Huckett)
3. Epistoma more or less projecting forwards beyond frons at lunule; parafrontals...
with ors. .................................................. 5. morionella (Zetterstedt)

- Epistoma not projecting forwards beyond frons at lunule; parafrontals without ors. .......................... 4

4. Interfrontalia with if usually absent, if present very fine and vestigial. ............ 5
- Interfrontalia with if always present and more or less distinct. .......................... 6

5. $A_8$ about 1.8-1.6 times as long as wide and distinctly not reaching to epistoma; epistoma situated distinctly behind frons at lunule. ............ 2. laricicola (Karl)
- $A_8$ about 1.7-2 times as long as wide and nearly reaching to epistoma; epistoma situated nearly as far as frons at lunule. ............ 1. anthracinum (Czerny)

6. Eyes distinctly haired; $f_4$ near middle with a few $pv$ much longer than height of the femur. .......................... 6. meadei (Kowarz)
- Eyes practically bare; $f_4$ near middle with no $pv$ longer than height of the femur. .......................... 7

7. Third sternite more than twice as long as wide; cercal plate with a pair of short setulae at apex. .......................... 7. octoguttatum (Zetterstedt)
- Third sternite less than twice as long as wide; cercal plate with no setulae at apex. .......................... 8. japonicum Suwa

1. Lasiomma anthracinum (Czerny)


Material examined. HOKKAIDO - Józankei, 6♂♀; Mt. Apoi, 1♂; Shikaribetsuko, 2♂♂.

Host plants. Picea excelsa (in Europe, after Kangas & Leskinen, 1943); Picea glauca & Tsuga mertensiana (in North America, after 'Tripp, 1954 & Huckett, 1953).

Distribution. Japan; Europe; North America.

2. Lasiomma laricicola (Karl)


Material examined. HOKKAIDO — Nopporo, 1♂; Mt. Kocha, & 1♀, 15-iv-73, emerged from the cones of Larix sp.; Koshunai, 1♂, 15-iv-72, emerged from the cones of Larix leptolepis.

♂. Body-length 4.6-5.2 mm. Haustellum thinly pollinose although shining. Mesonotum with $pra$ long, about as long as anterior or posterior $ntpl$; $stpl$ 1:2 or 2:2, the lower anterior being fine. Fore tibia with 1-3 $pv$; $t_4$ with 6-8 $av$.

♀. Body-length 5 mm. Frons about 0.4 times as wide as head. Hind tibia with 4 $av$, 6 $ad$, 3-4 $pd$ and no $pv$.

Host plants. Larix europae (in Europe, after Seitner, 1929); Larix sibirica & Larix dahurica (in Siberia, after Zonova, 1935); Larix koreana (in Korea, after Hosoya, 1943); Larix leptolepis, L. koreana & L. dahurica var. japonicum (in Japan, after Yamada et al., 1972).

Distribution. Japan; Korea; Siberia; Europe.

The species recorded from Korea as a pest of the cones of Larix koreana by Hosoya (1943) under "Hylemia laricicola (Karl)" may be referred to the present species. According to Yamada et al. (1965 & 1972) this species is widely distributed in Japan (Hokkaido and Honshu) and inflicts severe damage on larch cones.
3. Lasiomma abietis (Huckett)


Material examined. HOKKAIĐO — Nopporo, 2♂♂, 1-v-68 (S. Yogo), emerged from the cones of *Abies sachalinensis*.


Distribution. Japan; North America.

4. Lasiomma todocola Suwa


Material examined. HOKKAIDO— Nopporo, 2♂♂ (holotype and paratype), 6-v-68 (S. Yogo), emerged from the cones of *Abies sachalinensis*.


5. Lasiomma morionella (Zetterstedt)


Material examined. HOKKAIĐO — Mt. Daisetsu, 3♂♂, 28—29-vii-59 (S. Ueda), 2♂♂, 4♀♀, 4-viii-60 (S. Ueda), & 1♀, 21-vii-68.

♂. Body-length 4.3—4.7 mm.

♀. Body-length 4.2—5.3 mm. Body densely covered with brownish grey pollen, which is denser and paler than in male. Haustellum with mentum polished. Mesonotum and abdomen hardly vittate. Wings and calyptrae with a yellowish tinge.

Frons about 0.42—0.45 times as wide as head; parafrontals with 3 outwardly directed ors; cheeks with genal setae in 2 rows, setae of the upper row being much weakened and sometimes lacking. Mesonotum with 2nd ph well developed or fine; stph 2:2, the lower anterior being always fine and the lower posterior strong or fine.

Fore tibia with or without 1—2 short or rather distinct ad and with 1 pv; t2 with 1—2 ad, 1—2 (usually 2) pd and 2 pv; t3 with 2—3 av, 2—4 ad, 2—3 pd, and only 1 pv near apical fifth. Wings with costal thorns more or less stronger than those of male; m—m nearly upright and straight.

Distribution. Japan; East Siberia; Scandinavia; North America.

*6. Lasiomma meadei* (Kowarz)

(Fibs. 219-224)


Material examined. HOKKAIĐO — Sapporo, 12♂♂, 5—v—1-vii—66—70 (S. Ueda, K. Kusigemati, H. Torikura & M. Suwa); Nopporo, 1♂, 2-vi-68; Mt. Soranuma, 1♂, 1-vii-68. HONSHU — Mt. Jimba, Tōkyō-to, 1♂, 28-iii-71 (T. Kocha); Mt.

♂. Body-length 5.5-5.8 mm (4 mm in 1 specimen). Haustellum with mentum rather distinctly pollinose. Thorax in pollinosity bluish grey or pale grey and usually more or less tinged with brown; mesonotum with median and sublateral vittae rather broad and distinct. Abdomen thickly bluish grey pollinose, and half-shining in some lights; median vitta moderate or rather broad; fore marginal bands much narrower than median vitta. Wings more or less tinged with brown; calyptrae pale, rather distinctly yellow marginally; halteres dark brownish at base and yellowish at knob.

Eyes more or less distinctly haired; frons usually about half as wide as anterior ocellus, and never wider than the latter; parafrontals contiguous to each other or sometimes not, and with no ors; profrons about 0.5-0.8 (usually 0.6) times as wide as A3; parafacials much narrowed ventrad; cheeks slightly higher than profrons-width.

Mesonotum with 2nd ph usually well developed; pra a little shorter than posterior ntpt; stpl 2:3, the lowest posterior being often fine.

Fore tibia with 1-2 (rarely 3) pv; t4 with 1 ad, 1 pd and 3-6 (usually 3-4) p-pv; t5 with 2-3 av, 4-7 (usually 5-7) ad, 3-4 pd, and in basal half 2-8 (usually 4-7) pv, the pv-series being nearly in a row.

♀. Unknown to me. After Hennig (1967) hardly distinguishable from the females of the allied species.

Distribution. Japan; Europe.

A subspecies of L. meadei was recently described by Hennig (1967: 189) under the name m. apenninum on the basis of some specimens (4♂♂) from South Europe. According to the description the subspecies apenninum can be distinguished from the nominate form distributed in North Europe by the contiguous parafrontals, the more longly and densely haired eyes and the weaker fore marginal bands on
the abdominal tergites. In Japan the form with contiguous parafrontals has been collected together with the form with separated parafrontals from some localities as shown in Table 2. There are found no other significant differences between the two forms. It should be added that these forms are identical in the fore marginal bands narrower than the median vitta on the abdomen. They cannot be divided into subspecies in Japan.

Table 2. Number of specimens (♂♀) of *L. meadei*, with contiguous or separated parafrontals (Pf).

<table>
<thead>
<tr>
<th>Locality</th>
<th>Number of ♂♂ with contiguous Pf</th>
<th>Number of ♂♂ with separated Pf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapporo</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Nopporo</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Mt. Soranuma</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mt. Jimba</td>
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<td>0</td>
</tr>
<tr>
<td>Mt. Daibosatsu</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mt. Yatsugatake</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Mt. Kiso-Komagatake</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Rokkō-san</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kumamoto</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mt. Kirishima</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

7. *Lasionma octoguttatum* (Zetterstedt)


Material examined. The localities of the present specimens (40♂♀) are as follows. HOKKAIDO — Sapporo; Nopporo; Jōzankei; Mt. Soranuma; Mt. Yūbari; Mt. Shokambetsu; Mt. Daisetsu; Rishiri-to; Eniwa; Shikotsu-ko. HONSHŌ — Mt. Sumon, Niigata-ken; Mt. Yatsugatake & Mt. Senjō, Nagano-ken; Rokkō-san, Hyōgo-ken.

Distribution. Japan; Europe; North America.

8. *Lasionma japonicum* Suwa

*Lasionma japonicum* Suwa, 1971a:36.

Material examined. HOKKAIDO — Sapporo, 2♂♀; Nopporo, 4♂♀; Jōzankei, 1♂; Mt. Soranuma, 1♂; Shikotsu-ko, 1♂; Rishiri-to, 5♂♀ (including the holotype). HONSHŌ — Mt. Hakkōda, Aomori-ken, 3♂♀; Mt. Hayachine, Iwate-ken, 1♂; Mt. Daibosatsu, Yamanashi-ken, 1♂.


In the original description of this species (Suwa, 1971a) I mentioned as follows: — “This species is closely related to the European species, *Lasionma nitidicauda* (Zetterstedt), but it is readily distinguished from the latter by the bare eyes.” Most species of Anthomyiidae have eyes microscopically more or less haired, and in this sense *L. japonicum* is also haired, although practically bare.
According to Ackland (1967) the Nepalese form of *L. eriophthalmum* (=*nitidicauda*) is different from the European one in having the eyes much less densely haired and with the hairs shorter. Further comparisons are necessary in order to get a definite conclusion concerning these forms.

16. Genus *Egle* Robineau-Desvoidy


In agreement with the distributions of *Salix* and *Populus*, known host plants of *Egle*, this genus is almost restricted in the Holarctic region. According to Hackett (1965a & 1965b) and Ackland (1970) are known 15 species, of which 10 species are found in the Palaeartic region, 10 or 11 in the Nearctic region, and 1 endemic in Burma. From Japan will be recorded 5 species, of which one is new to science.

Key to the species (♂♂)

1. Larger in size, body-length about 5–6 mm; mesonotum with 4 strong *post dc*; notopleura with some accessory setulae; *tₙ* with apical *pd* very long and strong. .............................. 1. *muscaria* (Fabricius)
   - Smaller in size, body-length less than 4 mm; mesonotum with 3 strong *post dc*; notopleura with no accessory setulae; *tₙ* with apical *pd* minute or vestigial. .... 2

2. Hind femur with *pv* much longer than height of the femur; 5th sternite with some strong setae at outer base of each process. ............... 2. *longipalpis* (Malloch)
   - Hind femur without *pv* longer than height of the femur; 5th sternite with no strong setae. ............................................... 3

3. Rather densely pollinose and rather shortly setose; epistoma slightly projecting forwards beyond frons at lunule. ............... 3. *minuta* (Meigen)
   - Rather thinly pollinose and rather longly setose; epistoma distinctly projecting forwards beyond frons at lunule. ............... 4

4. Cheeks with 2 rows of genal setae which are curved upwards; mesopleura with 6–7 *pstg* including accessory setulae; cercal plate with apical projection strongly constricted at base. ............... 4. *parva* Robineau-Desvoidy
   - Cheeks with 1 row of genal setae which are curved upwards, below the row with at most 1–2 setae also curved upwards; mesopleura with 3–4 *pstg* including accessory setulae; cercal plate with apical projection hardly constricted at base. .................. 5. *korpokkur* sp. nov.

*1. Egle muscaria* (Fabricius)

(Figs. 225–229)


Material examined. HOKKAIDO — Sapporo 1 ♂, 1 ♀, 22-vi-59 (T. Kumata), & 1 ♂, 25-iv-69; Jōzankei, 1 ♂, 3-v-65 (T. Kocha), & 1 ♂, 2-v-71 (A. Kubota); Nopporo, 2♂♂, 2♀♀, 23-iv-69, & 15♂♂, 7♀♀, 18-24-iv-70; Shikotsu-ko, 1♂, 18-v-71. ♂. Body-length 4.7–6.2 mm. Densely haired. Mesonotum with 4 strong *post dc*; notopleura with some (4–9) accessory setulae; *stpl* 0:2.

♀. Less densely haired than in male. *Stpl* 0:2, if 1:2 the anterior one usually fine.
Figs. 225-229. *Egle muscaria* (Fabricius), ♂: 225, hypopygium, dorsal view; 226, ditto, lateral view; 227, aedeagus; 228, 5th sternite, ventral view; 229, ditto, lateral view.

Distribution. Japan; Kamchatka; Europe; North America.

*2. Egle longipalpis* (Malloch)

(Figs. 230-233)


Material examined. HOKKAIDO — Sapporo, 1♂, 3-v-65 (T. Kocha), & 1♂, 6-v-73 (T. Hattori); Nopporo, 4♀♂, 5-v-70.

♂. Body-length 3.2–3.7 mm. Body rather distinctly covered with whitish grey pollen, which is more or less tinged with blue. Mesonotum darkened when viewed from behind, and hardly vittate. Abdomen with median vitta rather broad and about one-fifth of abdominal width; tergites with rather broad fore marginal bands, and sometimes also with narrow or rather broad hind marginal bands. Haustellum with mentum slightly pollinose. Wings somewhat tinged with dark brownish colour, distinctly at base; calyptrae whitish, slightly yellowish marginally; knobs of halteres more or less darkened.

Head more or less higher than its length; epistoma rather distinctly projecting forwards beyond frons at lunule; frons probably about as wide as anterior ocellus (impossible to be exactly measured due to the poor condition); parafrontals may be nearly contiguous to each other, with 4–5 _ori_ and 1 minute _ors_; interfrontalia with or without a pair of fine or rather distinct _if_; _A₃_ only a little longer than the width; profrons as wide as or slightly wider than _A₃_; cheeks as high as or slightly less high than _A₃_-width, with genal setae in a few rows.

Mesonotum with usually 3 pairs of _pre aer_ and with no accessory setulæ between the rows, which are separated from each other by a distance as long as or somewhat shorter than that between _dc_ and _acr_; _ph_ duplicated, and a few or some of accessory setulæ rather lengthened; notopleura with no accessory setulæ; mesopleura with 1 strong and a few finer _psig_; _stpl_ 1:2; scutellum with no accessory setulæ dorsally.

Abdomen nearly parallel-sided, about 2.5 times as long as wide; 5th sternite
(Fig. 233) at outer base of each process with some strong setae not reaching to the apex of the process; cercal plate (Fig. 230) much narrowing apicad and bifurcated at apex.

Fore tibia with 2–3 p-pv, and with or without 1 pd; f₁ on basal half or more with a row of av, the longest one being at most only a little longer than height of the femur, and on basal two-thirds with 2 rows of pv, the longest one much longer than height of the femur; t₂ with 1–3 (usually 2) pd, 1 p and 1 pv; f₂ with av and pv more or less irregularly rowed, the longest ones being at least twice as long as height of the femur; t₃ with 4–5 av, 5–6 ad, and 3–4 long and 1–2 short pd, distal one of the pd being the longest and about 0.33–0.46 times as long as the tibia, and with some pv, which are usually discernible from accessory setulae, apical d being very long, about 2.6–3.2 times as long as height of the tibia; fore tarsus with 1st segment distinctly longer than 2nd and 3rd segments combined. Wings with m-m nearly straight.

♀. Uncertain to me. According to Huckett (1928 & 1965a) the female of *longipalpis* has a polished haustellum, by which it can be distinguished from the females of the related species. The female specimens (15♀♀) collected together with the present male specimens may be referred to this species by having the haustellum polished or nearly so. However, no other distinct differences have been found between these specimens and some other female specimens of *Egle*.

Distribution. Japan; North America.

This species may be closely related to *E. rhinotmeta* (Pandelle) in having the hind femur with very long av and pv and having the 5th sternite with some strong setae at outer base of each process. It may, however, be readily distinguished from that species by the quite different cercal plate.

*3. Egle minuta* (Meigen)
(Figs. 234–237)


Material examined. HONSHU — Saku, Nagano-ken, 1♀, 9-iv-73 (M. Kiuchi).

♂. Body-length 3.3 mm. Body rather densely pollinose. Mesonotum when viewed from behind with rather broad median and broad lateral vittae and in some lights with rather broad sublateral ones. Abdomen with median vitta broad and more or less interrupted at hind margin of tergites.

Interfrontalia with 2 pairs (probably 1 pair in usual) of short and fine if; parafrontals with 1 minute ors; epistoma somewhat projecting forwards beyond frons at lunule. Mesonotum with pra about two-thirds of posterior ntpl in length; mesopleura with 1 strong and 1–2 fine pstg. Mid tibia with 1 ad and 1 pd; t₃ with pv indiscernible. Wings with costal thorns hardly distinguishable from costal setulae.

♀. There is at hand a female specimen caught in company with the present male specimen. It might be referred to *minuta*. However, because I am unfamiliar with the females of *Egle*, I keep from a definite conclusion concerning this female specimen.

Distribution. Japan; Burma; Europe; ? North America.
4. *Egle parva* Robineau-Desvoidy
(Figs. 238–241)


Material examined. HOKKAIDO — Jōzankei, 1♂, 2-v-71 (A. Kubota).

♂. Body-length 3.4 mm. Mesopleura with 1 strong and 5–6 fine pstg. Abdomen with 5th sternite and hypopygium as in figures. Fore tibia with 1 pv; t₃ weakly setose, only 1 pv being discernible; t₄ with some fine pv, which are hardly distinguishable from accessory setulae.

♀. Unknown to me.

Distribution. Japan; Kamchatka; Europe.

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Figs. 230–233. *Egle longipalpis* (Malloch), ♂: 230, hypopygium, dorsal view; 231, ditto, lateral view; 232, aedeagus; 233, 5th sternite, ventral view.

Figs. 234–237. *Egle minuta* (Meigen), ♂: 234, hypopygium, dorsal view; 235, ditto, lateral view; 236, aedeagus; 237, 5th sternite, ventral view.


Figs. 242–245. *Egle korpokkur* sp. nov., ♂: 242, hypopygium, dorsal view; 243, ditto, lateral view; 244, aedeagus; 245, 5th sternite, ventral view.

5. *Egle korpokkur* sp. nov.
(Figs. 242–245)

Type-material. HOKKAIDO — Nopporo, 3♀♂ (one the holotype), 24-iv-70, & 4♀♂, 18-iv-73; Sapporo, 1♂, 8-v-65 (T. Kocha).

♂. Body-length 3.1–3.7 mm; wing-length 3–3.7 mm. Interfrontalia,
parafacials and cheeks dark brownish in ground colour; antennae and palpi dark brownish or blackish; haustellum with mentum blackish or dark brownish and thinly pollinose. Thorax blackish in ground colour, greyish and more or less brownish in pollinosity, which is not very dense; mesonotum when viewed from behind with broad median and lateral vittae. Abdomen blackish in ground colour, thinly covered with greyish and faintly brownish pollen, and when viewed from behind largely darkened except on hind margin and lateral sides of each tergite. Legs dark brownish. Wings weakly tinged with brown though strongly dark brownish at base; calyptrae mainly pale, yet dark brownish marginally; halteres dark brownish.

Head hardly higher than the length; epistoma distinctly projecting forwards beyond frons at lunule; frons narrower than anterior ocellus; interfrontalia with a pair of fine or somewhat distinct if; parafrontals with 4–5 ori and 1 minute ors; A₃ about 1.3 times as long as wide; arista minutely pubescent; profrons about as wide as A₃; cheeks as high as or somewhat less high than A₃-width, with genal setae in 2 rows, yet the setae of the lower row are fewer in number and usually not curved upwards.

Mesonotum with 2–3 pairs of pre acr, distance between the rows being more or less shorter than that to δc, and with no accessory setulae between the rows; ph duplicated; pra about two-thirds as long as posterior ntpl; notopleura with no accessory setulae; mesopleura with an anterior mtpl which is distinguishable from adjacent setulae, and with 3–4 post including accessory setulae; I prpl present; stpl 1:2, if 1:3 the lowest posterior weak; scutellum with no accessory setulae on dorsal surface.

Abdomen depressed, about twice as long as wide; 5th sternite (Fig. 245) with no strong setae; ceral plate (Fig. 242) with apical projection hardly constricted at base.

Fore tibia with 0–2 (usually 1) pd near basal third or fourth and 0–1 (usually 1) pv near middle; f₀ on basal half with some av shorter than height of the femur, on basal third with a row of pv longer than height of the femur, and in addition near base behind the pv-row with some pv; t₂ with 1( rarely 2) pd and 0–2 (usually 1) pv; f₃ with a row of av becoming longer towards apex of the femur, the longest one being much less than height of the femur though less than twice as long as the latter; t₃ with 2–5 av, 4–6 ad, 3–4 pd and 2–5 (usually 4–5) pv; fore tarsus with 1st segment much longer than 2nd and 3rd segments combined. Wings with costal thorns hardly distinguishable from costal setulae; m-m nearly upright and slightly sinuate.

♀. Unknown.


This species closely resembles parva in general appearance, and also resembles minuta in hypopygial structures. It may, however, be distinguishable from the two species by the characters mentioned in the key.

17. Genus Paregle Schnabl

 Paregle Schnabl, 1911: 71, as subgenus of Hylemyia (= Hylemya Robineau-Desvoidy). Type-species: Musca radicum Linne, 1758.
 Chionomyia Ringdahl, 1933: 30, as subgenus of Hylemyia. Type-species: Anthomyza vetula Zetterstedt, 1838. Syn. nov.

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As pointed out by Huckett (1924) and Ackland (1967) *Paregle cinerella* does not conform to the concept of *Paregle* defined on the basis of the type-species. The Palaearctic species are divided by Hennig (1967) into two species-groups, namely, the *radicum*-group and the *cinerella*-group. In addition to the hairy body and the depressed abdomen the *radicum*-group has distinct differences from the *cinerella*-group in the genital structures (cf. the figures on pp. 156 & 159 of Hennig, I.c.). It is due to their similarity in the cercal plate and surstyli that the two groups are included in the same genus. Judging from the genital structures and most external characters except for the epistoma, *vetula*, the type-species of *Chionomyia*, may be included in the *radicum*-group.

Key to the species (♂ & ♀)

1. Mesonotum with 3 pairs of pr pro acr being strong, and with no accessory setulae between the rows; mesopleura with at most 1–2 accessory setulae near pstg; abdomen conical in male. ............................... 3. *cinerella* (Fallén)
   - Mesonotum with 1 pair of pr pro acr being strong, and with many accessory setulae between the rows of pr acr; mesopleura with many accessory setulae around pstg; abdomen depressed in both sexes. ........................................... 2

2. Epistoma distinctly projecting forwards beyond frons at lunule; notopleura with some accessory setulae. ........................... 2. *radicum* (Linne)
   - Epistoma at most as far as frons at lunule; notopleura without accessory setulae. .................................................. 1. *vetula* (Zetterstedt)

1. *Paregle vetula* (Zetterstedt)
   (Figs. 246–248)


Figs. 246–248. *Paregle vetula* (Zetterstedt), ♂: 246, hypopygium, dorsal view; 247, ditto, lateral view; 248, aedeagus.
♀. Body-length 5–5.5 mm. Mesonotum with 5 vittae along rows of acr, dc and ia, the median one being broad. Abdomen with median vitta sharp and broad; tergites with narrow or broad bands on fore and hind margins.

Epistoma distinctly projecting forwards beyond frons at lunule; frons a little narrower than anterior ocellus; interfrontalia not interrupted though very narrow, with if very fine; parafrontals with 1 short ors; haustellum rather long and compressed.

Mesonotum with acr fine and indistinguishable from fine accessory setulae between the rows except for 1 pair of pre acr and the pair of prs acr, which are composed of strong setae; notopleura with some (3–7) accessory setulae; mesopleura

Material examined. HOKKAIDO — Mt. Daisetsu, 2♂♂, 2♀♀, 20–21-vii-68.

♀. Body-length 5.8 mm–7 mm. Body densely covered with brownish grey pollen, and less densely and more shortly setulose than in male. Frons very wide, only a little narrower than half of head-width; interfrontalia with a pair of strong if; parafrontals with 4–5 strong ors. Wings not so blackish at base.

Distribution. Japan; Manchuria; Europe.

*2. Paregle radicum (Linné)
(Figs. 249–252)


Material examined. HOKKAIDO — Mt. Daisetsu, 2♂♂, 2♀♀, 20–21-vii-68.

♂. Body-length 5–6.2 mm. Blackish and shaggy. Epistoma projecting forwards at most as far as frons at lunule; parafrontals with 1 slender ors; interfrontalia without if. Notopleura with no accessory setulae. Abdomen depressed. Wings usually strongly blackish at base. Mid and hind femora with rows of long av and pv; t₄ with 1–2 (usually 1) v often located a little to anterovelontal surface.

♀. Body-length 5.8 mm–7 mm. Body densely covered with brownish grey pollen, and less densely and more shortly setulose than in male. Frons very wide, only a little narrower than half of head-width; interfrontalia without if. Notopleura with no accessory setulae. Abdomen depressed. Wings usually strongly blackish at base. Mid and hind femora with rows of long av and pv; t₄ with 1–2 (usually 1) v often located a little to anterovelontal surface.

Distribution. Japan; Manchuria; Europe.

Figs. 249–252. Paregle radicum (Linné), ♂: 249, hypopygium, dorsal view; 250, ditto, lateral view; 251, aedeagus; 252, 5th sternite, ventral view.
with no strong anterior mpl, and with many (ca. 15) accessory setulae around pstg. Abdomen depressed and long-ovoid.

Fore tibia with apical pd and pv being weak or vestigial; t3 with apical pd weak. Wings with m-m oblique and nearly straight; lower calyptra slightly protruded beyond the upper.

♀. Body more thickly pollinose and less densely setulose than in male; interfrontalia brownish yellow on lower half. Frons about 0.45 times as wide as head; interfrontalia with if strong. Stpl 1: 1 or 1: 2.

Distribution. Holarctic region; Australia.

3. Paregle cinerella (Fallén)


Material examined. HOKKAIDO — Sapporo, 2♀♂, 8♀; Jozankei, 1♂; Notoro-ko, 2♀♀; Shari, 1♀; Kunneppu, 1♀; Toyotomi, 1♂; Nakasatsunai, 2♀♀. HONSHU — Mt. Hayachine, Iwate-ken, 1♂; Gotemba, Shizuoka-ken, 1♂; Mt. Daibosatsu, Yamanashi-ken, 9♀♂, 8♀♀; Mt. Yatsugatake, Nagano-ken, 2♀♂.

Distribution. Holarctic region.

18. Genus *Botanophila* Lioy

*Botanophila* Lioy, 1864: 990. Type-species: *Anthomyia varicolor* Meigen, 1826.

*Collinomyia* Ringdahl, 1929: 269, as subgenus of *Hylemyia*. Type-species: *Aricia gemmata* Zetterstedt, 1860.

*Euryparia* Ringdahl, 1929: 269, as subgenus of *Hylemyia*. Type-species: *Anthomyia varicolor* Meigen, 1826.

This genus is closely related to *Pegohylemyia* Schnabl as discussed by Hennig (1970). Some characters are commonly seen as follows: — The setose prebasal sclerite (6th tergite) is also seen in *Pegohylemyia striolata* (Fallén), and the fleshy and spinose 5th sternite is also seen in *Pegohylemyia spinisternata* sp. nov. and *P. silva* sp. nov. However, *Botanophila* is recognized as distinct from *Pegohylemyia* by having a strong apical pv on the hind tibia.

In the course of the present study has been found a single species from Japan.

**1. Botanophila gemmata** (Zetterstedt)

(Figs. 253-257)


Material examined. HOKKAIDO — Jozankei, 1♂, 2♀♀, 16-vi-66 (M. Miyazaki); Shikaribetsu-ko, 1♂, 1♀, 14-vii-66; Mt. Poroshiri, 1♂, 2♀♀, 21-vii-73 (T. Hattori).

♂. Body-length 8.8-9.2 mm; wing-length 7.3-7.5 mm. Body including legs black in ground colour and densely covered with whitish grey pollen, which is slightly tinged with blue. Abdomen with broad median vitta and rather broad fore marginal bands, the median vitta being interrupted at hind margin of each tergite.

Body rather densely covered with short and fine accessory setulae. Frons
about 1.3–1.6 times as wide as $A_3$; interfrontalia a little narrower than $A_3$, and with or without (in the specimen from Jōzankei) a pair of weak if, a few or some microscopical setulae being present; parafrontals with 6–7 long or $i$ mingled with fine or vestigial ones, and with no or $s$; $A_3$ twice or a little more as long as wide; arista distinctly swollen at base, with hairs shorter than basal diameter of arista; profrons about 1.6–1.8 times as wide as $A_3$; cheeks more or less higher than twice of $A_3$-width; epistoma distinctly behind frons at lunule.

Mesonotum with $ph$ not duplicated; $acr$ very fine and like accessory setulae; $pra$ as long as or a little longer than anterior $ntl$; mesopleura with 1–2 distinct

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**Figs. 253–257.** *Botanophila gemmata* (Zetterstedt), $\varnothing$: 253, hypopygium, dorsal view; 254, *ditto*, lateral view; 255, aedeagus; 256, 5th sternite, ventral view; 257, *ditto*, lateral view.
anterior mpl, and with 1 strong and 1-2 weaker pstg, which are associated with many (8-11) accessory setulae; stpl 1:2; scutellum densely setulose on whole dorsal surface. Abdomen with anal sclerite very small and almost concealed beneath 5th sternite.

Fore tibia with 1-2 ad and 1 pv; t4 with 1 weak ad near middle and 1 strong ad at apical fourth, and with 3 pd, 2-3 pv and no av; t5 with 2-3 av, 3-4 ad, 3 strong and usually 1 weaker pd (in 1 specimen with a few additional ones) and no pv, apical pd much shorter and weaker than apical a, being about half as long as the latter, apical pv well developed and strong. Wings with costal thorns very minute and only a little stronger than costal setulae; costa haired on ventral surface especially from base to near costal thorns; m-m oblique and hardly sinuate.

♀. Body-length 8.4–10.7 mm; wing-length 7.2–9 mm. Frons about 0.43–0.44 times as wide as head; interfronitalia usually with weak if, which are closely or distantly paired with each other, and with microscopical setulae various in number; parafrontals with 3–5 ori and usually 3 ors, and with many minute setulae along and outside the setae; profrons and cheeks relatively wider and higher than in male respectively; haustellum with mentum conspicuously enlarged. Thorax with 2 setae on humeral calli as in male.

Fore tibia with 2 ad and 1–2 pv, and sometimes with 1–2 weak pd, apical p being well developed and strong; t3 with 1 av, 2 (rarely 3) ad, 3–4 pd and 2–3 pv; t3 with no strong pv except for a few preapical ones; t4 with 2–4 av, 4–5 ad and 3–5 pd. Wings with costa more distinctly haired on ventral surface than in male.

Distribution. Japan; Sweden.

The specimens at hand agree well with a redescriptions of gemmata given by Hennig (1970) except for a few aspects as follows: — Body larger in size; interfronitalia more or less narrower than Aa in male; humeral calli with only 2 setae; legs with setae more numerous.

19. Genus Pegohylemyia Schnabl

Pegohylemyia Schnabl, 1911: 75, as subgenus of Hylemyia. Type-species: (Musca cinerea Fallén, 1824, nec Harris, 1776) = Egeria silvatica Robineau-Desvoidy, 1830.

Xanthocnemia Karl, 1943: 65, as subgenus of Hylemyia. Type-species: Hylemyia pseudomaculipes Strobl, 1893.

This genus is a large group in this family. The Palaearctic species were recently revised by Hennig (1970–1972), by whom 70 species were recognized to occur in this region. In Japan only 1 species, Pegohylemyia pseudomaculipes (Strobl), has been known to occur (after Hennig, l.c.). On this occasion will be recorded from Japan 28 species, of which 11 species are described as new to science.

Key to the species (♀♂)

1. Prebasal sclerite of hypopygium (6th tergite) with a row of distinct setae on hind margin. ......................................................... 1. striolata (Fallén)
   — Prebasal sclerite without a row of setae, if with a few or some setae they are not completely rowed and are usually setula-like. ......................................................... 2

2. Fifth sternite (cf. Figs. 356 & 361) with a row of stout setae on each process, the setae becoming longer towards apex of the process. ......................................................... 3

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- Fifth sternite otherwise in setal pattern. ................................................. 4
3. Haustellum with mentum pollinose; hypopygium as in Figs. 353–354. .......... 23. silva sp. nov.
- Haustellum with mentum polished; hypopygium as in Figs. 358–359. ........ 24. spinisternata sp. nov.
4. Fifth sternite (Figs. 343 & 344) with processes long and blade-like, largely devoid of setae except for many short ones on middle half of inner margin and a strong one on outer margin near apex. .............. 20. nitiditheca sp. nov.
- Fifth sternite otherwise in structure. ..................................................... 5
5. Hind tibia with apical pd strong, at least about as long as apical ad. .......... 6
- Hind tibia with apical pd weak, if rather distinct it is shorter than apical ad. ... 8
6. Hairy species; cheeks with genal setae numerous in number and arranged in about 5–6 rows. .................................................. 25. askoldica Schnabl
- Not hairy species; cheeks with genal setae not numerous in number and arranged in 1–2 rows. ................................................................. 7
7. Mid femur with strong pv on whole length; cheeks more than 1.5 times as high as A2-width. 22. okai sp. nov.
- Mid femur with strong pv on basal half; cheeks less than 1.5 times as high as A2-width. 26. pseudomaculipes (Strobl)
8. Mid and hind femora largely yellowish; haustellum with mentum polished. .... 9
- Mid and hind femora wholly blackish or dark brownish; haustellum with mentum pollinose. .......................................................... 10
3. Haustellum with mentum pollinose; hypopygium as in Figs. 353–354. ........ 23. nitiditheca sp. nov.

Hind tibia with apical pd strong, at least about as long as apical ad. .......... 6
- Hind tibia with apical pd weak, if rather distinct it is shorter than apical ad. ... 8
6. Hairy species; cheeks with genal setae numerous in number and arranged in about 5–6 rows. .................................................. 25. askoldica Schnabl
- Not hairy species; cheeks with genal setae not numerous in number and arranged in 1–2 rows. ................................................................. 7
7. Mid femur with strong pv on whole length; cheeks more than 1.5 times as high as A2-width. 22. okai sp. nov.
- Mid femur with strong pv on basal half; cheeks less than 1.5 times as high as A2-width. 26. pseudomaculipes (Strobl)
8. Mid and hind femora largely yellowish; haustellum with mentum polished. .... 9
- Mid and hind femora wholly blackish or dark brownish; haustellum with mentum pollinose. .......................................................... 10
9. Body in pollinosity rather thick and more or less tinged with yellow; parafrontals contiguous to each other; 5th sternite and hypopygium as in Figs. 383–386. .............. 28. nigrogenis sp. nov.
- Body in pollinosity rather thin and not tinged with yellow; parafrontals separated from each other by linear interfrontalia; 5th sternite and hypopygium as in Figs. 374–382 ................................ 27. maculipedella sp. nov.
10. Mid tibia without ad; notopleura with some accessory setulae; 5th sternite and hypopygium as in Figs. 335–339 ..................................... 19. parvicornis (Malloch)
- Mid tibia with ad; notopleura with or without accessory setulae; 5th sternite and hypopygium otherwise in structure. ...................... 11
11. Epistoma situated distinctly behind frons at lunule; frons wider than anterior ocellus; profrons wider than A2. ................................. 12
- Otherwise in combination of characters. .................................................. 16
12. Arista practically bare; pra distinctly shorter than posterior ntpl. ............ 21. isikariana sp. nov.
- Arista distinctly pubescent although short; pra at least as long as posterior ntpl. .............................................................. 13
13. Abdomen with median vitta very narrow; 5th sternite and hypopygium as in Figs. 330–334. .................................................. 18. sanctimarei (Czerny)
- Abdomen with median vitta broad; 5th sternite and hypopygium otherwise in structure. ................................................................. 14
14. Fifth sternite (Figs. 290 & 291) with processes very long and narrow, and setose only at base and apex. ................................. 8. seneziella (Meade)
- Fifth sternite with processes not so long, and setose from base to apex. .... 15
15. Larger species, body-length 6–6.3 mm; 5th sternite (Figs. 300 & 301) densely setose along inner margin of each process. ............. 10. higuchii sp. nov.
- Smaller species, body-length 4.4 mm; 5th sternite (Figs. 288 & 290) sparsely setose along inner margin of each process. .......... 9. karibae sp. nov.
16. Pra at most as long as posterior ntpl. .................................................. 17
- Pra longer than posterior ntpl. .............................................................. 23
17. Hind femur with no distinct pv except for preapical ones. .... 16. hucketti (Ringdahl)
- Hind femur with a few or some distinct pv apart from preapical ones. ....... 18
18. Mid femur with a few or some distinct av on basal half even if short. ....... 19
- Mid femur with no distinct av. .................................................. 22
19. Mesopleura with 1–2 distinct anterior mpl. ............................. 20
- Mesopleura with no distinct anterior mpl. ............................. 21
20. Epistoma distinctly projecting forwards beyond frons at lunule; parafrontals
    usually with a minute ors; $t_2$ usually with av. ............ 5. angulosa (Ringdahl)
- Epistoma situated a little behind frons at lunule; parafrontals without ors; $t_2$
    without av. ............................................... 2. subfuscisquama Ringdahl
21. Mesonotum with strong pre acr, which are longer than pra; 5th sternite (Fig.
    329) with a dense fringe of stiffish setulae along inner margin of each process.
    ........................................................................... 17. macra Karl
- Mesonotum with only fine pre acr, which are shorter than pra; 5th sternite (Fig.
    274) with a sparse fringe of fine setulae along inner margin of each process.
    ........................................................................... 4. rubrigena Schnabl
22. Epistoma more or less projecting forwards beyond frons at lunule; palpi only
    a little shorter than fore metatarsus; 5th sternite (Figs. 282) shallowly cleft on
    caudal margin. ................................................. 6. rectangularis Ringdahl
- Epistoma more or less behind frons at lunule; palpi much shorter than fore
    metatarsus; 5th sternite (Fig. 305) deeply cleft on caudal margin.
    ........................................................................... 11. sitayuma sp. nov.
23. Parafemora with 1 ors. ............................................................ 24
- Parafemora with no ors. .......................................................... 25
24. Mesonotum with 1 pair of strong pre acr; epistoma more or less projecting
    forwards beyond frons at lunule. .................................. 15. appendiculata (Malloch)
- Mesonotum with 3 pairs of strong pre acr; epistoma projecting forwards at most
    as far as frons at lunule. ....................................... 7. profuga (Stein)
25. Epistoma distinctly projecting forwards beyond frons at lunule. .... 3. sansa sp. nov.
- Epistoma not projecting forwards beyond frons at lunule. ........... 26
26. Profrons and cheeks respectively much wider and higher than $A_4$-width;
    haustellum much lengthened. ..................................... 14. souchi (Hardy)
- Profrons and cheeks respectively as wide and high as $A_4$-width; haustellum
    not so lengthened. ............................................. 27
27. Palpi yellowish on basal half, and darkened apically; mesonotum mostly blackish
    when viewed from front; cercal plate (Fig. 306) with apical projections much
    different in length. ............................................ 12. gnava (Meigen)
- Palpi blackish, at most dark brownish basally; mesonotum brownish grey when
    viewed from front; cercal plate (Fig. 310) with apical projections nearly same in
    length. .............................................................. 13. dziedzickii Séguy

*1. Pegohylemyia striolata (Fallén)
   (Figs. 258–262)

(Anthomyia) discreta var. fugitiva Schnabl, in Schnabl & Dziedzicki, 1911: 268. Pegomyia

Material examined. HOKKAIDO — Nopporo, 4♂♀, 26-viii-67; Mt. Soranuma,
1♂, 30-viii-67 (K. Kusigemati); Ōnuma, 1♂, 12-ix-66. HONSAN — Mt. Senjō,
Nagano-ken, 1♂, 10-vii-71; Mt. Shirouma, Nagano-ken, 2♂♀, 5-viii-70.

♂. Body-length 4.5–5.5 mm. Interfrontalia brownish to black in ground
colour. Abdomen with broad median vitta and broad fore marginal bands;
asal sclerite shining. Wings more or less tinged with dark brown; calytrae pale
yellow, rather distinctly on margin; halteres dark brown at base and yellow at
knob.
Frons as wide as or a little wider than anterior ocellus; interfrontalia linear caudad, about half as wide as anterior ocellus, and with 2 pairs of distinct if, the setae of the lower pair being stronger than those of the upper; parafrontals with many ori of various length; A₉ about 1.6–2 times as long as wide; epistoma slightly projecting forwards beyond frons at lunule.

Mesonotum with 3–4 pairs of fine pre acr, the rows being more or less closer together than to dc, and often with 1 or a few accessory setulae between the rows; pra longer than anterior ntpl. Abdomen with prebasal sclerite of hypopygium (6th tergite) setose on hind margin.

Fore tibia with 1 ad 1–2 (usually 1) pv, the ad being short and fine, sometimes indiscernible; t₄ with 1 ad (in 2 specimens with 2 ad on one body-side), 2 pd and 2–3 (usually 2) pv; t₃ with 2–3 av, 3–5 ad, 3–5 (usually 3–4) pd and 2–5 pv.

♀. Unknown to me.

Distribution. Japan; Kamchatka; Siberia; Europe.

This species is widely distributed in the Palaearctic region and variable in some characters, e.g. in the width of the frons and in the chaetotaxy of the legs. So that it was described under various names as distinct species or varieties. A detailed synonymy of this species was recently given by Hennig (1970), who applied "striolata" to this species as the valid name instead of "discreta" which had been used by many authors up to that time.

The Japanese form agrees better with the form described as discreta var. angustifrons Ringdahl from Kamchatka rather than with the nominate form from Europe in having the frons less than twice as wide as anterior ocellus and having the mid tibia usually with only 1 ad. However, some forms with a such narrow frons, e.g. quadrirseta Ringdahl and discreta var. fugitiva Schnabl, are also found in Europe. It is unlikely that these forms are distinct taxa.

*2. Pegohylemyia subfuscisquama Ringdahl
(Figs. 263–266)


Material examined. HOKKAIDO — Mt. Daisetsu, 1 ♂, 20-vii-68.

♂. Body-length 5 mm. Wings with a brownish yellow tinge, rather distinctly yellow at base; calyptrae yellowish.

Frons slightly narrower than anterior ocellus; interfrontalia not interrupted though very narrow; parafrontals with many ori of various length; cheeks with genal setae in 2 rows; epistoma a little behind frons at lunule; A₉ about 1.5 times as long as wide; aristal pubescence distinct though shorter than basal diameter of arista.

Mesonotum with 2 pairs of rather strong or distinct pre acr and 2 pairs of fine ones, and with some accessory setulae between the rows, which are separated from each other by a distance more or less longer than that between dc and acr; pra about as long as posterior ntpl.

Fore tibia with 1 fine ad and 1 pv; t₄ with 1 ad, 2 pd and 2 pv; t₃ with 2 av, 7 ad, 4 pd and 4–6 pv, apical pd being weak. Wings with costal thorns vestigial.

♀. Unknown.

Distribution. Japan; Europe.
3. Pegohylemyia sansa sp. nov.  
(Figs. 267–270)

Type-material. HONSU – Mt. Kiso-Komagatake, Nagano-Ken, 1 ♂ (holotype), 27-vii-70.

♂. Body-length 5.1 mm; wing-length 5.2 mm. Interfrontalia orange yellow on lower half and brownish on the upper, with whitish pollen; parafacials and cheeks yellowish, and somewhat darkened along eye-margins, with pale yellowish pollen; antennae and palpi blackish; haustellum with mentum blackish and pollinose; occiput blackish in ground colour and pale greyish in pollinosity, which is more or less tinged with brown and blue. Thorax blackish or dark brownish in ground colour; mesonotum brownish grey pollinose, with median vitta moderate in width and visible from both front and behind. Abdomen dark brownish in ground colour, and more or less brownish yellow in pollinosity; median vitta rather broad and obscurely margined; each tergite with a dark triangular marking based on fore margin of the tergite in some lights. Legs dark brownish. Wings with a brownish yellow tinge, rather distinctly yellow at base; calyptrae yellow; halteres
yellow at knob.

Frons a little more than twice as wide as anterior ocellus; interfrontalia about twice as wide as anterior ocellus, with a pair of if, which are somewhat shorter than ocellar setae; parafrontals with about 4 strong and some fine ori and no ors; A₃ shrunk and cannot be measured, probably less than twice as long as wide; aristal pubescence distinct although shorter than basal diameter of arista; profrons slightly wider than A₂-length; cheeks about as high as A₄-length, with genal setae short and in 2 rows; epistoma rather distinctly projecting forwards beyond frons at lunule; haustellum slender.

Mesonotum with about 4 pairs of pre aer, the setae of the middle 2 pairs being rather distinct, and with some accessory setulae between the rows, distance between the rows being about half as long as that between dc and aer; 2nd ph distinguishable from accessory setulae although weak; pra slightly longer than posterior ntpl; notopleura with no accessory setulae; mesopleura with 2 rather distinct anterior mpl, and with 1 long and 1 short pstg and about 6 associated setulae; stpl 1:2; scutellum with 7–8 accessory setulae on each lateral side dorsally and bare on dorsal centre.

Abdomen depressed and nearly parallel-sided, slightly more than twice as long as wide; cereal plate (Fig. 267) with 3 long apical projections.

Fore tibia with 1 short ad and 1 pv; t₃ on basal half with some short av and some long pv, the longest pv distinctly longer than height of the femur; t₄ with 1 ad, 2 pd and 2 pv; t₅ with 6–7 long av, the longest one about twice as long as height of the femur, and with 1–2 pv in basal and apical fourth respectively, the longest one at basal fourth about 1.5 times as long as height of the femur; t₆ with 3 av, 4 ad, 4 pd and 5 pv, apical pd being weak. Wings with costal thorns minute; costa sparsely haired ventrally; m-m more or less oblique and slightly sinuate.

♀. Unknown.


In Hennig's key to the Palaearctic species of Pegohylemyia based on the male genital structures (Hennig, 1970) the present species runs to P. gentianae (Pandellé) by having the cercal plate divided into 3 projections at apex and having the surstyli cleft apically. P. sansa, however, can be readily distinguished from gentianae by the following aspects: — Cheeks with genal setae in 2 rows; wings with costal thorns minute; f₃ with av short; cercal plate with projections all narrow.

*4. Pegohylemyia rubrigena Schnabl
(Figs. 271–274)


♀. Body-length 5–6 mm. Wings tinged with brown, distinctly yellowish at base; calyptrae yellow; halteres dark reddish brown at base, and yellow at knob.

Frons more or less narrower than anterior ocellus; interfrontalia not interrupted although much narrower caudad; parafrontals with 5–7 strong and some
fine and short ori and no ors; \( A_3 \) 1.7–1.8 times, at most twice, as long as wide; aristal pubescence not longer than basal diameter of arista; profrons more or less narrower than \( A_3 \); cheeks usually about as high as \( A_3 \)-width; epistoma slightly projecting forwards beyond frons at lunule.

Mesonotum with fine pre acr and with many fine accessory setulae between the rows of acr, which are separated from each other by a distance longer than that between dc and acr; pra about two-thirds to four-fifths of posterior ntpl in length.

Fore tibia with 1 short ad and 1 \( pv \); \( t_2 \) with 1–2 (usually 1) ad, 1–2 (usually 2) \( pd \) and 1–3 (usually 2) \( pv \); \( t_3 \) with a row of long av, the longest one being about 1.5–2 times as long as height of the femur, and on basal half with a few or some \( pv \), the longest one about 1.3–1.7 times as long as height of the femur; \( t_3 \) with 2–3 av, 4–7 (usually 4–5) ad, 3–5 \( pd \) and 2–6 \( pv \).

♀. Unknown.

Distribution. Japan; Kamchatka; Siberia; Iceland; Europe; Greenland.

The present specimens agree well with a redescription of rubrigena given by Hennig (1970) in main features except in the 3rd antennal segment which is not longer than twice of its own width.

Figs. 267–270. Pegohylemyia sansa sp. nov., ♂: 267, hypopygium, dorsal view; 268, ditto, lateral view; 269, aedeagus; 270, 5th sternite, ventral view.
Figs. 271–274. Pegohylemyia rubrigena Schnabl, ♂: 271, hypopygium, dorsal view; 272, ditto, lateral view; 273, aedeagus; 274, 5th sternite, ventral view.
5. *Pegohylemyia angulosa* (Ringdahl)
(Figs. 275-278)


Material examined. HOKKAIDO — Mt. Daisetsu, 2♀, 4-viii-60 (S. Ueda), 2♀♂, 1♀, 26-29-vii-67 (M. Miyazaki & K. Kusigemati), & 2♀, 20-vii-68; Shikaribetsuko, 1♀, 14-vii-66; Akkeshi, 6♂♂, 2♀♀, 18-19-vii-66; Daikokujima, 2♂♂, 19-vii-66; Shiretoko, 1♀, 17-viii-69 (H. Takizawa); Kunneppu, 1♀, 25-vii-66; Jōzankei, 1♀, 23-vi-68 (H. Takizawa).

♀. Body-length 5.4–6.3 mm. Interfrontalia yellowish or brownish on lower half or near lunule, sometimes wholly blackish, and with whitish pollen, which is sometimes tinged with yellow; parafacials often more or less brownish in ground colour near lunule, whitish grey and slightly yellowish in pollinosity; cheeks blackish, with pale grey pollen which is often more or less tinged with yellow or brown; occiput bluish grey and more or less brownish in pollinosity; antennae and palpi blackish or dark brownish; haustellum with mentum blackish or dark brownish, and thickly pollinose. Thorax usually rather distinctly brownish yellow in pollinosity; mesonotum when viewed from front becoming darker, and when viewed from behind becoming paler, with rather broad median and broad lateral vittae, and in some lights with narrow paramedian vittae along rows of *dc*. Abdomen densely covered with pale yellowish grey pollen which is more or less tinged with brownish and greenish tone; median vitta narrow and sharp. Wings with a brownish yellow tinge, strongly yellow at base; calyptrae strongly yellow; halteres reddish brown at base and yellow at knob.

Frons usually more or less narrower than anterior ocellus, at most as wide as the latter; interfrontalia linear caudad and not interrupted, with *if* as long as or a little shorter than ocellar setae; parafrontals with 3–4 strong, a few fine and some vestigial *ori*, and usually with 1 vestigial *ors*; *Aa* 2–2.5 times as long as wide; arista distinctly pubescent, the longest hairs more or less longer than basal diameter of arista; profrons about as wide as *Aa*; cheeks about 0.7–0.8 times as high as *Aa*-width, with genal setae short and fine, at most in 2 rows; epistoma distinctly projecting frowards beyond frons at lunule; haustellum with mentum much longer than palpi.

Mesonotum with some pairs of *pre aer*, of which 1–2 pairs are strong, distance between the rows being distinctly longer than that between *dc* and *acr*; about 10 accessory setulae present between the rows of *pre aer*; *pra* more or less shorter than posterior *ntpl*, at most as long as the latter; *stpl* 1:3, the lowest posterior much shorter than the upper although much stronger than accessory setulae.

Fore tibia with 1 distinct *ad* and 1 *pv*; *t₁₅* on basal half with 3–5 distinct *av*, the longest one usually more or less shorter than height of the femur, and on basal half with 4–6 *pv* more or less weaker than *av*, proximal one the longest, being as long as or a little longer than height of the femur; *t₄* with 0–2 (usually 1) *av*, 1 *ad*, 2 *pd* and 1–3 (usually 2) *pv*; *t₅* with a row of long *av*, the longest one about 1.5–2 times as long as height of the femur, and on basal half with 3–5 *pv* more or less weaker than *av*; *t₆* with 3–4 (rarely 5) *av*, 5–6 *ad*, 5–6 *pd* and 3–6 (rarely 2) *pv*. Wings with costal thorns rather long and strong, or short and distinct; costa not haired on ventral surface; *m-m* nearly erect or rather oblique, and more or less sinuate.

♀. Body-length 5.7–6.5 mm. Frons 0.36–0.39 times as wide as head; para-
frontals with 1–2 strong and a few vestigial ori, and with 1 proclinate and 2 reclinate ors. Mesonotum with pre acr finer than in male, the rows being separated from each other by a distance as long as or slightly longer than that between dc and acr; stpl 1:2. Mid femur on middle half with a few av, and on basal third with a few pv; t2 with 1–2 (usually 1) av; t3 usually with no pv. Wings with costal thorns strong.

Distribution. Japan; Kamchatka.

*6. Pegohylemyia rectangularis Ringdahl
(Figs. 279–282)


Material examined. HOKKAIDO — Mt. Daisetsu, 1 ♂, 29-vii-59 (S. Ueda), 2 ♂♂, 3 ♀♀, 4-viii-60 (S. Ueda), 1 ♂, 26-vii-67 (K. Kusigemati), & 9 ♂♂, 20-21-vii-68.

♂. Body-length 4.4–5.2 mm. Interfrontalia orange yellow to brown and becoming darker caudad, rarely blackish wholly, and with whitish grey pollen; parafacials and cheeks yellowish to brownish and partly or largely darkened, with whitish grey pollen which is more or less tinged with yellow; antennae and palpi blackish or dark brownish; haustellum with mentum blackish or dark brownish, and distinctly pollinose. Thorax blackish or dark brownish in ground colour and brownish grey in pollinosity; mesonotum faintly vittate, in some lights with rather broad median and narrow paramedian vittae. Abdomen blackish or dark brownish in ground colour and greyish in pollinosity, which is more or less tinged with brown or brownish yellow; median vitta narrow or moderate and not sharp; fore marginal bands absent, or narrow if present. Legs blackish or dark brownish. Wings faintly or rather distinctly tinged with brown, more or less yellowish at base; calyptrae yellowish.

Frons about as wide as anterior ocellus; interfrontalia more or less narrower than anterior ocellus, with if more or less shorter than ocellar setae; parafrontals with 6–8 strong and some fine or vestigial ori, and with no ors; A9 about 1.5–1.7 times as long as wide; profrons as wide as or slightly wider than A9; parafacials hardly narrowing ventrad; cheeks about as high as A9-width, with genal setae in 2 rows; epistoma projecting forwards as far as or slightly beyond frons at lunule; haustellum with mentum more or less longer than palpi.

Mesonotum with some accessory setulae between the rows of pre acr, distance between the rows about as long as that between dc and acr; pra about as long as posterior ntpl; stpl 1:3, the lowest posterior weaker than the uppers.

Fore tibia with or without 1 pv and usually with no ad, at most with 1 minute ad at apical third; f2 on basal half with some av, which are shorter than height of the femur, and on basal half with some pv longer than height of the femur; t3 with 1 (rarely 2) ad, 2 (sometimes 1) pd and 1–2 (rarely none) pv; f3 with a row of 7–9 long av, the longest one about 1.5–2.2 times as long as height of the femur, and on basal half with 3–4 long pv, the longest one about 1.3–1.7 times as long as height of the femur; t4 with 2 (sometimes 1) av, 3–5 ad, 3–5 (rarely 2) pd and 1–6 pv. Wings with costal thorns minute; m–m slightly oblique and hardly sinuate.

♀. The female of this species has been unknown. On the basis of the present specimens (3 ♀♀) a brief description will be given as follows: — Interfrontalia
orange yellow, more or less darkened on upper half; parafacials and cheeks largely yellowish, darkened only along eye-margin, and with pale yellowish pollen. Mesonotum and abdomen hardly vittate. Frons about 0.43–0.47 times as wide.

Figs. 275–278. Pegohylemyia angulosa (Ringdahl), ♂: 275, hypopygium, dorso-lateral view; 276, ditto, lateral view; 277, aedeagus; 278, 5th sternite, ventral view.

Figs. 279–282. Pegohylemyia rectangularis Ringdahl, ♂: 279, hypopygium, dorsal view; 280, ditto, lateral view; 281, aedeagus; 282, 5th sternite, ventral view.

Figs. 283–286. Pegohylemyia profuga (Stein), ♂: 283, hypopygium, dorsal view; 284, ditto, lateral view; 285, aedeagus; 286, 5th sternite, ventral view.
as head; interfrontalia with if strong; parafrontals with 4–5 strong or distinct ors mingled with some vestigial setulae, and with 3 (2 on the right body-side of 1 specimen) ors, some vestigial setulae being present outside ors; cheeks with genal setae short and fine, the upper row with only a few setae. Stpl 1:2, the lower posterior less than half of the upper in length. Fore tibia with 1 distinct ad and with or without 1 minute pv; t₃ on basal half with 1 or a few av and a few pv, both of which are shorter than height of the femur; t₄ with 1 (2 on the left body-side of 1 specimen) ad, 2 pd and 1–2 pv, and in 1 specimen with 1 minute av at apical third; t₅ with about 6 av shorter than those of male, and on basal half with a few finer pv; t₆ with 2–3 (usually 3) av, 4–6 ad, 3–4 pd and no pv. Wings with costal thorns only a little stronger than those of male.

Distribution. Japan; Sweden.

*7. *Pegohylemyia profuga* (Stein)  
(Figs. 283–286)


♀. Body-length 5.4–6.8 mm. Abdomen bluish grey to brownish grey in pollinosity, and with metallic reflections in some lights; median vitta and fore marginal bands sharp and brownish pollinose. Wings distinctly tinged with brownish yellow, at base more yellowish; calyptrae yellow or brownish yellow.

Frons narrower than anterior ocellus; interfrontalia linear caudad, not interrupted; parafrontals with 1 vestigial ors; profrons and cheeks respectively about as wide and high as A₅-width; A₅ more or less longer than twice of the width; arista with the longest hairs about twice as long as basal diameter of arista; epistoma more or less behind frons at lunule.

Mesonotum with about 3 pairs of strong pre acr, and with a few or some accessory setulae between the rows, distance between the rows being nearly equal to that between dc and acr and somewhat becoming shorter caudad; 2nd ph often rather distinct; pra about as long as anterior ntpl.

Mid tibia without av; t₃ with 2–3 av, 4–5 ad, 3 pd and 3–4 pv, apical pd being weak. Wings with costal thorns rather strong or distinct; m-m oblique and sinuate.

♀. Unknown.

Distribution. Japan; Europe; North America.

The Japanese form is not seriously different from the European form redescribed by Hennig (1970) except for the presence of 1 vestigial ors.

*8. *Pegohylemyia seneciella* (Meade)  
(Figs. 287–291)


♂. Body-length 5 mm. Parafacials and cheeks with a brownish yellow tinge in pollinosity. Abdomen with median vitta broad and interrupted at hind margin of each tergite; 3rd tergite with narrow fore marginal band. Wings at base and calyptrae yellow.

Frons about 1.5 times as wide as anterior ocellus; interfrontalia about as wide as anterior ocellus, with if somewhat longer than ocellar setae; parafrontals without ors; A₃ nearly twice as long as wide; arista with the longest hairs a little longer than basal diameter of arista; profrons and cheeks respectively about 1.5 times as wide and high as A₃-width; epistoma distinctly behind frons at lunule.

Mesonotum with a few accessory setulae between the rows of pre acr, which are separated from each other by a distance nearly equal to that between dc and acr; pra about as long as posterior ntpl. Abdomen long-ovoid, nearly twice as long as wide.

Fore tibia with 1 pv and without ad; f₂ with no strong av, only a row of fine ones, of which proximal ones are longer and stronger than distal ones although distinctly shorter than height of the femur, and with a row of pv becoming shorter towards apex of the femur, proximal ones being more or less longer than height of the femur; t₃ with 1 ad, 2 pd and 2 pv, and without av; t₄ with a row of alternately long and short av, which are respectively becoming longer towards apex of the femur, the longest one about 1.7 times as long as height of the femur, and with a row of pv, which are much shorter than height of the femur except for a preapical one more or less longer than the height; t₅ with 3 av, 4-5 ad, 3 pd and 3-5 pv, apical pd being weak. Wings with costal thorns vestigial and hardly distinguishable from costal setulae; m-m not oblique and slightly curved inwards.

♀. Unknown to me. According to Collin (1936) through Hennig (1970) the female of this species can be distinguished from that of the related species Pegohylemyia jacobaeae (Hardy) by the ventrally bare costa, the weak apical pd on the hind tibia and the ntpl arranged in 1:2.

Host plants. Senecio jacobaea & Senecio aquaticus (in Europe, after Meade, 1892 through Hennig, 1970).

Distribution. Japan; Europe. This species was introduced to North America from France (Frick & Andres, 1967) and to New Zealand from England (Kelsey, 1955 through Hennig, 1970) for the biological control of the tansy ragwort, Senecio jacobaea.

The Japanese form is somewhat different from the European one redescribed by Hennig (1970) in having the mid and hind femora with shorter pv, yet in other features including the genital structures they agree well with each other.

9. Pegohylemyia karibae sp. nov.  
(Figs. 292–296)

Type-material. HOKKAIDO — Mt. Kariba, 1♀ (holotype), 19-23-vii-72.  
♂. Resembling that of seneciella. Body-length 4.4 mm; wing-length 4.1 mm. Interfrontalia brownish on lower half and blackish on the upper; parafacials and cheeks dark brownish in ground colour and brownish grey in pollinosity; antennae
blackish, on A₂ more or less brownish; palpi dark brownish; haustellum with mentum blackish, and thinly pollinose; occiput blackish in ground colour and more or less tinged with blue and brown in pollinosity. Thorax blackish in ground colour and brownish grey in pollinosity; mesonotum thinly pollinose, when viewed from front and above largely blackish, and when viewed from behind broadly blackish laterally, very faint median vitta being visible in some lights. Abdomen blackish in ground colour and a little brownish in pollinosity; median vitta broad, and interrupted at hind margin of each tergite; narrow fore marginal bands present. Legs dark brownish. Wings distinctly tinged with brown, more or less yellowish at base; calyptrae yellowish, more or less tinged with brown; halteres yellow at knob.

Frons slightly less than twice as wide as anterior ocellus (the measurement may not be exact for a contracted condition of the eyes); interfrontalia more or less
wider than anterior ocellus, with if a little shorter than ocellar setae; parafrontals with 5 long and some short and fine ori, and no ors; A₉ about 1.6 times as long as wide; aristal hairs not longer than basal diameter of arista; profrons about 1.2 times as wide as A₉; cheeks more or less higher than profrons-width, with genal setae in 2 rows; epistoma distinctly behind frons at lunule; haustellum not lengthened.

Mesonotum with 2–3 pairs of pre acr, distance between the rows about half as long as that between de and acr; no accessory setulae present between the rows of pre acr; ph not duplicated; pra as long as or slightly longer than posterior ntpl; mesopleura with 1 distinct anterior mpl; and with 2 strong pstg and 2 fine associated setulae; stpl 1:2; scutellum with only a few accessory setulae on dorsal surface.

Abdomen depressed, about 2.3 times as long as wide, and slowly narrowing caudad; prebasal sclerite with some setulae on hind margin laterally, a few of them being rather long; 5th sternite (Figs. 295 & 296) with processes not so long as in seneceilla and sparsely setose along inner margins except on bases which are rather densely setose; postgonites (Fig. 294) not bifurcated apically as in seneceilla.

Fore tibia with 1 pv and no ad; t₅ with a row of short av becoming shorter and finer towards apex of the femur, proximal ones being rather distinct although shorter than height of the femur, and with a row of pv which are longer and stronger than av although becoming shorter and finer towards apex of the femur; t₅ with 1 ad (invisible on the right body-side), 1 pd (invisible on the right body-side) and 1 p–pv, and with no av; t₅ with a row of av, the longest one being about 1.5 times as long as height of the femur, and with 3 and 1 pv respectively on basal half and near apex, the setae being rather distinct and the longest one near middle is about as long as height of the femur; t₆ with 2 av, 3–4 ad, 2 pd and 1 pv, apical d being shorter and weaker than apical av and only a little longer than height of the tibia, apical pd weak. Wings with costal thorns vestigial and indistinguishable from costal setulae; costa bare on ventral surface; m–m erect and straight.

♀. Unknown.


Judging from the shape of the 5th sternite and hypopygium P. karibae is closely related to P. seneceilla although the characters are different enough to separate it from the latter as distinct.

10. Pegohylemyia higuchii sp. nov.
(Figs. 297–301)

Type-material. HOKKAIDO — Rebun-tō, 2♂♂ (one the holotype), 21-vii-72 (H. Higuchi); Mt. Kariba, 1♂, 19–23-vii-72.

♂. Body-length 6–6.3 mm; wing-length 5.5–5.7 mm. Body including appendages black or blackish in ground colour. Pollinosity more brownish in the specimens from Rebun-tō, more bluish in the specimen from Mt. Kariba. In the specimens from Rebun-tō: — Interfrontalia whitish grey pollinose; parafacials whitish grey and slightly yellowish in pollinosity; cheeks pale yellowish pollinose; haustellum with mentum thinly pollinose; thorax brownish grey pollinose, darker on mesonotum; mesonotum when viewed from front almost wholly darkened, and when viewed from behind darkened between rows of acr and outside rows of de except between ia and sa; abdomen pale brownish grey pollinose, with median
Figs. 297–301. Pegokylemyia higuchii sp. nov., 3: 297, hypopygium, dorsal view; 298, ditto, lateral view; 299, aedeagus; 300, 5th sternite, ventral view; 301, ditto, lateral view.

vitta broad and interrupted at hind margin of each tergite; 5th tergite with broad fore marginal band disappearing in low angle of view. In the specimen from Mt. Kariba: — Parafacials and cheeks whitish grey and more or less bluish in pollinosity; thorax in pollinosity bluish grey, on pleura more or less brownish in part; mesonotum when viewed from each of front and behind with broad black vittae between rows of acr and between rows of dz and ia, and narrowly blackish outside sa, these markings being brownish pollinose; abdomen in pollinosity bluish grey, and with a brownish tinge near markings and on 5th tergite. Wings strongly tinged with brownish yellow, at base more yellowish; calyptrae yellow, more or less tinged with brown; halteres yellow at knob.

Frons about 1.4–1.7 times as wide as anterior ocellus; interfrontalia as wide as or a little narrower than anterior ocellus, with a pair of strong if, which are about as long as ocellar setae, and below this pair of if with some irregular pairs of fine setulae; parafrontals with 5–6 strong, some slender and some vestigial ori, and without ors; A₄ as long as or slightly shorter than twice of the width; arista distinctly pubescent, the longest hairs about as long as basal diameter of arista;
profrons about 1.3-1.4 times as wide as Aa; cheeks as high as or slightly higher than profrons-width, with genal setae strong and in 2-3 rows; epistoma distinctly behind frons at lunule; haustellum not lengthened.

Mesonotum with about 4 pairs of rather distinct or strong pre acr, the setae of the 2nd pair being the strongest, about two-thirds as long as 1st pre acr, and sparsely (in the specimens from Rebun-tō) or rather densely (in the specimen from Mt. Kariba) setulose between the rows, which are separated from each other by a distance as long as or slightly shorter than that between acr and acr; prsc acr more or less longer and stronger than discal setae on scutellum; pra as long as or a little shorter than posterior ntpl; notopleura with 1 accessory setula in the paratype from Rebun-tō; mesopleura with 1 strong or distinct anterior mpl, and with 1 strong and 1 weak pstg and about 10 fine associated setulae; stpl 1:2, if 1:3 (in the paratype from Rebun-tō) the lowest posterior is fine; scutellum nearly bare on dorsal surface, and with 4-5 setulae between the apical setae.

Abdomen long-ovoid, depressed on basalar half and half-depressed on caudal half, about as long as thorax, and about 1.7-1.9 times as long as wide; 5th sternite (Figs. 300 & 301) with processes densely setose along inner margin as well as at base; cercal plate with 2 long apical projections, between which a small protuberance is present (Fig. 297), the long apical projections being distinctly sinuate in profile (Fig. 298); postgonites (Fig. 299) bifurcated apically.

Fore tibia with 1 short ad and 1 pv, apical ad rather strong; f₂ with no distinct av and on basal half to two-thirds with some (4-7) distinct or strong pv, the longest one distinctly longer than height of the femur; t₂ with 1 ad, 2 pd and 2-3 (usually 2) pv; t₃ with a row of about 6-10 strong av on apical two-thirds to whole length, the longest one about 1.5 times as long as height of the femur, and with a row of short pv apart from 1-2 long preapical ones; t₄ with 2-4 av, 4-6 ad, 3-4 pd and 2-4 pv, apical pd being weak. Wings with costal thorns minute and hardly distinguishable from costal setulae; costa bare ventrally; m-m slightly or hardly oblique and nearly straight.

♀. Unknown.

Although the present species is more densely setulose and more stout than seneciella and karibae, they may be included in the same species-group on the basis of the 5th sternite and hypopygium.

11. *Pegohylemyia* *kitayamae* sp. nov.

(Figs. 302-305)

Type-material. HONSHŪ — Kitayama, Kyōto-fu, 2♂♂ (one the holotype), 2-iv-68.

♂. Body-length 4.7-4.8 mm; wing-length 4.7-5 mm. Interfrontalia largely yellow and thinly covered with whitish pollen; parafacials and cheeks yellowish, with whitish pollen; antennae blackish; palpi dark brownish; haustellum with mentum dark brownish, with greyish pollen; occiput dark brownish or blackish in ground colour, with greyish pollen. Thorax on pleura dark brownish in ground colour and rather thinly greyish pollinose; mesonotum blackish in ground colour and very thinly greyish pollinose, hardly vittate, at most very faint median vitta being visible in some lights. Abdomen dark brownish in ground colour, thinly
covered with pale greyish pollen, and half-shining in some lights; median vitta moderate in width and rather obscure; tergites with faint fore marginal bands. Legs dark brownish. Wings tinged with brown, more or less yellowish at base; calypterae pale yellow, with brownish fringe; halteres yellow at knob.

Frons as wide as or a little narrower than anterior ocellus; interfrontalia linear caudad, with a pair of slender if, which are about as long as ocellar setae; parafrontals with 5–7 long and slender orl mingled with a few or some short and fine setulae, and without ors; A₃ about 1.5 times as long as wide; arista nearly bare; profrons as wide as or slightly narrower than A₃; cheeks somewhat less high than A₃-width, with genal setae in 2 rows; face distinctly concave near epistoma; epistoma slightly or rather distinctly behind frons at lunule; occiput swollen on lower part; palpi shorter than A₂ and A₃ combined, and somewhat broadening apicad; haustellum more or less lengthened, distinctly longer than palpi.

Mesonotum with 5 pairs of fine pre acr, distance between the rows about two-thirds of that between dc and acr; only 1–2 accessory setulae present between the rows of pre acr; pra a little shorter than posterior ntpl; notopleura with 1–2 accessory setulae above anterior ntpl; mesopleura without distinct anterior mpl, and with 2 strong pstg and a few fine associated setulae; stpl 1:2; scutellum nearly bare dorsally.

Abdomen depressed, nearly parallel-sided, and only a little less than twice as long as wide; prebasal sclerite with 1 or a few setae; 5th sternite and hypopygium as in Figs. 302–305.

Fore tibia with 1 vestigial ad and 1 short and fine pv; f₃ on basal third with some av and pv respectively shorter and longer than height of the femur; t₄ with 1 ad, 2 pd and 2 pv; f₃ with a row of av becoming longer and stronger towards apex of the femur, the longest one being much longer than height of the femur, and on basal half to two-thirds with some pv more or less longer than height of the femur; t₅ with 1–2 av, 4–6 ad, 3–5 pd and 4–7 pv. Wings with costal thorns practically absent; costa bare on ventral surface, and rather distinctly broadened at part meeting with R₁; R₁ on dorsal surface near costa with 1 (on the left) or 3 (on the right) minute setulae in the paratype; m–m nearly erect and faintly sinuate.

♀. Unknown.


At first sight the present species resembles Pegohylemyia dziedzickii Séguy, from which it can, however, be readily distinguished by the shorter pra and the more or less heart-shaped 5th sternite.

*12. Pegohylemyia gnava (Meigen)
(Figs. 306–309)


Material examined. HOKKAIDŌ — Mt. Daisetsu, 1♀, 23-vii-68; Mt. Soranuma, 1♂, 1-viii-68. HONSHU — Mt. Daibosatsu, Yamanashi-ken, 2♂♂, 6-viii-69. ♀. Body-length 4.6–5.3 mm. Interfrontalia orange yellow on lower half and dark brownish on the upper, with whitish pollen; parafacials largely yellowish in ground colour and whitish yellow in pollinosity; cheeks yellowish or dark brownish in ground colour and more or less yellowish grey in pollinosity; palpi yellowish or brownish yellow at least on basal half and darkened apically. Mesonotum very
thinly covered with brownish grey or pale grey pollen, which is visible only in some lights, when viewed from behind the pollinosity is discernible before the suture along dark median vitta and along the suture, and is discernible behind the suture along rows of \(dc\) and on hind margin of mesonotum. Abdomen rather densely covered with greyish pollen which is more or less tinged with yellowish brown; median vitta broad and interrupted at hind margin of each tergite; 3rd to 5th tergites along median vitta obscurely darkened, the marking being broader cephalad and making a triangle with median vitta.

Frons about 1.5 times as wide as anterior ocellus; interfrontalia about as wide as anterior ocellus; \(A_3\) as long as or slightly less than twice of the width; arista with hairs as long as or a little longer than basal diameter of arista; epistoma more or less behind frons at lunule.

Mesonotum with \(pre\) acr-rows separated from each other by a distance about two-thirds or half of that between \(dc\) and acr; \(pra\) about as long as anterior ntpl; notopleura with 1–2 accessory setulae in 3 specimens of the 4 examined ones.

Mid femur near base with 1–2 \(av\) as long as or a little longer than height of the femur and with 2–4 \(pv\) more or less longer than height of the femur.

\( \hat{\varphi} \). Unknown to me.


Distribution. Japan; Europe.

The present specimens agree well with a redescription of *gnava* from Europe given by Hennig (1970) except in the wider frons, and they should be identified with that species. Hennig (l.c.) has also mentioned about a specimen (\( \hat{\delta} \)) from Manchuria as follows: “Im Museum Stuttgart befindet sich 1 \( \hat{\delta} \) aus der Mandschurei ..., das sich von europäischen Exemplaren im 5. Abdominalsternit nicht erkennbar, im Hypopygium nur durch die schlankerer Surstyli ... unterscheidet. An äusseren Merkmalen können nur die aschgraue, nicht braune Bestäubung des Mesonotum und die etwas breitere Stirn genannt werden: der Abstand der Augenränder entspricht in der oberen Stirnhälfte etwas der doppelten Breite des vorderen Oezellus.”, and “...., lasst sich zur Zeit kaum entschieden, ob das Tier zu einer ostasiatischen Subspecies oder einer eigenen (mit g n a v a dann aber auf jeden Fall nächstverwandten) Art gehört.” The discovery of the Japanese form identical with the European one in the surstyli may suggest that the Manchurian form is distinct from *gnava* although it seems to be closely related to the latter.

*13. *Pegohylemyia dziedzickii* Séguy

(Figs. 310–313)


Material examined. HOKKAIDÔ — Nopporo, \(1 \hat{\delta}, 9\text{-vi-67}\). HONSHÛ — Mt. Yatsugatake, Nagano-ken, \(2 \hat{\delta}, 2\text{-vi-67}\) (T. Kocha).

\( \hat{\delta} \). Closely resembling that of *gnava*. Body-length 4.3–4.4 mm. Interfrontalia brownish near lunule or yellowish on lower half and blackish on the upper, with whitish pollen; parafacials dark brownish or largely yellowish, with whitish grey pollen more or less tinged with yellow; cheeks dark brownish in ground colour
and more or less dullish grey in pollinosity; antennae blackish; palpi dark brownish or blackish. Mesonotum rather distinctly, though thinly, covered with pollen which is weakly or strongly tinged with brown, and with median vitta rather broad and continuous to scutellum. Abdomen in pollinosity a little tinged with yellow
or brown and blue also; median vitta moderate or rather broad and interrupted at hind margin of each tergite.

Frons as wide as or a little narrower than anterior ocellus. Mesonotum with pre acr-rows separated from each other by a distance nearly equal to that between dc and acr; notopleura with 2–4 accessory setulae in 2 specimens of the 3 examined ones. Cercal plate (Fig. 310) with 3 apical projections, which are not so different from each other in length. Mid femur with no distinct av, at most near base with a few or some fine ones shorter than height of the femur.

♀. Unknown.

Distribution. Japan; Europe.

According to Hennig (1970) the type-specimen of dziedzickii is missing. Comparing the genital structures of the specimens at hand with those of dziedzickii figured by Schnabl & Dziedzicki (1911) as brunnescens Zetterstedt I have come to the conclusion that the Japanese specimens should be identified with the present species. Although Hennig (l.c.) suppressed dziedzickii as a synonym of gnava, the former may be distinctly separated from the latter by the cercal plate with the apical projections of nearly same length.

*14. Pegohylemyia sonchi (Hardy)  
(Figs. 314–317)


Material examined. HOKKAIDÔ — Shiretoko, 1♂, 21-viii-68 (H. Torikura).

♂. Body-length 5.9 mm. Haustellum with mentum pollinose. Mesonotum thickly covered with pale brownish grey pollen, when viewed from behind with some blackish markings as follows: — Before the suture with a spot-like marking behind each humeral callus and a wedge-shaped one between rows of acr, and behind the suture with a wedge-shaped marking between dc and acr and a larger one between dc and ia, the median and paramedian markings touching the suture. Abdomen thickly covered with pale yellowish pollen, and when viewed from behind with sharp and narrow median vitta, which is interrupted at hind margin of each tergite; tergites brownish pollinose near median vitta, and without fore marginal band.

Frons about 1.7 times as wide as anterior ocellus; interfrontalia slightly wider than anterior ocellus; A3 slightly longer than twice the width; arista with the longest hairs about as long as basal diameter of arista; profrons and cheeks respectively about 1.8 times as wide and high as A3-width; cheeks with genal setae in 2 rows; epistoma about as far as frons at lunule; palpi slender, distinctly longer than A2 and A3 combined; haustellum slender, with mentum slightly longer than palpi.

Mesonotum with pre acr-rows separated from each other by a distance about half of that between dc and acr; pra about as long as anterior ntpl. Abdomen rather elongate, about 2.5 times as long as wide, and becoming a little narrower caudad.

♀. Unknown to me.

Host plants. Sonchus oleraceus (in Europe, after Hardy, 1872 through Hennig, 1970).
Distribution. Japan; Europe.

According to Hennig (1970: 346, in a key of Pegohylemyia) the parafacials of sonchi are somewhat narrower than A3. On the other hand the parafacials of the present specimen are evidently wider, even at the narrowest part about 1.6 times as wide as A3. So that the identification of the specimen with sonchi is quite tentative.

*15. Pegohylemyia appendiculata (Malloch)
(Figs. 318–321)


♂. Body-length ca. 6 mm. Mesonotum brownish grey pollinose, when viewed from behind with distinct median and lateral vittae, and in some lights with rather obscure paramedian ones along rows of dc. Abdomen with narrow and sharp median vitta, and without fore marginal band.

Frons about as wide as anterior ocellus; parafrontals with 1 fine ors; A3 slightly longer than twice the width; arista with the longest hairs more or less longer than basal diameter of arista; profrons and cheeks about 1.2 times as wide and high as A3-width respectively; epistoma a little projecting forwards beyond frons at lunule; palpi slender; haustellum with mentum rather distinctly longer than A2 and A3 combined.

Mesonotum with 1 pair of strong and some pairs of fine pre acr, and with a few accessory setulae between the rows, which are separated from each other by a distance nearly equal to or slightly shorter than that between dc and acr; pra

Figs. 318–321. Pegohylemyia appendiculata (Malloch). ♂: 318, hypopygium, dorsal view; 319, ditto, lateral view; 320, aedeagus; 321, 5th sternite, ventral view.
about as long as anterior *ntpl*.

Fore tibia with 1 *ad* and 1 *pv*, and in addition with 1 shorter *ad* in 1 specimen; *f*₂ with 5–7 short *av* on basal half or a little more, the longest one about two-thirds as long as height of the femur, and with 5–7 long *pv* on basal half, the longest one about 1.2–1.4 times as long as height of the femur; *t*₂ with 1–2 *ad*, 2 *pd* and 2 *pv*, and in 1 specimen with 1 *av*; *f*₃ with a row of long *av*, the longest one about 1.8 times as long as height of the femur, and on basal half to two-thirds with 4–6 *pv*, the longest one about 1.6–1.7 times as long as height of the femur; *t*₃ with 4–6 *av*, 4–5 *ad*, 3 *pd* and 4–6 *pv*. Wings with costal thorns strong.

♀. Unknown to me.

Distribution. Japan; North America.

The present specimens agree well with the original description of *appendiculata*, and they may be rightly identified with the species. Having read a redescription of *norvegiea* Ringdahl, 1952 given by Hennig (1970) I have found that the specimens also agree with *norvegiea* except in the epistoma and haustellum, which are as follows in *norvegiea*: “Mundrand im Profil hinter dem Vorderrande der Stirn. Rüssel kurz und breit, grau bestäubt.” The relationship of *appendiculata* and *norvegiea* is, therefore, open for further study.

Drew (1963) suppressed *Pegohylemyia* as a synonym of *Hylemya*. In consequence, *Hylemya appendiculata* Malloch, 1920 (nec *Hylemya appendiculata* (Bigot, 1885)=*H. brassicae* (Bouche, 1883)) was renamed *Hylemya ringdahl* Drew. In the present study *Pegohylemyia* is ranked as a good genus, so that the name *appendiculata* Malloch must be revived.

*16. Pegohylemyia hucketti* (Ringdahl)

(Figs. 322–325)


Material examined. HONSHO — Mt. Hodaka, Nagano-ken, 2♂♀, 3-viii-70.

♂. Body-length 5.2 mm. Mesonotum brownish grey pollinose, in some lights with paramedian vittae along rows of *de* apart from median and lateral vittae. Abdomen with median vitta moderate in width and sharp.

Frons a little wider than anterior ocellus; parafrontals with no *ors*; *A₉* about twice as long as wide; arista with hairs more or less longer than basal diameter of arista; profrons and cheeks respectively about as wide and high as *A₉*-width; cheeks with genal setae nearly in a row; epistoma as far as or slightly behind frons at lunule.

Mesonotum with 3 pairs of strong *pre acr*, setae of the middle pair being the strongest, and with 1 or a few accessory setulae between the rows, which are separated from each other by a distance nearly equal to that between *dc* and *acr*; *pra* about half as long as posterior *ntpl*.

Fore tibia with 1 *ad* and 1 *pv*; *f*₂ with no distinct *av*, and near base with some *pv* more or less longer than height of the femur; *t*₂ with 1 *ad*, 2 *pd* and 2 *pv*; *f*₃ with 6–9 strong *av*, the longest one about 1.5 times as long as height of the femur, and with no distinct *pv* except for preapical one(s); *t*₃ with 2 *av*, 5 *ad*, 3 *pd* and a few fine *pv*. Wings with costal thorns rather distinct.
♀. Unknown to me.
Distribution. Japan; Europe; North America.

*17. Pegohylemyia macra Karl
(Figs. 326-329)

Material examined. HONSHU — Mt. Hodaka, Nagano-ken, 1 ♂, 3-viii-70.
♂. Body-length 5 mm. Haustellum with mentum pollinose. Mesonotum
brownish grey pollinose and obscurely vittate, when viewed from behind with rather broad median vitta. Abdomen bluish grey in pollinosity, which is more or less tinged with pale rose-brown in some lights; median vitta narrow and sharp; tergites with fore marginal bands when viewed from above. Wings with a brownish tinge; calyptrae pale yellow, rather distinctly on margin; halteres dark reddish brown at base, and yellow at knob.

Frons about two-thirds as wide as anterior ocellus; interfrontalia linear caudad; parafrontals with no ors; A₃ nearly twice as long as wide; arista with the longest hairs about as long as basal diameter of arista; profrons and cheeks respectively about as wide and high as A₃-width; cheeks with genal setae in 3 rows; epistoma only a little projecting forwards beyond frons at lunule.

Mesonotum with 3 pairs of distinct pre acr, setae of the middle pair being strong, and with some (6-7) fine accessory setulae between the rows; distance between the rows of pre acr more or less longer than that between dc and acr; pra about half as long as posterior ntpl.

Fore tibia with 1 ad and 1 pv; f₂ on basal half with some av and some pv, the longest av being more or less shorter than height of the femur, and the longest pv distinctly longer than height of the femur; t₂ with 1 ad, 2 pd and 2 pv; f₃ with a row of av, the longest one about twice as long as height of the femur, and on basal half with some pv, the longest one a little less than twice as long as height of the femur; t₃ with 2 strong and 1-2 weak av, 6-7 ad, 3 pd and 3 pv. Wings with costal thorns rather short although stronger than costal setulae.

♀. Unknown.

Distribution. Japan; Eastern Turkestan; Finland.

Judging from redescriptions of *Pegohylemyia macra* Karl, 1940 and *Chortophila betarum* Lintner, 1882 respectively given by Hennig (1970) and Huckett (1924) the former is slightly different from the latter in that the median apical projection of the cercal plate is more strongly hook-shaped in profile. This difference, however, may not be enough to separate the two as distinct from each other. As pointed out by Hennig (l.c.) it is possible that *macra* is identical with *betarum*.

*18. Pegohylemyia sanctimarci* (Czerny)

(Figs. 330–334)


Material examined. HOKKAIDŌ — Sapporo, 1♂, 12-v-68 (T. Kocha).

♂. Body-length 5.4 mm. Rather hairy species. Interfrontalia with a pair of strong if and below this pair with some short setulae; parafrontals with 1 fine ors; A₃ about twice as long as wide; arista with the longest hairs slightly shorter than basal diameter of arista; epistoma behind frons at lunule.

Mesonotum with 5 pairs of pre acr, setae of the 2nd pair being the strongest and nearly as long as 1st pre dc, and in the present specimen with 1 accessory setula between the rows, which are much closer together than to dc; pra about as long as anterior ntpl.

Fore tibia with 1 short ad and 1 pv; f₂ with no strong av, and on basal half with 6-8 long pv; f₃ with 1 ad, 2 pd and 2 pv; f₃ with a row of long av and on basal...
half with 3 long \( pv \); \( t_3 \) with 2 distinct and 1–2 weak \( av \), 4 \( ad \), 3 \( pd \) and a few \( pv \). Wings with costal thorns hardly distinguishable from costal setulae.

♀. Unknown to me.

Distribution. Japan; Europe.

The present specimen is not seriously different from a redescriptions of *sanctimarci* given by Hennig (1970) except in the \( A_3 \) more than 1.5 times as long as wide and in the \( pra \) longer than posterior \( ntpl \).

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*19. Pegohylemyia parvicornis* (Malloch)

(Figs. 335–339)

*Hylemyia parvicornis* Malloch, 1920d: 283. *Hylemyia (Pegohylemyia) parvicornis*:


Material examined. HONSHŪ — Mt. Yatsugatake, Nagano-ken, 3♂♀, 18–21-vii-70.

♀. Body-length 5.5–7.0 mm. Interfrontalia black, with whitish grey pollen; antennae blackish; palpi yellow or brownish yellow, with a darkened apex; haustellum with mentum dark brownish or blackish, and thinly pollinose. Mesonotum brownish pollinose except between \( dc \) and \( acr \), where it is greyish pollinose. Abdomen pale grey in pollinosity, which is tinged with brown, strongly on and near median vitta and on anterior part of each tergite; median vitta rather broad especially on 4th and 5th tergites; fore marginal bands narrow if present. Legs blackish; \( t_2 \) more or less brownish; \( t_3 \) more or less brownish yellow. Wings with a strong brownish yellow tinge; calypterae brownish yellow; halteres yellow at knob.

Frons about as wide as anterior ocellus in 1 specimen of good condition; interfrontalia about half as wide as anterior ocellus in that specimen, with a pair of strong \( if \); parafrontals with 5–7 strong and some finer \( ori \), and with no \( ors \); \( A_3 \) less than twice (about 1.7–1.8 times) as long as wide; arista minutely pubescent; profrons about as wide as \( A_3 \); cheeks as high as or slightly higher than \( A_3 \)-width, with genal setae in 3 rows; epistoma situated as far as or slightly behind frons at lunule.

Mesonotum rather densely setulose on posthumeral areas and between \( ia \) and \( sa \); 4–5 pairs of \( pre acr \) present, 1 pair of them being much stronger than the others; some (4–7) accessory setulae present between the rows of \( pre acr \), which are separated from each other by a distance nearly equal to that between \( dc \) and \( acr \); \( pra \) distinct, about two-thirds to four-fifths of posterior \( ntpl \) in length; notopleura with some (5–7) accessory setulae near anterior \( ntpl \); mesopleura with no strong anterior \( mpl \), and with 1–2 strong \( pstg \) and 6–9 associated setulae; \( stpl \) 1.2; scutellum bare on dorsal centre.

Abdomen depressed except on rather developed hypopygium, and more or less long-ovoid when viewed from above; prebasal sclerite with 3 short marginal setulae in 1 specimen; 5th sternite (Figs. 338 & 339) with processes densely setose along inner and outer margins; surstyli (Figs. 335 & 336) expanded dorsad near cercal plate.

Fore tibia with 1–2 \( pv \) and no \( ad \); \( t_2 \) on basal half with some rather distinct \( av \) although shorter than height of the femur, and on basal two-thirds with a row of rather strong \( pv \), most of which are more or less longer than height of the femur;

t₂ with 2 pd and 2–4 p–pv, and without ad or av; f₃ with rows of av and pv becoming longer towards apex of the femur, the setae on basal third being short and fine, the longest av near apical third a little less than twice as long as height of the femur, and the longest pv more or less longer than height of the femur; t₄ with 2 strong and 0–4 weaker av, 4–5 ad, 3–4 pd and 4–7 pv. Wings with costal thorns vestigial and hardly distinguishable from costal setulae; m–m more or less oblique and hardly sinuate.

♀. Unknown to me.

Distribution. Japan; North America.

P. parvicornis may closely be related to the European species Pegohylemyia lineatula (Karl, 1928) in having the surstyli of the same type. It may, however, be distinguishable from the latter by the more densely setose 5th sternite and the surstyli more strongly expanded dorsad.

20. Pegohylemyia nitiditheca sp. nov.

(Figs. 340–344)


♂. Body-length 6.3–7.8 mm; wing-length 5.3–6.7 mm. Interfrontalia wholly black or slightly brownish near lunule in ground colour, with whitish grey pollen; parafacials and cheeks black in ground colour and silvery grey in pollinosity, which is slightly tinged with yellow especially on cheeks; occiput black in ground colour, with bluish grey pollen which is more or less tinged with brown; antennae blackish; palpi dark brownish or blackish; haustellum with mentum blackish and polished. Thorax black in ground colour, rather thickly covered with greyish pollen which is more or less tinged with brown; mesonotum when viewed from behind with broad median vitta and broad lateral patches shifting according to the point of view. Abdomen black in ground colour, and thickly covered with bluish grey pollen, which is very faintly, though distinctly on 5th tergite, tinged with brown; median vitta narrow or sometimes rather broad; fore marginal bands narrow if present; prebasal and basal sclerites black and polished, at most prebasal one being very faintly pollinose in part; 5th sternite more or less brownish at apex and base of each process. Legs blackish. Wings strongly tinged with yellow, especially at base; calyptrae yellow, strongly on margin; halteres brownish at base and yellow at knob.

Frons narrower than anterior ocellus, usually about half as wide as the latter; interfrontalia with a pair of strong if, which are about as long as ocellar setae; parafrontals usually contiguous to each other, with 4 (sometimes 5) strong ori mingled with some vestigial setulae, and without ors; A₃ about 1.8–2.3 times as long as wide; arista distinctly pubescent although shortly, the longest hairs being about as long as basal diameter of arista; profrons as wide as or a little wider than A₃; cheeks usually somewhat less high than A₃-width, at most as high as the latter, and with genal setae rather short and fine, arranged in 1 (sometimes 2) row; palpi slender, rather distinctly longer than A₃ and A₄ combined; haustellum slender, with mentum much longer than palpi; face strongly concave near epistoma,
which is projecting forwards as far as or a little beyond frons at lunule.

Mesonotum with 3 pairs of strong pre acr, and with a few or some accessory setulae along or between the rows, distance between the rows being as long as or a little shorter than that between dc and acr; pra as long as or a little longer than anterior ntpl; notopleura with no accessory setulae; mesopleura with 1-2 strong anterior mpl, and with 1 strong and 1 weaker pstg and 4–6 fine associated setulae; stpl 2:3, the lower anterior and lowest posterior being distinct though much shorter than the upper; scutellum sparsely setulose on dorsal surface.

Abdomen depressed on basal half and half-depressed on caudal half, slightly narrowing caudad, and usually more or less longer than twice the width; 5th sternite and hypopygium as in Figs. 340–344.

Fore tibia with 1 strong ad and 1 pv; f2 with no distinct av, and on basal half with some (4–6) rather strong pv, the longest one being more or less longer than height of the femur; t2 with 1 ad, 2 (rarely 3) pd and 2–3 pv; f3 with a row of 6–9 strong av becoming longer towards apex of the femur, the longest one about 1.7–1.9 times as long as height of the femur, on basal two-thirds with some (4–7) pv distinctly shorter than height of the femur, and near apex with a few long pv; t3
with 3-4 av, 5-6 (usually 5) ad, 3 pd and 3-7 pv. Wings with costal thorns minute (rather strong in 1 specimen); costa haired on ventral surface anteriorly; m-m oblique and more or less sinuate.

♀. Unknown.


Judging from the hypopygium and the aedeagus, and moreover from the long and polished mentum of the haustellum, \emph{P. nitiditheea} is undoubtedly closely related to \emph{Pegohylemyia pseudomaeulipes} (Strobl, 1893), from which the present species can, however, readily be distinguished by the characteristic 5th sternite and by \( t_b \) with apical \( pd \) much shorter and weaker than apical \( d \).

21. \emph{Pegohylemyia isikariana} sp. nov.

(Figs. 345-348)

Type-material. \textsc{Hokkaido} — Ishikari-hama, 4♂♂, 9-vii-68, & 102♀♀ (one the holotype), 55♂♀, 16-v-71.

♂. Body-length 3.3-5 mm; wing-length 3.1-4.3 mm. Interfrontalia, parafacials and cheeks brownish to black in ground colour; interfrontalia whitish grey pollinose; parafacials in pollinosity whitish grey and with or without a trace of yellowish tinge; cheeks whitish grey or dull grey in pollinosity; occiput in ground colour black and in pollinosity bluish grey and more or less brownish; antennae and palpi blackish; haustellum with mentum blackish and pollinose. Thorax black in ground colour and bluish grey in pollinosity, which is faintly tinged with brown in places; mesonotum when viewed from front wholly pollinose, and when viewed from behind with moderate median vitta, with narrow and often faint paramedian vittae along rows of \( dc \) and with broad lateral patches. Abdomen black in ground colour and bluish grey in pollinosity, which is very faintly tinged with reddish tone in some lights; median vitta broad; fore marginal bands present and often broad. Legs blackish. Wings faintly tinged with brown; calyptrae whitish, slightly yellowish marginally; halteres dark brown at base and yellow at knob.

Frons wider than anterior ocellus, about 1.3-1.5 times as wide as the latter; interfrontalia about two-thirds of anterior ocellus in width, with a pair of strong \( tf \); parafacials usually with 3-4 strong and a few fine \( ori \) mingled with some vestigial setulae, and rarely with 1 vestigial \( ors \); \( A_9 \) about 1.6-1.8 times as long as wide; arista minutely pubescent; profrons 1.1-1.5 (usually 1.3-1.5) times as wide as \( A_9 \); checks 1.2-1.5 (usually 1.4-1.5) times as high as \( A_9 \)-width, with genal setae usually in 2 rows; epistoma distinctly behind frons at lunule; palpi not so long, about as long as \( A_9 \) and \( A_9 \) combined; haustellum with mentum about as long as palpi.

Mesonotum with usually 3 pairs of distinct \( preacr \), setae of the middle pair being strong, and usually with no accessory setulae between the rows, which are more or less closer together than to \( dc \); \( preacr \) short though distinct, half to four-fifths of posterior \( ntpl \) in length; mesopleura with no distinct anterior \( mpl \), and with 1 strong and a few finer \( pstg \); \( stpl \) 1:2; scutellum on dorsal surface very sparsely setulose, bare on centre.

Abdomen depressed, nearly parallel-sided and about 1.8-2.1 times as long as wide; 5th sternite and hypopygium as in Figs. 345-348.

Fore tibia with 1 \( ad \) and 1 \( pv \); \( f_2 \) on basal half to two thirds with some rather distinct \( av \), which are more or less shorter than height of the femur, at
most about as long as the latter, and on basal half with some distinct \( p_v \), the longest one being more or less longer than height of the femur; \( t_2 \) with 1 \( a_d \), 2 \( p_d \) and 2 (rarely 3) \( p_v \); \( f_2 \) with a row of long \( a_v \), the longest one about 1.5–1.8 times as long as height of the femur, and on basal half with a few long \( p_v \); \( t_3 \) with 2 (sometimes 3) \( a_v \), 3–5 (usually 4–5) \( a_d \), 3 \( p_d \) and 2–6 \( p_v \), apical \( p_d \) being vestigial. Wings with costal thorns distinct, as long as or a little longer than \( h \)-vein; costa bare ventrally; \( m-m \) hardly or slightly oblique and hardly or slightly sinuate.

♀. Interfrontalia usually brownish on lower half and blackish on the upper. Abdomen with median vitta very obscure. Head only a little higher than the length, about 1.1 times so; frons about 0.43–0.45 times as wide as head; \( A_a \) usually about 1.5 times as long as wide; profrons usually about 1.5 times as wide as \( A_a \). Mesonotum with \( pre \ acr \) weaker than those of male, and usually with 1 or a few accessory setulae between the rows; \( spl 1.2 \), the lower posterior much shorter and weaker than the upper. Hind tibia with no \( p_v \).


Judging from the shape of the 5th sternite and hypopygium of the male the present species is closely related to \textit{macra} Karl, 1940, from which it can, however, be readily distinguished by the paler pollinosity, the broader parafacials, the higher cheeks and the epistoma distinctly behind frons at lunule.

22. \textit{Pegohylemyia okai} sp. nov.

(Figs. 349–352)

Type-material. \textit{HOKKAIDO} — Akkeshi, 42♀♀ (one the holotype), 7♀♂, 18–19–vii–66; Nemuro, 3♂♂, 2♀♀; Shikaribetsu-ko, 1♂; Mt. Daisetsu, 6♂♂, 5♀♀; Rishiritori, 1♀; Mt. Yūbari, 1♂, 1♀; Mt. Ashibetsu, 1♂; Mt. Apoi, 1♂; Moshiri, 1♀. \textit{HONSHU} — Mt. Zaō & Mt. Chōkai, Yamagata-ken, 2♂♂, 1♀; Mt. Daibosatsu, Yamanashi-ken, 1♀; Mt. Yatsugatake, Mt. Kiso-Komagatake, Mt. Senjō, Mt. Akaishi, Mt. Shirouma & Mt. Hodaka, Nagano-ken, 18♂♂, 1♀.

♂. Body-length 6.3–7.8 mm; wing-length 5.5–6.5 mm. Interfrontalia black or sometimes brownish in ground colour, with whitish pollen, which is often tinged with yellow although very faintly; parafacials in ground colour black or sometimes brownish, and in pollinosity with a weak or strong brownish or yellowish tinge, often with a golden reflections in some lights; cheeks in ground colour black or sometimes brownish, and in pollinosity weakly or strongly tinged with yellow; occiput blackish in ground colour, and bluish grey in pollinosity, which is more or less tinged with brown or yellow; antennae and palpi blackish; haustellum with mentum blackish and thinly pollinose. Thorax blackish in ground colour, and bluish grey in pollinosity, which is faintly or rather distinctly tinged with brownish yellow on pleura; mesonotum often distinctly tinged with brown in pollinosity, which is dense and does not disappear even when viewed from front, when viewed from behind with median and lateral vittae which are moderate in width, and in some lights with narrow paramedian vittae along rows of \( d_c \), the vittae being brownish pollinose even in specimens with pale pollen. Abdomen blackish in ground colour, and whitish grey or bluish grey in pollinosity, which is usually tinged with yellow or brown although variable in degree; median vitta and fore marginal bands distinct and moderate in width, the former being interrupted at hind margin of each tergite. Legs blackish although often dark brownish especially
Wings with a rather distinct yellowish tinge, strongly yellow at base; calypterae strongly yellow; halteres yellow at knob.

Frons about 1.2–2 times as wide as anterior ocellus; interfrontalia usually about as wide as anterior ocellus, with a pair of strong if, which are usually about as long as ocellar setae; parafrontals with 5–7 strong and some fine ori, and with no ors; A₃ about 1.9–2.2 times as long as wide; arista distinctly pubescent, with the longest hairs slightly longer than basal diameter of arista; profrons about 1.3–1.6 times as wide as A₂; parafacials at least about as wide as A₃; cheeks about 1.6–1.9 times as high as A₃-width, with genal setae in 2 rows; epistoma more or less behind frons at lunule; palpi slender, about as long as A₂ and A₃ combined; haustellum slender, with mentum usually more or less longer than palpi although distinctly shorter than fore metatarsus and about two-thirds to four-fifths of the latter in length.

Figs. 345–348. *Pegohylemyia isikariana* sp. nov., ♂: 345, hypopygium, dorsal view; 346, *ditto*, lateral view; 347, aedeagus; 348, 5th sternite, ventral view.

Figs. 349–352. *Pegohylemyia okai* sp. nov., ♂: 349, hypopygium, dorsal view; 350, *ditto*, lateral view; 351, aedeagus; 352, 5th sternite, ventral view.

Mesonotum with 1 pair of strong and a few pairs of rather distinct pre acr, and often with a few setulae along or between the rows, distance between the rows being usually about as long as that between dc and acr; pra rather distinctly longer than anterior stpl; mesopleura with or without 1 distinct anterior mpl, and with 1 strong and 1–2 (usually 1) weaker pstg and a few associated setulae; stpl 1: 3, the lowest posterior being strong or distinct even if much shorter than the uppers; scutellum
sparsely setulose on dorsal surface laterally. Abdomen depressed except on hypopygium which is more or less developed, nearly parallel-sided, as long as or slightly shorter than head and thorax combined, and about 2.6–3.1 times as long as wide; prebasal sclerite exposed and rarely with a few short setulae; 5th sternite and hypopygium as in Figs. 349–352.

Fore tibia with 1–2 (usually 1) \( \text{ad} \) and 1–2 (usually 1) \( \text{pv} \); \( f_1 \) on basal third with a few or some \( \text{av} \), which are often rather strong although the longest one is at most about as long as height of the femur, and with a row of strong \( \text{pv} \), the longest one being about 1.6–2 times as long as height of the femur; \( t_2 \) with 1 (rarely 2) \( \text{ad} \), 2–4 (usually 2) \( \text{pd} \) and 2–4 \( \text{pv} \), and without \( \text{av} \); \( f_3 \) with a row of long and strong \( \text{av} \), the longest one being 2–2.6 times as long as height of the femur, and with a row of \( \text{pv} \), of which some near apical third and often near base are shortened and weakened, the longest seta near middle being about 1.5–2 times as long as height of the femur; \( t_3 \) with 3–5 (usually 3–4) \( \text{av} \), 4–5 \( \text{ad} \), 3–5 (of them usually 3 are long and strong) \( \text{pd} \) and 2–5 \( \text{pv} \), apical \( \text{pd} \) being well developed. Wings with costal thorns short, sometimes hardly distinguishable from costal setulae; costa haired on ventral surface rather anteriorly; \( m-m \) slightly or rather distinctly oblique and nearly straight or a little sinuate.

♀. Body-length 5.5–7.2 mm; wing-length 5.1–6.3 mm. Interfrontalia orange yellow in ground colour, at most blackish or brownish near ocellar triangle, and with whitish or whitish yellow pollen; parafrontals on upper half blackish in ground colour and yellowish grey in pollinosity; parafrontals on lower half and parafacials yellow or orange yellow in ground colour and yellow in pollinosity; cheeks yellow or brown in ground colour and yellow or whitish yellow in pollinosity; occiput blackish in ground colour and pale grey in pollinosity, which is more or less tinged with yellow or brown. Thorax in pollinosity pale grey and more or less yellowish; mesonotum more or less tinged with brown in pollinosity, and very faintly vittate, when viewed from behind with a trace of median and sublateral vittae and lateral patches. Abdomen concolorous with thorax, and with tessellations in some lights; median vitta obscurely appearing when viewed from behind.

Head only a little (about 1.1 times) higher than the length; frons about 0.39–0.43 times as wide as head; interfrontalia about twice as wide as parafrontalia, with some vestigial setulae below the strong \( \text{if} \); parafrontals with 1 strong, 1–2 strong or distinct and a few or some vestigial \( \text{ori} \), and with 3 \( \text{ors} \); cheeks with genal setae very short and fine except for 1 or a few ones near peristomal setae, these fine genal setae being in 1–2 rows.

Mesonotum with some irregular pairs of fine \( \text{pre acr} \), of which at most 1–2 pairs are composed of rather distinct setae distinguishable from accessory setulae, and with some accessory setulae between the rows; \( \text{stpl} 1.2 \).

Fore tibia with 1 \( \text{ad} \) and 1 \( \text{pv} \), apical \( \text{pv} \) being well developed and much stronger than that of male; \( f_2 \) with no \( \text{av} \), on basal half with 2–4 \( \text{pv} \), the longest one being more or less longer than height of the femur, and near apex with a few \( \text{pv} \); \( f_3 \) with 4–7 \( \text{av} \), the longest one being at most 1.5 times as long as height of the femur, on basal half with 2–4 \( \text{pv} \), the longest one about as long as height of the femur, and near apex with a few \( \text{pv} \); \( t_3 \) with 1–2 \( \text{pv} \). Wings with costal thorns strong or distinct.


In this genus there are found some other species which have a well-developed
apical \( pd \) on \( t_b \), namely, *askoldica* Schnabl, *pseudomaculipes* (Strobl), *apiciseta* Ringdahl and *jacobaeae* (Hardy), from all of which the present new species is, however, readily distinguishable by the following aspects of the male: — Not hairy; haustellum with mentum pollinose although thinly; arista with the longest hairs at most slightly longer than basal diameter of arista; \( p_f r_a \) longer than anterior \( n_{tpl} \); hypopygium different in structure.

23. *Pegohylemyia silva* sp. nov.

(Figs. 5 & 353–357)

Type-material. HONSHU — Tsumakoi, Gumma-ken, 1♀, 11-vii-71 (T. Kocha); Mt. Yatsugatake, Nagano-ken, 3♀♂ (one the holotype), 4♀, 16-18-vii-70; Mt. Chōgatake, Nagano-ken, 1♀, 30-vii-70; Mt. Hodaka, Nagano-ken, 6♀♂, 3-vii-70; Mt. Shirouma, Nagano-ken, 1♀♂, 5-vii-70; Mt. Daibosatsu, Yamanashi-ken, 1♀♂, 8-vii-70 (H. Takizawa); Mt. Hōō, Yamanashi-ken, 1♀, 5-7-vii-67 (H. Takizawa); Mt. Chausu, Shizuoka-ken, 1♀, 27-vii-70 (H. Takizawa). SHIKOKU — Mt. Tsurugi, 4♀♂, 16-vii-71; Mt. Mimune, 1♀, 18-vii-71; Mt. Ishizuchi, 11♀♂, 4♀, 21-vii-71.

♀. Body-length 7.6–10 mm; wing-length 7.1–8.8 mm. Body excluding appendages black in ground colour. Interfrontalia in pollinosity whitish grey and usually with a faint yellowish or brownish tinge; parafacials and cheeks silvery grey in pollinosity, which is hardly or slightly tinged with yellow; antennae and palpi black; haustellum with mentum black and distinctly pollinose. Thorax bluish grey pollinose and half-shining; mesonotum often rather distinctly tinged with brown in pollinosity, when viewed from behind with moderate median vitta and broadly blackened laterally except on humeral calli and on notopleura. Abdomen shining and largely blackish when viewed from front although densely covered with bluish grey pollen, which is of fine texture and sometimes slightly tinged with yellow or brown; median vitta and fore marginal bands usually narrow and sharp, the former being sometimes rather broad and the latter often lacking; prebasal sclerite very thinly pollinose and shining. Femora black, with narrowly yellow apex; tibiae blackish, or sometimes largely yellowish although more or less darkened basally. Wings distinctly tinged with yellow or brownish yellow, at base strongly yellow; calyptrae strongly yellow; halteres yellow, more or less brownish at base.

Frons usually a little wider than anterior ocellus, yet sometimes distinctly wider or slightly narrower than the latter; interfrontalia usually about half as wide as anterior ocellus, at most as wide as the latter, with a pair of strong \( if \), sometimes with some minute setulae below this pair; parafrontals with about 6–7 \( or_i \), of which a few are often more or less weakened, some vestigial setulae being usually mingled with the \( or_i \), and with no \( or_s \) (only in the specimen from Mt. Hōō with a distinct one); \( A_9 \) about 2.2–2.6 times as long as wide; arista longly pubescent or shortly plumose, the longest hairs being usually about 3 times as long as basal diameter of arista, and rarely twice as long as the latter; profrons about 1.3–1.8 (usually 1.4–1.5) times as wide as \( A_9 \); cheeks about 1.5–2.2 (usually 1.8–2) times as high as \( A_9 \)-width, with genal setae in 1–2 rows; epistoma more or less behind frons at lunule, at most as far as the frons; palpi slender, usually about as long as \( A_2 \) and \( A_3 \) combined, and more or less broadened apically; haustellum
more or less lengthened although not very narrow, with mentum more or less longer than palpi.

Mesonotum with 4–6 pairs of short *pre acr*, and usually with no accessory setulae between the rows, which are separated from each other by a distance usually about half of that between *de* and *acr*; *pra* longer than anterior *ntpl* and sometimes as long as 1st *post de*; *stpl* 1:2 or 1:3; mesopleura always with 1 or a few strong anterior *mpl*, and with 1 strong and 1 weak *psig* (the weak one often hardly distinguishable from associated setulae) and 6–13 associated setulae; scutellum on dorsal surface sparsely setulose laterally and bare on centre.

Abdomen half-depressed, more or less narrowing caudad, and about 2.1–2.4 times as long as wide; discal and marginal setae strong; 5th sternite and hypopygium as in Figs. 353–357.

Fore tibia with 2 (rarely 1 or 3) *ad* and 1 (rarely 2) *pv*, and rarely with 1–2 *pd*; *f₂* with no distinct *av*, and on basal half with some (3–7) long and strong *pv*, the longest one being about 1.5 times as long as height of the femur; *t₄* with 1 *ad*, 2 (rarely 1 or 3) *pd* and 2–3 (rarely 4) *pv*, and with no *av*; *f₃* with a row of 7–10 strong *av*, the longest one about 2–2.5 times as long as height of the femur, and with a row of 7–10 strong *pv*, the row being usually interrupted near apical third, the longest one about 1.7–2.2 times as long as height of the femur; *t₅* with 2–5 (usually 3–4) *av*, 3–5 (usually 4) *ad*, 3 (rarely 4) *pd* and 1–6 finer *pv*, apical *pd* being weak although distinct from accessory setulae. Wings with costal thorns rather strong or minute; costa distinctly hairy on ventral surface; *m–m* strongly oblique and sinuate.

♀. Interfrontalia reddish brown, more or less darkened on upper half, and with whitish pollen usually a little tinged with yellow; parafrontals on upper half more or less dark brown in ground colour and pale yellow in pollinosity; parafrontals on lower half, parafacials and cheeks in ground colour reddish brown, at most partly darkened on cheeks, and in pollinosity whitish and slightly tinged with yellow especially on cheeks; occiput black in ground colour, with bluish grey pollen, which is tinged with yellow and faintly with brown. Thorax in pollinosity bluish grey and more or less tinged with yellow; mesonotum half-shining in some lights. Abdomen thinly covered with bluish grey pollen sometimes tinged with yellow, and shining, with metallic reflections. Legs blackish; femora with narrowly yellow apex; tibiae at most somewhat brownish.

Head only a little higher than the length, about 1.1 times so; frons about 0.36–0.4 times as wide as head; parafrontals with 3–5 *ori* and 3 (sometimes 2) *ors*. *Stpl* 1:2, if 1:3 the lowest posterior is very weak. Abdomen with accessory setulae decumbent; discal setae indistinguishable from accessory setulae; marginal setae strong though much weaker than those of male.

Fore tibia with 2–4 *ad*, 2 *pd* and 1 (rarely 2) *pv*; *f₂* on basal third to half with 3–5 *pv*; *t₄* with 1 *av*, 2 *ad*, 2–4 (usually 2) *pd* and 2–3 *pv*; *f₃* on basal half with 3–6 *pv* and near apex with a few *pv*; *t₅* with *pv* sometimes hardly distinguishable from accessory setulae. Wings with costal thorns strong.


This species has a strong resemblance to *Pegohylemyia tibetana* Schnabl in the shape of hypopygium (cf. Figs. 177 & 178 of Schnabl & Dziedzicki, 1911), yet differs from the latter in the 5th sternite of the male. The original description of *tibetana* reads as follows:— "Das fünfte Bauchsegment lang-viereckig, hinten
etwas breiter, tief und breit fast bis zur Hälfte dreieckig ausgeschnitten; die Lappen sind ziemlich schmal, in der Mitte etwas breiter, die Spitze schmal abgerundet, wenig beborstet." On the other hand the present species has the 5th sternite strongly setose as seen in Figs. 356 & 357. According to Hennig (1970: 336) the type-specimens of tibetana have been lost, and he listed only the name of tibetana under "Ungedeutete Arten (Botanophila oder Pegohylemyia)." Although the present specimens are described as distinct from tibetana, a further discussion will be necessary when topotypical specimens of the latter are taken. The present species is also closely related to the following new species, P. spinisternata, from which it, however, differs mainly in the following aspects: — Body larger in size and more bluish in pollinosity; haustellum with mentum distinctly pollinose; mesonotum more sparsely setulose; acr fewer in number and finer; mesopleura always with strong anterior mpl; t1 always with pd in female; wings with costa more densely haired on ventral surface; cercal plate of male hypopygium ovoid in outline and with narrower apical projection.

24. Pegohylemyia spinisternata sp. nov. (Figs. 358-362)

Type-material. HOKKAIDO - Sapporo, 2♀; Mt. Soranuma, 16♂♂ (one the holotype), 4♀♀, 13-viii-66, & 29♂♂, 7♀♀; Shikotsu-ko, 2♂♂, 1♀; Rishiri-tō, 12♂♂, 3♀♀; Toyotomi, 2♂♂; Toikambetsu, 4♂♂, 1♀; Bifuka, 1♂; Moshiiri, 2♂♂, 3♀♀; Horokanai, 4♂♂, 1♀; Mt. Daisetsu, 6♂♂, 2♀♀; Mt. Yūbari, 12♂♂, 2♀♀; Mt. Poroshiri, 2♂♂; Mt. Rausu, 2♂♂; Akkeshi, 1♀; Kitami-Esashi, 1♂; Mt. Kariba, 58♂♂, 12♀♀; Mt. Ōsen, 7♀♀. HOKKAIDO - Mt. Asahi, Yamagata-ken, 1♂; Mt. Bandai, Fukushima-ken, 4♂♂; Masutomi & Mt. Daibosatsu, Yamanashi-ken, 12♂♂, 4♀♀; Mt. Chausu, Shizuoka-ken, 4♂♂; Mt. Shirouma, Mt. Kashimayari, Mt. Hodaka, Mt. Chōgatake, Mt. Kiso-Komagatake, Mt. Yatsugatake & Mt. Senjō, Nagano-ken, 66♂♂, 32♀♀.

♂. Body-length 6-9 mm; wing-length 5.4-7.7 mm. Body excluding appendages black in ground colour, sometimes more or less brownish especially in smaller specimens. Interfrontalia with whitish grey pollen, which is often more or less tinged with yellow; parafacial in pollinosity silvery grey and sometimes slightly tinged with yellow; cheeks silvery grey or whitish grey in pollinosity, which is usually more or less tinged with yellow or brownish yellow; antennae black; palpi blackish; haustellum with mentum blackish and polished, at most faintly pollinose in part. Thorax rather densely covered with bluish grey pollen, which is usually more or less tinged with yellow or brown; mesonotum variously darkened according to the point of view, when viewed from behind with moderate median vitta and broad lateral patches. Abdomen shining in some lights and largely darkened when viewed from front although densely covered with bluish grey pollen, which is sometimes more or less tinged with yellow or brown; prebasal sclerite very faintly pollinose and shining; basal sclerite rather distinctly pollinose except on polished cephalic margin; median vitta and fore marginal bands narrow or moderate and usually sharp, the former being often interrupted at hind margin of each tergite. Femora blackish, at most slightly yellowish at apex especially on t1; in the specimens collected from Hokkaidō tibiae yellowish although slightly or strongly darkened on t2 and at base of t3 and t5; in the specimens collected from
Honshū tibiae strongly darkened and blackish or dark brownish, only occasionally yellow as in the specimens from Hokkaidō; tarsi blackish. Wings distinctly tinged with brownish yellow, at base strongly yellow; calyptrae strongly yellow; halteres brownish at base and yellow at knob.

Head about 1.3 times as high as long; frons more or less wider than anterior ocellus, usually 1.3–1.5 times as wide as the latter; interfrontalia usually half to two-thirds of anterior ocellus in width, with a pair of strong if; parafrontals with 5–8 ori, and rarely with 1 ors; A₃ about 2–2.4 times as long as wide; arista distinctly pubescent, the longest hairs longer than basal diameter of arista, usually

Figs. 353–357. Pegohylemyia silva sp. nov., ♂: 353, hypopygium, dorsal view; 354, ditto, lateral view; 355, aedeagus; 356, 5th sternite, ventral view; 357, ditto, lateral view.
Figs. 358–362. Pegohylemyia spinisternata sp. nov., ♂: 358, hypopygium, dorsal view; 359, ditto, lateral view; 360, aedeagus; 361, 5th sternite, ventral view; 362, ditto, lateral view.

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about twice as long as the latter; profrons usually about 1.4–1.5 times as wide as $A_3$, but in smaller specimens about as wide as the latter; cheeks about 1.5–1.9 (in smaller specimens about 1.3) times as high as $A_3$-width, with genal setae in 1 or sometimes 2 rows; epistoma more or less behind frons at lunule; palpi slightly longer (in larger specimens) or somewhat shorter (in smaller specimens) than $A_3$ and $A_4$ combined; haustellum slender (although not so in smaller specimens), with mentum more or less longer than palpi.

Mesonotum with about 6–10 pairs of short $p_{ae}$, of which 1–2 pairs are composed of setae rather longer than the others and sometimes strong; distance between the rows of $p_{ae}$ being half to two-thirds of that between $d_e$ and $acr$, a few or some accessory setulae present between the rows; $p_{ar}$ much longer than anterior $ntpl$, about as long as 1st $p_{st dc}$; notopleura with no accessory setulae; mesopleura with 1 or a few anterior $mpl$ rather distinct or not, and with about 10–15 (in larger specimens) or only some (in smaller specimens) accessory setulae around $pstg$ (1 strong and 1–2 weaker); $stpl$ 1:3, the lowest posterior being well developed or rather weak; scutellum bare on dorsal centre.

Abdomen half-depressed, about 2.3–2.7 times as long as wide, and slowly narrowing caudad; 5th tergite with a complete row of strong discal setae; 5th sternite and hypopygium as in Figs. 358–362.

Fore tibia with 1 or sometimes 2 $ad$ and 1 or rarely 2 $pv$; $f_4$ with no distinct $av$ and on basal half with 3–5 strong $pv$, the longest one about 1.4–2 times as long as height of the femur; $t_4$ with 1 $ad$, 2 $pd$ and 2–3 (usually 2) $pv$; $f_5$ with a row of long and strong $av$, the longest one about 1.8–2.4 times as long as height of the femur, and with a row of $pv$ more or less weaker than the $av$; $t_5$ with 2–4 (usually 3) $av$, 4–5 (usually 4) $ad$, 3 $pd$ (sometimes in addition with 1 short $pd$) and 1 or some $pv$, apical $pd$ being weak. Wings with costal thorns rather distinct, or minute and only a little stronger than costal setulae; costa haired on ventral surface rather anteriorly; $m-m$ oblique and usually sinuate.

♀. Body-length 6–9.7 mm; wing-length 6–8.6 mm. Interfrontalia orange yellow or reddish brown in ground colour, sometimes darkened near ocellar triangle, and with whitish pollen, which is usually tinged with yellow; parafacials on upper half darkened in ground colour, and yellowish in pollinosity; parafacials on lower half, parafacials and cheeks in ground colour orange yellow or reddish brown, at most partly darkened, and in pollinosity slightly or rather distinctly tinged with yellow; occiput blackish in ground colour, and bluish grey in pollinosity, which is more or less tinged with yellow and brown. Thorax densely covered with pale yellowish grey pollen; mesonotum when viewed from front with paramedian vittae between $d_e$ and $acr$, and when viewed from behind with narrow or moderate median and broad lateral vittae. Abdomen very thinly covered with bluish grey pollen and shining. In the specimens from Hokkaido legs largely yellow; $f_1$ slightly or largely blackish; $f_2$ and $f_3$ at most blackish apically; tibiae darkened at most basally; tarsi blackish. In the specimens from Honshū legs blackish although sometimes yellow as in the specimens from Hokkaido. Wings more yellowish than in male.

Head only a little (about 1.1 times) higher than the length; frons about 0.35–0.42 times as wide as head; interfrontalia about 2.5 times as wide as parafrontalia; parafrontals with 2–3 (rarely 1) strong $ors$; cheeks with genal setae very short and fine except for 1–2 strong or distinct ones near peristomal setae. $Stpl$ 1:2. Ab-
domen with accessory setulae decumbent; discal setae usually indistinguishable from accessory setulae; marginal setae strong.

Fore tibia with 1–3 (usually 2) ad and 1–2 (rarely none) pv, and with or without 1 (rarely 2) pd; t2 with a few pv on basal third; t3 with 1 av, 2 ad, 2 pd and 2–4 (usually 2) pv; t3 on basal half with 3–5 pv and near apex with a few pv; t3 with pv sometimes hardly distinguishable from accessory setulae. Wings with costal thorns strong, or minute especially in smaller specimens.


This species is undoubtedly closely related to the preceding new species, P. silva, especially by having the 5th sternite and hypopygium of the same type. However, it can be distinguished from that species by the haustellum with polished mentum and by the rounded cercal plate of the male.

*25. Pegohylemyia askoldica Schnabl
(Figs. 363–368)

_Hylemyia_ (Pegohylemyia) _askoldica_ Schnabl, in Schnabl & Dziedzicki, 1911: 253.


♂. A very hairy species. Body-length 4.5–7.2 mm. Body including appendages black or blackish in ground colour, at most brownish on interfrontalia and cheeks. Parafacials silvery grey in pollinosity; cheeks with whitish grey pollen slightly tinged with yellow. Mesonotum in pollinosity whitish grey and more or less bluish, obscurely vittate along _acr_ and _dc_ and on lateral sides, the median vitta sometimes and the paramedian vittae always being brownish pollinose; scutellum thinly brownish grey pollinose and almost blackish except when viewed from front in low angle. Abdomen in pollinosity whitish grey and usually more or less bluish, sometimes tinged with yellow slightly; median vitta broad; fore marginal bands very broad, often expanded on anterior two-thirds of each tergites. Legs black or blackish. Wings more or less tinged with brown, at base strongly dark brownish; calyptrae whitish, more or less yellowish on margin, and with fringe sometimes brownish; halteres yellow or reddish yellow at knob.

Head about 1.1–1.2 times as high as long; frons about 1.5 times as wide as anterior ocellus; interfrontalia about half as wide as anterior ocellus, and with or without 1 or a few fine or rather distinct _if_, which are paired or not; parafrontals with numerous slender _ori_ in about 2 rows, setae of the inner row being shorter and less numerous than those of the outer, and with no _ors_; _A₃_ as long as or a little shorter than twice the width; arista practically bare; profrons more or less wider than twice _A₃_-width; cheeks about twice as high as _A₃_-width, with numerous genal setae in about 5–6 rows; in much smaller specimens _A₃_ relatively wider than in larger specimens and consequently _A₃_ only about 1.5 times as long as wide, and profrons and cheeks less than twice _A₃_-width in width and height respectively; epistoma projecting forwards as far as frons at lunule, or a little behind the frons; palpi not very long, at most as long as _A₂_ and _A₃_ combined; haustellum rather slender.

Mesonotum with 5–7 pairs of slender _pre acr_ and with some or many accessory
setulae between the rows, which are somewhat closer together than to $\delta c$; $\delta r a$ about as long as posterior $n t p l$; notopleura with 1 or a few accessory setulae near anterior and posterior $n t p l$ respectively; $s t p l$ 1:2; scutellum on dorsal surface rather densely setulose except on limited centre.

Abdomen depressed, twice or a little more as long as wide, and loosely narrowing caudad; tergites densely covered with long and slender accessory setulae; prebasal sclerite rarely with 1 or a few setulae; basal sclerite densely setulose; 5th sternite and hypopygium as in Figs. 363-368.

Figs. 363-368. Pegohylemyia askoldica Schnabl, $\delta$: 363, hypopygium, dorsal view; 364, ditto, dorso-caudal view; 365, ditto, lateral view; 366, aedeagus; 367, basi- and distiphlli, dorsal view; 368, 5th sternite, ventral view.

Fore tibia with 1 minute $a d$ and 1–3 (usually 1–2) $p v$, and sometimes with 1 $p d$, the $a d$ being often indiscernible; $t _ 2$ with a row of $a v$ becoming shorter and finer towards apex of the femur, the longest one being distinctly longer than height of the femur, and with $p v$ in 2–3 rows, the longest one being twice or more as long as height of the femur, accessory setulae on basal half of anterior surface rather longer than those on the other parts; $t _ 3$ with 1 $a d$, 2–3 (usually 2) $p d$ and 1–3 (usually 2) $p–p v$; $f _ 2$ with a row of long $a v$, the longest one being more than twice as long as height of the femur, and on basal two-thirds with a row of long $p v$, the longest one being 2.5 or more times as long as height of the femur, and on anterior and posterior surfaces with many long setae; $t _ 4$ with 1–3 $a v$, 3–5 $a d$, 2–3 (usually
3) \(pd\) (usually in addition with 1 or a few shorter ones) and a few or some finer \(pv\), apical \(pd\) being well developed. Wings with costal thorns minute and hardly distinguishable from costal setulae; costa not haired on ventral surface; \(m-m\) erect and straight, or slightly sinuate.

\(\varphi\). Not hairy. Body and legs less densely covered with short and fine accessory setulae, and very thickly covered with pale grey pollen. Interfrontalia brownish in ground colour; parafacials dark brownish in ground colour, and tinged with yellow in pollinosity; cheeks brownish in ground colour, and with a yellowish tinge in pollinosity. Mesonotum very thickly pollinose and not darkened in any lights, with brownish pollinose markings along rows of \(dc\), at bases of setae and between rows of \(post\ acr\), the median and paramedian markings being often fused just behind the suture; pleura more or less tinged with brown in pollinosity, especially on mesopleura; scutellum more or less tinged with brown in pollinosity, especially at bases of basal setae. Abdomen very thickly pollinose, and with no markings, at most with tessellations in some lights. Wings more yellowish than in male.

Frons about 0.45 times as wide as head; interfrontalia about twice as wide as parafrontalia, with microscopical setulae various in number and, only occasionally with a pair of short \(if\); parafrontals with a few or some strong and some fine \(ori\) and with 3 (sometimes 2 or rarely 4) outwardly directed \(ors\), some minute setulae being present along and near the \(ori\); cheeks with genal setae in 3 rows (in 2 rows in smaller specimens); epistoma projecting forwards about as far as frons at lunule.

Mesonotum with \(acr\) short and fine except for a pair of prescutellar ones, and usually with 1 or a few accessory setulae between the rows; notopleura with 1 or a few accessory setulae.

Fore tibia with 1 distinct \(ad\) and 1–2 \(pv\), and sometimes with 1 \(pd\); \(f_2\) on middle half with a few or some \(av\) and on basal half with some \(pv\,\) the longest \(av\) and \(pv\) being more or less longer than height of the femur; \(t_2\) with 1 \(ad\), 2–3 \(pd\) and 1–3 \(pv\); \(f_3\) with a row of about 7–8 \(av\) and on basal half with some \(pv\,\) the longest \(av\) and \(pv\) being about 1.3–1.6 times as long as height of the femur; \(t_3\) usually with no \(pv\). Wings with costal thorns usually rather strong, or sometimes (in smaller specimens) minute.

Distribution. Japan; Littoral Siberia.

The original description based on a single specimen (?) from Vladivostok says: —“... Akrostikalborsten vor der Naht 4–5 Paar, die vordersten sehr lang und stehen näher den Dorsocentralborsten als gegenseitig. ... Hinterleib bedeutend schmäler als Thorax, etwas länger als Kopf und Thorax zusammen,...” However, in the present specimens the \(acr\) of the 1st pair are more or less closer together than to the 1st \(dc\) and the abdomen is shorter than the head and thorax combined. Nevertheless, I have come to the conclusion that the specimens examined should be identified with \textit{askoldica} by the following aspects of the male: — Body densely covered with long accessory setulae; parafacials and cheeks broad; 5th sternite and hypopygium agreeing well with those of \textit{askoldica} figured in the original description.

According to Hennig (1970:335) the type-specimen of this species has been lost, and he listed only the name under “Ungedeutete Arten (\textit{Botanophila} oder \textit{Pegohylemyia}).” Judging from the bare prebasal sclerite of hypopygium, the
depressed abdomen and the absence of apical pv on t₃, this species belongs to the genus Pegohylemyia.

Apart from the specimens given in Material examined there are at hand two intersexual specimens (one from Sapporo, 20-iv-69, and the other from Nopporo, 23-iv-69), which are as follows: — Frons about one-third as wide as head; abdomen interveniently setose and setulose; 5th sternite and hypopygium not differing from those of normal male; other external characters similar to those of normal female.

26. Pegohylemyia pseudomaculipes (Strobl)
(Figs. 369-373)


Material examined. HOKKAIDO — Soranuma, 1 ♂; Tomakomai, 1 ♂; Rishirito, 2 ♂♂; Mt. Shokambetsu, 2 ♂♂; Mt. Kariba, 2 ♂♂. HONSHU — Mt. Hakkoda, Aomori-ken, 3 ♂♂; Mt. Hayachine, Iwate-ken, 2 ♂♂; Mt. Kurikoma, Miyagi-ken, 2 ♂♂; Mt. Bandai, Fukushima-ken, 4 ♂♂; Mt. Daibotsu, Yamanashi-ken, 3 ♂♂; Mt. Yatsugatake, Mt. Senjō, Mt. Kiso-Komagatake, Mt. Hodaka, & Mt. Shirouma, Nagano-ken, 34 ♂♂. SHIKOKU — Mt. Ishizuchi, 5 ♂♂.

♂. Body-length 5-7 mm. Interfrontalia usually more or less brownish near lunule; haustellum with mentum polished or sometimes very thinly pollinose. Mesonotum brownish grey or bluish grey in pollinosity. Abdomen bluish grey or pale grey in pollinosity, which is usually more or less tinged with brown; median vitta and fore marginal bands usually narrow and sharp, the former being often rather broad; prebasal sclerite pollinose like the preceding segments. Legs variable in colour; f₁ blackish or dark brownish; f₂ and f₃ yellow or brown, with darkened apex, or sometimes wholly blackish; tibiae darkest on t₁ and lightest on t₃; t₁ brownish or blackish; t₂ and t₃ yellow to blackish.

Frons about as wide as anterior ocellus; interfrontalia linear caudad, half or a little more as wide as anterior ocellus; arista distinctly pubescent, the longest hairs being often as basal diameter of arista; epistoma situated as far as or slightly behind frons at lunule. Mesonotum with about 3 pairs of pre acr and usually with a few accessory setulae between the rows, which are closer together than to dc; pra as long as or a little longer than anterior ntl. Abdomen about 2.2-2.7 times as long as wide, with 5th sternite and hypopygium as in Figs. 369-373. Fore tibia with 1 ad and 1 pv; t₃ with 1 ad, 2 pd and 2 pv; t₄ with 2-3 av, 4-5 ad, 3 pd and a few or some pv, apical pd being well developed. Wings with costal thorns minute; costa haired ventrally.

♀. Uncertain to me. There are at hand many female specimens which are probably separated into two species, Pegohylemyia pseudomaculipes and the following P. maculipedella sp. nov. A study on the females of the two species will be given in another paper.

Distribution. Japan; Europe.

Japan (Morioka, Iwate-ken) has been recorded as a locality of P. pseudomaculipes by Hennig (1970). This species may be widely distributed in Japan together with the following two related species, Pegohylemyia maculipedella sp. nov. and Pegohylemyia nigrigenis.
sp. nov. The specimens taken from Shikoku (Mt. Ishizuchi) are paler in colour than those from other localities as follows: — Mesonotum and abdomen in pollinosity bluish grey and only a little tinged with brown; f₁ and f₂ pale yellow though darkened apically; t₂ and t₃ pale yellow.

27. Pegohylemyia maeulipedella sp. nov. (Figs. 374-382)


♂. Body-length 5.2-6.7 mm; wing-length 4.9-6.2 mm. Interfrontalia black or sometimes narrowly brownish near lunule, with whitish pollen; parafacials and cheeks black in ground colour and silvery white in pollinosity, which is slightly tinged with yellow; occiput black in ground colour, and bluish grey and slightly brownish in pollinosity; antennae and palpi blackish; haustellum with mentum blackish and polished. Thorax black in ground colour and bluish grey in pollinosity; mesonotum rather thinly pollinose and half-shining in some lights, the pollinosity being faintly or hardly tinged with brown; median vitta hardly visible or sometimes rather distinct. Abdomen blackish in ground colour, whitish grey and more or less bluish in pollinosity, and with metallic reflections; median vitta narrow and sharp; fore marginal bands absent except on 2nd tergite, at most median vitta being more or less dilated at anterior part especially on 3rd tergite; 5th sternite and hypopygium more or less brownish in ground colour; prebasal sclerite hardly or thinly pollinose and shining. Femora yellow, with apical fourth to third blackish; f₁ sometimes largely darkened; tibiae yellow, more or less darkened at base and apex; t₄ dark brownish in 1 specimen; tarsi blackish or dark brownish. Wings distinctly tinged with brownish yellow, at base strongly yellow; calyptrae yellowish; halteres yellowish, at base more or less brownish.

Frons about as wide as anterior ocellus; interfrontalia one-third to two-thirds of anterior ocellus in width, and with a pair of strong if about as long as ocellar setae; parafrontals with 4-6 strong ori mingled with some vestigial setulae, and with no ors; A₃ about twice as long as wide; arista distinctly pubescent, the longest hairs being slightly or hardly longer than basal diameter of arista; profrons slightly wider than A₃, at most about 1.2 times as wide as the latter; cheeks about as high as A₃-width, with genal setae in 2 (sometimes 1) rows; epistoma projecting forwards about as far as frons at lunule, at most only a little beyond the frons; haustellum slender.

Mesonotum with about 3-5 pairs of pre acr, of which 1 or 2 pairs are composed of strong setae, and sometimes with 1-2 accessory setulae between the rows, which are separated from each other by a distance as long as half to two-thirds of that between dc and acr; pra as long as or longer than anterior ntpl; mesopleura with no distinct anterior mpl; stpl 1:2 or sometimes 2:3 although the lower anterior and the lowest posterior are much shorter and weaker than the uppers; scutellum on dorsal surface at most sparsely setulose laterally

Abdomen depressed and elongated, about 2.5-3.3 (usually about 3) times as long as wide and nearly parallel-sided; 5th sternite and hypopygium as in Figs. 374-382.
Fore tibia with 1 \(ad\) and 1 (2 in 1 specimen) \(pv\); \(f_2\) with no distinct \(av\), and on basal third with 3–5 \(pv\), the longest one being more or less longer than height of the femur; \(t_2\) with 1 \(ad\), 2 \(pd\) and 2 \(pv\); \(f_3\) with 6–9 strong \(av\), the longest one about 1.8–2.4 times as long as height of the femur, and with some much finer \(pv\)
on basal half to two-thirds and on apical fourth to third respectively, the longest
one being a little longer than height of the femur; \( t_4 \) with 2-4 \( av \), 4-5 \( ad \), 3 \( pd \) and
1-8 (usually 3-5) \( pv \), apical \( pd \) being much shorter and weaker than apical \( d \) and
usually very fine. Wings with costal thorns minute; costa haired on ventral
surface rather anteriorly; \( m-m \) erect and straight, at most slightly curved inwards.

\( \varphi \). Uncertain (see under pseudomaculipes).


It may not be easy to distinguish \( P. \) maculipedella from the paler form of \( P. \)
pseudomaculipes unless the genital structures are seen. However, the following
aspects may be worthy of mention: — Arista more shortly pubescent; \( f_1 \) largely
yellow in usual cases; \( f_3 \) with finer \( pv \); \( t_3 \) with much shorter and finer apical \( pd \).

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28. Pegohylemyia nigrigenis sp. nov.

(Figs. 383-386)

Type-material. HONSHU — Mt. Bandai, Fukushima-ken, 6\( \delta \delta \), 2\( \varphi \varphi \), 28-vii-71; Mt. Daibosatsu, Yamanashi-ken, 1\( \delta \), 2\( \varphi \varphi \), 6-viii-69; Mt.
Hodaka, Nagano-ken, 1\( \delta \), 2\( \varphi \varphi \), 1-3-viii-70; Mt. Shirouma, Nagano-ken, 1\( \delta \), 5-vii-70; Mt. Kiso-Komagatake, Nagano-ken, 1\( \delta \), 1\( \varphi \), 25-27-vii-70.

\( \delta \). Body-length 6.6-7.4 mm; wing-length 6.5-6.8 mm. Interfrontalia
brownish yellow to dark brown in ground colour and whitish yellow pollinose;
parafacials and cheeks brownish yellow to blackish in ground colour and whitish
yellow in pollinosity; occiput blackish in ground colour, bluish grey and more or
less brownish in pollinosity; antennae blackish; palpi blackish, sometimes slightly
brownish at base; haustellum with mentum blackish and polished. Thorax in
ground colour blackish, at most brownish along pleural margins, and rather densely
covered with pale yellowish grey pollen, which is slightly tinged with blue; mesono­
tum more or less tinged with brown in pollinosity, when viewed from front almost
darkened, and when viewed from behind with obscure median vitta and lateral
patches. Abdomen blackish in ground colour, and rather densely covered with
pale yellowish grey pollen, which is more or less tinged with blue; tergites when
viewed from front wholly darkened, and when viewed from behind with narrow
median vitta, which is not very sharp, and without fore marginal band except on
2nd tergite; prebasal sclerite very thinly pollinose and shining; 5th sternite reddish
brown to dark brown. Legs largely yellow; coxae blackish, at most partly
brownish; trochanters brownish to yellowish; femora yellow, with blackish apex;
tibiae yellow, more or less darkened at base and apex; \( t_1 \) sometimes dark yellow
or brownish; tarsi blackish. Wings distinctly tinged with brownish yellow, at
base strongly yellow; calyptrae strongly yellow; halteres yellow, at base more or
less brownish.

Head about 1.3-1.4 times as high as long; frons narrower than anterior ocellus,
usually about half as wide as the latter; interfrontalia interrupted by contiguous
parafrontals, with a pair of distinct \( if \), which are usually about as long as ocellar
setae; parafrontals with 3-5 \( ori \) mingled with a few or some vestigial setulae, and
with no \( ors \); \( A_9 \) about 2-2.3 (in 1 specimen 1.8) times as long as wide; arista
distinctly pubescent, the longest hairs being longer than basal diameter of arista,
usually about twice as long as the latter; profrons more or less wider (in 1 specimen
slightly narrower) than \( A_9 \); cheeks as high as or a little higher than \( A_9 \)-width, with
genal setae in 2 rows; epistoma more or less behind frons at lunule, at most sometimes projecting forwards about as far as the frons; palpi slender, about as long as A₂ and A₃ combined; haustellum slender, with mentum longer than palpi.

Mesonotum with 3–5 pairs of pre acr, setae of the 2nd pair being much stronger than the others and separated from each other by a distance as long as or two-thirds of that between dc and acr; 1–2 setulae usually present between rows of pre acr; pra longer than or at least as long as anterior mpl; mesopleura with 1–2 anterior mpl which are as fine as or slightly stronger than adjacent accessory setulae, and with 2 pstg and 2–8 (usually 4–7) associated setulae; stpl 1:3, the lowest posterior being rather strong in 1 specimen, yet usually fine and only a little stronger than accessory setulae; scutellum bare on dorsal centre.

Abdomen depressed except on hypopygium which is half-depressed, about 2.4–2.9 times as long as wide, and nearly parallel-sided; 5th sternite and hypopygium as in Figs. 383–386.

Fore tibia with 1 (sometimes 2) ad and 1 (sometimes 2) pv, apical pv being always strong; t₂ with no distinct av, and on basal half with some (usually 4–5) pv, the longest one about 1.2–1.4 times as long as height of the femur; t₂ with 1 (rarely 2) ad, 2 pd and 2–3 pv; t₃ with a row of strong av, the longest one being about 1.8–2 times as long as height of the femur, and with a complete or incomplete row of

Figs. 383–386. Pegohylemyia nigrigenis sp. nov., ♂: 383, hypopygium, dorsal view; 384, ditto, lateral view; 385, aedeagus; 386, 5th sternite, ventral view.
weaker pv, the longest one of the setae on basal two-thirds being as long as or a little longer than height of the femur, and the longest one of the setae on apical fourth being a little or rather distinctly longer than height of the femur; \( t_3 \) with 2-4 (rarely 5) av, 4 (rarely 5) ad, 3 (sometimes 4) \( \dot{p}d \) and 2-7 pv, apical \( \dot{p}d \) being weak or rather distinct, yet much shorter than apical d. Wings with costal thorns minute; costa haired on ventral surface; \( m-m \) only a little oblique and hardly sinuate.

♀. Body-length 6.2-7.1 mm. More yellowish than in male. Interfrontalia orange yellow on lower half and blackish on the upper in ground colour; parafacials and cheeks orange yellow in ground colour and yellow in pollinosity, which is paler on cheeks; palpi paler than in male, sometimes yellowish at base; occiput in pollinosity bluish grey and more or less yellowish. Thorax in pollinosity more yellowish than in male; mesonotum hardly tinged with brown in pollinosity, and more faintly vittate; scutellum sometimes yellowish in ground colour on ventral surface. Abdomen bluish grey and slightly yellowish in pollinosity, with tessellations in some lights; 6th tergite polished or nearly so. Coxae yellowish, or sometimes brownish and partly blackish; trochanters yellow. Wings yellowish, and hardly tinged with brown.

Head only a little higher than the length, at most about 1.1 times as high as long; frons about 0.36-0.41 times as wide as head; interfrontalia about twice as wide as parafrontalia; parafrontals with 2-3 (usually 2) strong and a few fine or vestigial ori, and with 2 ors, which are strong and directed outwards; profrons about 1.3-1.4 times as wide as \( A_3 \); cheeks with genal setae fewer in number (about 3-4) and much finer than those of male and nearly in 1 row. \( Stpl \) 1:2.

Mid femur on basal half with a few rather fine pv, which are shorter than height of the femur; \( t_2 \) with 1 (rarely 2) \( ad \), 2-3 \( \dot{p}d \) and 2 (rarely 1 or 3) pv; \( t_3 \) with av and pv shorter and fewer than in male; \( t_4 \) with 1-3 (usually 2) av, 4 (rarely 5) \( ad \), 3 (rarely 4) \( \dot{p}d \) and 1-2 (none in 1 specimen) pv.


Judging from the postgonites and distiphallus of the male, and moreover from the polished mentum of the haustellum and the yellowish legs, the present species is closely related to the preceding two species, \( P. \) pseudomaculipes and \( P. \) maculipeda. It can, however, be readily distinguished from them by the following characters of the male: — Body with pollen more dense and more yellowish; frons narrower; parafrontals contiguous to each other; 5th sternite and hypopygium otherwise in structure.

20. Genus Delia Robineau-Desvoidy


*Crinura* Schnabl, 1911: 71, as subgenus of *Hylemyia*. Type-species: (*Chortophila ciliicrura* Rondani, 1866) = *Anthomyia platura* Meigen, 1826.

*Leptohylemyia* Schnabl & Dziedzicki, 1911: 94, as subgenus of *Hylemyia*. Type-species: *Musca coarctata* Fallén, 1825.

*Flavena* Karl, 1928: 147, as subgenus of *Chortophila*. Type-species: *Anthomyza criniiventris* Zetterstedt, 1860.

*Tricharia* Karl, 1928: 160, as subgenus of *Chortophila*. Type-species: (*Chortophila trichodactyla* Rondani, 1866) = *Anthomyia liturata* Meigen, 1838.
Subhylemyia Ringdahl, 1933: 30, as subgenus of Hylemyia. Type-species: Musca longula Fallen, 1824.

Delia is one of the largest genera in this family. According to Ringdahl (1959) there are recorded in Sweden 48 species, which are referred by him into 3 supposed genera, Delia, Leptohylemyia and Subhylemyia. In North America 105 species are recognized by Huckett (1965a, 1965b, 1966a & 1966b). This genus is important on account of the included pests, too. In Japan some species have been known as pests of agricultural crops (Kato, 1939). In the course of the present study have been found 17 species, of which 7 species are described as new to science.

Key to the species (♀♂)

1. Fore tibia with apical pv strong and blunt apically. ............................................. 2
   - Fore tibia with apical pv weak, if strong it is not blunt apically. ....................... 5
2. Epistoma projecting forwards beyond frons at lunule; haustellum much lengthened; pra longer than posterior ntpl. ................................. 14. longitheca sp. nov.
   - Epistoma situated behind frons at lunule; haustellum not so lengthened; pra shorter than posterior ntpl. ................................. 3
3. Mid tibia without ad; arista with the longest hairs at least twice as long as basal diameter of arista; abdomen elongate, more than 2.5 times as long as wide. ................................................................. 15. conversata (Tiensuu)
   - Mid tibia with ad; arista with the longest hairs about as long as basal diameter of arista; abdomen not so elongate, less than 2.5 times as long as wide. ................... 4
4. Hind tibia with more than 20 pv on whole length; frons usually narrower than anterior ocellus. .................................................. 1. platura (Meigen)
   - Hind tibia with less than 20 pv on basal half to two-thirds; frons usually wider than anterior ocellus. ................................. 3. antiqua (Meigen)
5. Abdomen on 3rd tergite caudo-laterally with some conspicuously long setae which are directed caudad and beyond abdomen. .......................... 6. criniventris (Zetterstedt)
   - Abdomen on 3rd tergite without such long setae. ............................................ 9
6. Pra distinctly longer than posterior ntpl. .................................................. 7
   - Pra at most as long as posterior ntpl. .................................................. 13
7. Mid tibia with ad. .................................................. 8
   - Mid tibia without ad. ................................................................................ 11
8. Mid tibia with av; haustellum with mentum polished; parafrontals with 1 short ors. .................................................. 7. lineariventris (Zetterstedt)
   - Mid tibia without av; haustellum with mentum pollinose; parafrontals with no ors. .................................................. 9
9. Fore tibia with ad; frons distinctly wider than anterior ocellus; wings with costal thorns strong. .................................................. 12. tristriata (Stein)
   - Fore tibia without ad; frons at most as wide as anterior ocellus; wings with costal thorns minute. .................................................. 10
10. Abdomen very thinly pollinose and lustrous, with no markings; arista with the longest hairs more than twice as long as basal diameter of arista; tₗ with apical pd weak. .................................................. 13. pilicercs sp. nov.
   - Abdomen densely pollinose and with distinct median vitta and fore marginal bands; arista with the longest hairs shorter than basal diameter of arista; tₗ with apical pd strong. .................................................. 11. takizawai sp. nov.
11. Notopleura with no accessory setulae; arista very minutely pubescent, the longest hairs being much shorter than basal diameter of arista; haustellum with mentum polished. .................................................. 8. karasawana sp. nov.
   - Notopleura with a few or some accessory setulae; arista distinctly pubescent, the longest hairs being about as long as basal diameter of arista; haustellum with
mentum pollinose. ................................. 12

12. Hind tibia with less than 10 pv; t₄ with a row of short and distinct pv on basal two-thirds; 2nd ph more or less developed and easily distinguishable from accessory setae. ...........................................

- Hind tibia with more than 10 pv; t₄ without a row of distinct pv; 2nd ph lacking or indistinguishable from accessory setae. ............................ 4. floralis (Fallén)

13. Mid tibia without ad; mid metatarsus with dorsal setae lengthened. ............................ 10. echinopyga sp. nov.

- Mid tibia with ad; mid metatarsus with dorsal setae normal. ............................. 14

14. Third and 4th sternites with conspicuously long and strong setae on lateral sides (Figs. 391) ........................... 2. echinata (Séguy)

- Third and 4th sternites without such long and strong setae. ................................. 15

15. Mid tarsus with 2nd segment swollen ventrally; 3rd sternite densely setose on caudal half; arista with the longest hairs at most twice as long as basal diameter of arista. ................................. 6. nuda (Strobl)

- Mid tarsus with 2nd segment not swollen ventrally; 3rd sternite not densely setose; arista with the longest hairs at least 3 times as long as basal diameter of arista. ................................. 16

16. Mesonotum yellowish in pollinosity; t₄ with no distinct pv except for a few ones near apex; tₛ with apical pv distinct. ............................... 17. auricolor sp. nov.

- Mesonotum brownish in pollinosity; t₄ with a row of distinct pv on basal two-thirds; tₛ with apical pv weak. ............................... 16. tenuis sp. nov.

1. Delia platura (Meigen)


Material examined. There are at hand a lot of specimens of both sexes taken from many localities in Japan (Hokkaidō, Honshū, Shikoku & Kyūshū).

Distribution. Cosmopolitan.

2. Delia echinata (Séguy)

(Figs. 387–391)


Material examined. A lot of specimens have been seen. Their localities are as follows: — Hokkaidō — Sapporo (5♂♂, 5♀♀, ex Spinacia oleracea, T. Oku leg.); Nopporo; Shikotsu-ko; Mt. Soranuma; Mt. Shokambetsu; Mt. Daisetsu; Mt. Ashibetsu; Rishiri-tō; Mt. Yūbari; Mt. Apoi; Mt. Poroshiri; Mt. Niseko; Mt. Kariba. Honshū — Towada, Aomori-ken; Mt. Chōkai, Yamagata-ken; Mt. Bandai, Fukushima-ken; Mt. Sumon, Niigata-ken; Takao-san, Kariyose-yama, Jimba-san & Kawanori-yama, Tōkyō-to; Mt. Yatsugatake, Mt. Senjō, Mt. Kiso-Komagatake, Mt. Chōgatake & Mt. Hodaka, Nagano-ken; Minoo (3♂, 1♀, ex Stellaria media, M. Tsujita leg.), Ōsaka-fu; Rokkō-san & Himeji, Hyōgo-ken. Shikoku — Shōdoshima; Mt. Tsurugi. Kyūshū — Hikosan.
♀. Body-length 3.6–5.7 mm. Cheeks with genal setae in 2 rows; occiput with some setulae on upper part below postocular row of setulae. Abdomen with conspicuously long setae on 3rd and 4th sternites (Fig. 391). Fore tibia with 1 ad and 1–2 pv, apical pv being short and less than half as long as apical d; t₃ with 2–5 pv.

♀. Closely resembling the female of *platura*. However, the following characters may be useful to identify the present species: — Mesonotum often less yellowish in pollinosity and often with 5 distinct vittae between rows of *acr* and along rows of *dc* and *ia*. Occiput with some setulae on upper part below postocular row of setulae; mesonotum with *acr*-rows closer together than in *platura*, often nearly contiguous or lacking near the suture. Fore femur with a few semierect setulae on median plane of anterior surface; t₁ with apical *pd* vestigial; t₂ with *pd* always 1 in number.

Host plants. *Stellaria media* (in Japan, after Sasakawa, 1955); *Spinacia oleracea* (in Europe, after Miles, 1953; in Japan, after Oku, 1964). The larvae feed on leaves and stems of the hosts. In North America this species has been recorded under the name *Hylemya abdena* as a shoot-feeder of carnation, *Dianthus caryophyllus* (after Doucette, 1941).

Distribution. Japan; Europe; North America.

In England this species has been known as a pest of spinach and given the vernacular name “spinach stem fly” by Miles (1953). Having examined the specimens recorded by Oku (1964) under “*Hylemyia sp.*” as a pest of spinach I have found that they are undoubtedly referable to *echinata*. This species was
recorded for the first time from Japan by Sasakawa (1955) as a feeder of chick weed, *Stellaria media*.

3. *Delia antiqua* (Meigen)


Material examined. HOKKAIDO - Sapporo, 18, 5; Nopporo, 4, 8; Jōzankei, 1; Mt. Soranuma, 2; Bifuka, 1; Kitami, 4; Rishiri-tō, 1.

♀. Mid tibia with 1 or sometimes 2 

♀. Fore tibia with 1–2 (usually 1) ad, 1 pv and sometimes 1 pd; t₂ with 1–2 (usually 2) ad, 2 pd and 2–3 (usually 2) pv; t₃ with pv sometimes indiscernible.

Host plants. *Allium* spp. This species has been known as an important pest of onions and related plants.

Distribution. Japan; Korea; Manchuria; Siberia; Europe; North America.

4. *Delia floralis* (Fallén)

(Figs. 392–395)


Material examined. HOKKAIDO — Sapporo, 1, 4-ix-58 (S. Ueda), 1, 2; Tomakomai, Figs. 392–395. *Delia floralis* (Fallén), ♀: 392, hypopygium, dorsal view; 393, ditto, lateral view; 394, aedeagus; 395, 5th sternite, ventral view.
1♂, 20-viii-57 (S. Takagi); Shibetsu, 1♂, 7-vii-68 (H. Torikura). SAKHALIN — Otomari, 1♂, 1♀, 28-vii-14 (S. Isshiki).

Host plants. Cruciferous plants.

Distribution. Japan; Sakhalin; Korea; Manchuria; Siberia; Europe; North America.

5. *Delia pilipyga* (Villeneuve)  
(Figs. 15, 16 & 396–402)

*Chortophila pilipyga* Villeneuve, 1917: 440.  

Material examined. HOKKAIDO — Nemuro, 1♂, 11-vii-38 (S. Kuwayama), & 1♀, 28-viii-38 (? S. Kuwayama), ex Brassica campestris napus var. pekinensis; Toyotomi, 1♂, 10-vii-68. MANCHURIA — Katsuyama, 1♂, 9-vii-38 (T. Akiyama), ex Raphanus sativus var. acanthiformis.

♂. Body-length 5.2–5.9 mm. Frons about twice as wide as anterior ocellus; interfrontalia about as wide as anterior ocellus, with a pair of distinct *if*; parafrontals with 6–8 strong *ori*, in 1 specimen (from Toyotomi) with 1 vestigial *ors*;

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Figs. 401 & 402. *Delia pilipyga* (Villeneuve), ♀: 401, 4th (right) and 5th (left) sternites, ventral view; 402, ovipositor, lateral view.  

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A₃ about 1.5 times as long as wide; arista distinctly pubescent, the longest hairs being about as long as basal diameter of arista; profrons about 1.3 times as wide as A₃; cheeks about 1.5 times as high as A₃-width, with genal setae in 2 rows; occiput setulose on upper part below postocular row of setulae.

Mesonotum with some pairs of pre acr, of which about 3 pairs are composed of distinct setae, and with no accessory setulae between the rows; distance between the rows of pre acr about half as long as that between dc and acr; pra more or less longer than anterior ntpl; notopleura with 5-6 accessory setulae; stpl 1:2. Abdomen as long as or a little longer than twice the width, with 5th sternite and hypopygium as in Figs. 396-400.

Fore tibia with 1 pv and no ad, apical pv distinct, yet much shorter than apical d, about half as long as the latter; f₂ with no distinct av, and on basal half to two-thirds with 4–7 pv; t₂ with 1 pd and 2–3 pv; f₃ on apical two-thirds with 5–7 av, and on basal half or a little more with a row of about 10 short pv; t₃ with 3–5 av, 4–5 ad, 3–4 pd and 6–8 pv. Wings with costal thorns short although distinguishable from costal setulae; m-m slightly oblique and slightly sinuate.

♀. Only 1 female specimen has been seen by myself. Abdomen when viewed from behind with obscure median vitta, which is triangulate on each of 2nd to 4th tergites, and with tessellations in some lights.

Frons about 0.4 times as wide as head; parafrontals with 5 ori and 3 ors; occiput with a few setulae on upper part below postocular row of setulae. Mesonotum with acr distinguishable from accessory setulae although fine; notopleura with 1–3 accessory setulae; stpl 1:1.

Fore tibia with 1 ad and 3 pv, apical pd being vestigial as in male; t₂ with 1 ad, 2 pd and 2–3 pv; f₃ with no pv except on preapical part; t₃ with 4–5 av, 5 ad, 4 pd and 2 short and fine pv. Wings with costal thorns rather distinct; costa haired on ventral surface although rather sparsely.

Host plants. Cruciferous plants. According to Rato (1939) the eggs are laid on young leaves or leaf-stalks near the roots of the crops, and the hatched larvae feed into the roots.

Distribution. Japan; Kurile Is.; Manchuria; Europe.

The female of this species closely resembles that of floralis, from which it may, however, be distinguishable by the following aspects: — Abdomen with median vitta present though not sharp, and in some lights with tessellations; mesonotum with acr distinguishable from accessory setulae although fine; t₁ with apical pd vestigial; t₂ with 2 pd.

*6. Delia nuda (Strobl)
(Figs. 403-406)


δ: Body-length 6–7 mm. Mesonotum with median vitta distinct and brownish pollinose. Occiput setulose on upper part below postocular row of setulae. Mesonotum with pra shorter than posterior ntpl although distinct. Abdomen with 3rd sternite densely setose on caudal half; 5th sternite and hypopygium as figured. Fore tibia with apical pe much shorter and weaker than apical d, at most half as long as the latter; t2 with 1 ad, 1 pd and 2–3 pv; t3 with no pv except for a few ones near apex; mid tarsus with 2nd segment swollen ventrally.

♀. Fore tibia with apical pd distinct or strong and with apical pv strong; mid tarsus with 2nd segment normal. Wings with costal thorns well developed.

Distribution. Japan; Europe.

This species has a closely related species in Sweden, Delia fasciventris Ringdahl, 1933, which is also densely setose on the caudal half of the 3rd sternite of the male. The present Japanese specimens are referred to nuda by the swollen 2nd segment of the male mid tarsus and by the broader surstyli of the male hypopygium.

Figs. 403–406. Delia nuda (Strobl), δ: 403, hypopygium, dorsal view; 404, ditto, lateral view; 405, aedeagus; 406, 5th sternite, ventral view.

Figs. 407–410. Delia lineariventris (Zetterstedt), δ: 407, hypopygium, dorsal view; 408, ditto, lateral view; 409, aedeagus; 410, 5th sternite, ventral view.
*7. Delia lineariventris (Zetterstedt)
(Figs. 407-410)


Material examined. HONSHU — Mt. Senjō, Nagano-ken, 3♂, 10-vii-71.

♂. Body-length 4.2–5.5 mm. Haustellum with mentum blackish and polished. Thorax and abdomen densely covered with whitish grey pollen, which is more or less tinged with blue; mesonotum somewhat tinged with brown in pollinosity; abdomen with broad median vitta and broad fore marginal bands. Wings rather distinctly tinged with brown; calyptrae whitish.

Frons a little wider than twice anterior ocellus-width; interfrontalia more or less wider than anterior ocellus. Mesonotum with 2–3 irregular pairs of *pre acr*, the rows being nearly contiguous to each other; *pra* as long as or a little longer than anterior *ntpl*. Abdomen elongate, about 2.6–2.9 times as long as wide, and with 5th sternite and hypopygium as in Figs. 407–410.

Fore tibia without *ad*, apical *pv* being strong; *t₂* with 1–2 *av*, 1 *ad*, 1 *pd* and 2–3 *pv*; *t₃* with no *pv* except for a few ones near apex. Wings with costal thorns well developed and distinctly longer than *h*-vein.

♀. Unknown to me.

Distribution. Japan; Europe; North America.

Judging from the distiphallus which are strongly chitinized and armed with many spinules this species may be related to the *coarctata*-group (*Leptohylemyia auctt.*).

8. *Delia karasawana* sp. nov.
(Figs. 411–414)

Type-material. HONSHU — Mt. Hodaka, Nagano-ken, 1♂ (holotype), 3-viii-70; Mt. Yatsugatake, Nagano-ken, 1♂, 20-vii-70.

♂. Body-length 6.3 mm; wing-length 5.4–5.8 mm. Interfrontalia wholly black or slightly reddish near lunule in ground colour, with pale grey pollen; parafacials and cheeks wholly or largely blackish in ground colour and more or less tinged with dark yellow in pollinosity; occiput in ground colour black, and in pollinosity bluish grey and more or less brownish; antennae and palpi blackish; haustellum with mentum blackish and polished. Thorax blackish in ground colour, and densely pollinose; pleura in pollinosity dull yellowish grey in the holotype, or bluish grey and partly brownish in the paratype; mesonotum brownish grey pollinose, with narrow paramedian vittae between *dc* and *acr*, the vittae being distinctly visible when viewed from front, yet rather obscurely (in the holotype) or hardly (in the paratype) visible when viewed from behind owing to darkening of the area between the vittae, and with sublateral vittae and lateral patches, which are distinct when viewed from behind, yet more or less weakened when viewed from front. Abdomen blackish in ground colour, and densely covered with pale grey pollen, which is faintly tinged with brown (in the holotype) or rather distinctly tinged with blue (in the paratype); median vitta sharp and not very narrow; fore marginal bands distinct. Legs blackish. Wings with a rather weak (in the holotype) or rather strong (in the paratype) brownish tinge, at base more...
or less yellowish; calyptrae strongly yellow; halteres reddish brown at base and yellow at knob.

Head about 1.25 times as high as long; frons about as wide as anterior ocellus; interfrontalia not interrupted, with a pair of distinct if, which are about as long as secondary ocellar setae; parafrontals with 4-5 strong and a few fine or vestigial ori (in the holotype) or 6-8 fine ori (in the paratype), and with no ors; A₃ about 1.6-1.7 times as long as wide; arista minutely pubescent, the longest hairs being much shorter than basal diameter of arista; profrons as wide as or only a little wider than A₃; parafacials broadly maintained ventrad, at the narrowest part only a little narrower than profrons; cheeks about 1.2-1.3 times as high as A₃-width, with genal setae in 1 (in the holotype) or 2 (in the paratype) rows; epistoma as far as or only a little behind frons at lunule; occiput with a few setulae on upper part below postocular row of setulae; palpi shorter than A₂ and A₃ combined; haustellum with mentum more or less longer than A₂ and A₃ combined.

Mesonotum with 2 pairs of strong and a few pairs of fine pre acr, of which the strongest one is about as long as and much weaker than posterior ntpl (in the holotype), or about as long as and slightly weaker than anterior ntpl; distance between the rows of pre acr as long as or a little longer than half of that between dc and acr; 2nd ph developed although shorter and weaker than the 1st; pra slightly or rather distinctly longer than anterior ntpl; notopleura with no accessory setulae; mesopleura with no distinct anterior mpl, and with 1 strong and 1 weaker pstg (the weaker one is like associated setula in the holotype) and 3 associated fine setulae; stpl 1:3, the lowest posterior being shorter and weaker than the uppers; scutellum on dorsal surface sparsely setulose laterally and bare centrally.

Abdomen depressed except on slightly swollen hypopygium, about 2.3 times as long as wide, and loosely narrowing caudad; 5th sternite and hypopygium as in Figs. 411-414.

Fore tibia with 1 (2 in the paratype on one body-side) pv and no ad, apical pv being strong; f₂ with no distinct av and on basal half with 6-8 pv, the longest one about 1.4-1.5 times as long as height of the femur; t₃ with 2 (in the holotype)

Figs. 411-414. Delia karasawana sp. nov., ♂: 411, hypopygium, dorsal view; 412, ditto, lateral view; 413, aedeagus; 414, 5th sternite, ventral view.
or 3 (in the paratype) $pd$ and 2 (in the holotype) $pv$, and without $av$ or $ad$; $t_2$ with a row of $av$ becoming longer towards apex of the femur, setae on basal third being weakened and indistinguishable from adjacent setulae in the paratype, the longest one about 1.5 times as long as height of the femur, on basal two-thirds with a row of short $pv$, which are rather distinct in the holotype, yet much weakened and mostly indistinguishable from accessory setulae in the paratype, and on apical fourth with some strong $pv$, the longest one about 1.3–1.4 times as long as height of the femur; $t_3$ with 5–8 $av$, 5–6 strong and a few fine (in the holotype) or 7–8 strong (not uniform in length), 6–7 $pd$ (not uniform in length) and numerous (20–25) $pv$ irregularly rowed and becoming shorter towards apex of the tibia. Wings with costal thorns vestigial and hardly distinguishable from costal setulae; costa bare ventrally; $m-m$ more or less oblique and slightly or hardly sinuate.

♀. Unknown.


From *floralis* and *platura*, or from any other known species which have numerous $pv$ on $t_2$, the present new species is readily distinguished by the polished haustellar mentum, the duplicated $ph$, the long $pra$ and the absence of $av$ and $ad$ on $t_2$.

*9. Delia criniventris* (Zetterstedt)  
(Figs. 415–419)


Material examined. HOKKAIDO — Sarobetsu, 1♂ 18-viii-69 (T. Nakashima).

♂. Body-length 6 mm. Legs blackish or dark brownish. Frons more or less wider than anterior ocellus; interfrontalia about half as wide as anterior ocellus, with a pair of strong $if$, and in the present specimen with a pair of additional $if$ above the strong $if$; $A_3$ about twice as long as wide; arista distinctly pubescent, the longest hairs being about twice as long as basal diameter of arista; profrons about as wide as $A_3$-width; cheeks about 1.2 times as high as $A_3$-width; epistoma behind frons at lunule; occiput with some setulae on upper part below postocular row of setulae.

Mesonotum with 3 pairs of $pre acr$, the rows being more or less closer together than to $dc$; $ph$ not duplicated; $pra$ more or less shorter than posterior $mpl$; $stpl$ 1:2.

Abdomen on 3rd tergite caudo-laterally with 4 or 7 conspicuously long setae, which are prolonged caudad beyond abdominal terminalia; prebasal sclerite with a row of distinct setae on hind margin; 3rd to 5th sternites and hypopygium as in Figs. 415–419.

Fore tibia with 1 $ad$ and 2 $pv$, apical $pv$ lacking; $t_2$ with 1 $ad$, 1 $pd$ and 2 $pv$, apical $d$ being short; $t_3$ with no $pv$ except for a few ones near apex; $t_4$ with 2 $av$, 4 $ad$, 3 $pd$ and 1–2 $pv$; mid tarsus with 2nd segment swollen at base ventrally; fore tarsus with 1st segment about as long as 2nd to 4th segments combined; mid tarsus with 1st segment only a little shorter than 2nd to 4th segments combined; hind tarsus with 1st segment about as long as 2nd to 4th segments combined.

♀. Unknown to me.
Distribution. Japan; Europe.

Having compared the present specimen with an authentic European one (♂, Estonia) determined as *Delia criniventris* by Elberg I have found some differences between them. The European specimen has the following aspects: — Legs more or less yellowish on t₃; profrons a little wider than A₃; cheeks about 1.5 times as high as A₃-width; abdomen with more than 10 conspicuously long setae on each lateral side of 3rd tergite; 3rd sternite not divided into plates and with some long setae caudo-laterally; prebasal sclerite with no setae; t₃ with 3 av; mid tarsus with 2nd segment only a little swollen at base ventrally; fore tarsus with 1st segment more or less longer than 2nd to 4th segments combined; mid tarsus with 1st segment about as long as 2nd to 4th segments combined; hind tarsus with 1st segment slightly shorter than 2nd to 4th segments combined. The divided 3rd sternite and the setose prebasal sclerite of the Japanese specimen at hand are remarkable and may be enough to separate the Japanese form from *Delia criniventris* as a good species, provided their conditions are normal. Due to the lack of sufficient material it is at present uncertain to me whether the Japanese form is a mere aberrant form of *Delia criniventris* or a distinct species. The present identification is, therefore, tentative.

Figs. 415--419. *Delia criniventris* (Zetterstedt), ♂: 415, hypopygium, dorsal view; 416, *ditto*, lateral view; 417, aedeagus; 418, 5th sternite, ventral view; 419, 3rd (lower) and 4th (upper) sternites, ventral view.
10. *Delia echinopyga* sp. nov.  
(Figs. 420–424)

Type-material. **HOKKAIDO** — Sapporo, 1 ♂ (holotype), 8-v-68, & 1 ♂, 15-v-70.

♂. Body-length 3.6–3.9 mm; wing-length 3.3–3.5 mm. Interfrontalia in ground colour brownish and darker caudad, with whitish pollen; parafacials and cheeks dark brownish in ground colour and whitish grey in pollinosity; antennae and palpi blackish; haustellum with mentum blackish and pollinose. Thorax blackish or dark brownish in ground colour and pale grey in pollinosity, which is very faintly tinged with brown; mesonotum when viewed from behind with rather distinct median vitta and lateral patches and in some lights with paramedian vittae along rows of *dc*. Abdomen blackish or dark brownish in ground colour, thinly bluish grey pollinose; median vitta broad and not sharp; fore marginal bands narrow and faint. Legs dark brownish. Wings with a tinge brownish, strongly at base; calyptrae pale, and very faintly tinged with reddish yellow; halteres dark brownish at base, and pale yellow at knob.

Frons about as wide as anterior ocellus; interfrontalia linear caudad, about as wide as parafrontalia, and with a pair of fine or rather distinct *if*; parafrontals with 3–4 *ori* and no *ors*; *A₃* about 1.5–1.6 times as long as wide; arista minutely pubescent, with hairs much shorter than basal diameter of arista; profrons slightly narrower than *A₃*; cheeks about as high as *A₃*-width, with genal setae in 1 row; epistoma behind frons at lunule; occiput with no setulæ on upper part below postocular row of setulæ.

Mesonotum with 3 pairs of *pre acr*, the middle pair being strong, and with no accessory setulæ between the rows, which are separated from each other by a
distance about half of that between de and acr; 2nd ph more or less longer than accessory setulae though fine; pha about as long as posterior ntpl; notopleura with no accessory setulae; mesopleura with no distinct anterior mpl, and with 1 strong and 1 weaker pstg (the weaker one is indistinguishable from associated setulae in the paratype) and 1 (in the holotype) or 3-4 (in the paratype) associated setulae; stp 1:2; scutellum with no accessory setulae on dorsal surface.

Abdomen depressed, nearly parallel-sided, and about 2.6 times as long as wide; 5th sternite and hypopygium as in Figs. 420-424.

Fore tibia with 1 pv and no ad, and with only 1 strong apical seta (d); t2 near base with some (4-5) short and rather fine av, and on basal two-thirds with a row of about 10 strong pv, the longest one about 1.5 times as long as height of the femur; t3 with 2 pd and 2 pv, and without av or ad; t4 with a row of av becoming longer towards apex of the femur, the longest one about 1.5 times as long as height of the femur, and with no distinct pv except for a few ones near apex; t5 with 3-4 av, 4-5 ad, 3 pd and 2-5 pv, apical pd being distinct or rather strong, about as long as apical ad; mid metatarsus with some long setulae on dorsal surface. Wings with costal thorns minute, and distinctly (in the holotype) or hardly (in the paratype) distinguishable from costal setulae; costa bare ventrally; m-m slightly or hardly oblique and nearly straight.

♀. Unknown.


At first sight this species resembles the following Delia takizawai sp. nov., from which it can, however, be readily distinguished by the 5th sternite with many conspicuously long setae and by the absence of ad on t4.

11. Delia takizawai sp. nov.
(Figs. 425-428)

Type-material. HOKKAIDO — Sapporo, 1♀ (holotype), 15-v-70, & 53♂♂, 4♀♀, 8-v-19-vi-59-70 (S. Takagi, S. Ueda & M. Suwa); Nopporo, 4♂♂, 1♀♀, 6-v-2-vi-66-70; Jōzankei, 3♂♂, 10-vi-66; Mt. Soranuma, 2♂♂, 27-v-66; Shikotsu-ko, 8♂♂, 8♀♀, 1♀, 18-v-71; Eniwa, 2♂♂, 25-v-66, & 3♂♂, 27-v-71; Yamabe, 1♂, 25-v-68 (M. Suzuki); Mt. Shokambetsu, 1♂, 1-vii-71. HOKUSHI — Takao-san, Tōkyō-to, 1♂, 4-iv-69, & 1♀, 11-vi-71 (T. Kocha); Mitake-san, Tōkyō-to, 1♂, 4-vi-71 (H. Takizawa); Mt. Tanzawa, Kanagawa-ken, 3♂♂, 29-iv-70 (H. Takizawa). KYUSHU — Fukuoka, 1♂, 2♀♀, 17-iv-67.

♂. Body-length 3.5-4.4 mm; wing-length 3.1-3.7 mm. Interfrontalia brownish to blackish in ground colour and whitish grey in pollinosity; parafacials blackish or sometimes brownish in ground colour, and silvery white in pollinosity; cheeks blackish or sometimes brownish in ground colour, with whitish grey pollen; antennae and palpi blackish; haustellum with mentum blackish and pollinos. Thorax in ground colour blackish, and in pollinosity bluish grey and usually more or less tinged with brown especially on mesonotum; mesonotum with brownish pollinos vittae between rows of acr and along rows of de and ia, and when viewed from behind with dark vittae between rows of acr and along rows of de and with dark patches on lateral sides, these markings being usually distinct; scutellum largely brownish pollinos. Abdomen blackish in ground colour, and bluish grey in pollinosity except on hypopygium which is brownish pollinos; median vitta broad and
sharp, brownish pollinose; fore marginal bands narrow or rather broad and sharp, brownish pollinose. Legs dark brownish to blackish. Wings with a dark brownish tinge, at base blackish; calyptrae whitish, at most very faintly tinged with yellow or brown on margin; halteres yellow at knob.

Frons usually about as wide as anterior ocellus; interfrontalia linear caudad, with if fine or rather distinct; parafrontals with 3–5 ori and no ors; A₃ about 1.5–1.8 times as long as wide; arista minutely pubescent; profrons as wide as or a little narrower than A₃; parafacials narrowing ventrad; cheeks as high as or slightly higher than A₂-width, with genal setae in 1 row; epistoma behind frons at lunule; occiput bare on upper part below postocular row of setulae; palpi and haustellum not lengthened.

Mesonotum usually with 2–3 pairs of pre acr, setae of the 2nd pair being strong, and with no accessory setulae between the rows, which are more or less closer together than to dc; 2nd ph fine, usually indistinguishable from accessory setulae; pra at least as long as posterior ntpl, sometimes longer than anterior ntpl; notopleura with no accessory setulae; mesopleura with no distinct anterior mpl, and with 1 strong and 1–2 (rarely 3) fine pstg; stpl 1:2 or 1:3; scutellum with no accessory setulae on dorsal surface.

Abdomen depressed except on rather developed hypopygium, about 1.9–2.3 times as long as wide, and loosely narrowing caudad; prebasal sclerite exposed and with no setae or setulae; 5th sternite (Fig. 428) on each process with 3–4 blunt setae at inner margin near apex and with 1 pointed seta at apex; cercal plate (Fig. 425) with more than 10 conspicuously long setae on apical half.

Fore tibia with 1 pv and no ad, and with strong apical pd and rather strong apical pv; f₃ on basal half with some rather distinct av, which are shorter than height of the femur, and on basal two-thirds with a row of distinct pv, the longest one being as long as or a little longer than height of the femur; t₃ with 1 ad, 2 pd and 2–4 (usually 2) pv; f₃ on apical two-thirds with a row of about 10 av becoming longer towards apex of the femur, the longest one about 1.5 times as long as height of the femur, and on middle half with some (4–7) pv which are much shorter than height of the femur although not very weak; t₇ with 3–7 (usually 3–4) av, 4–5 ad, 3–4 (usually 3) pd and 4–10 pv, apical pd being strong. Wings with costal thorns minute though distinguishable from costal setulae; costa not haired on ventral surface; m–m nearly erect and hardly sinuate.

♀. Body covered with pollen less bluish than in male; abdomen with median vitta obscure. Wings paler than in male, not blackish at base.

Frons more or less wider than one-third head-width; interfrontalia twice or a little more as wide as parafrontalia, with if strong; parafrontals with 2–3 ori and 3 ors. Stpl 1:2. Fore tibia with 1 ad and 1 pv; f₃ with no av and a few pv near base; t₃ with 1 (rarely 2) av; f₃ with 5–6 av on apical half and with no pv except near apex; t₇ usually with no pv. Wings with costal thorns distinct.


In having blunt setae on the male 5th sternite and having conspicuously long setae on the cercal plate of the male hypopygium this new species may closely be related to the North American Delia frontulentata (Huckett, 1929) and Delia canadensis (Huckett, 1929), from which it can, however, be readily distinguished by the smaller body, shorter aristal hairs, longer pra and presence of a strong seta at apex of each process of the male 5th sternite. The Nepalese Delia coei Ackland,
1967 has the 5th sternite of the male similar to that of *takizawai*; however, the former is readily distinguishable from the latter by the strong and blunt apical *pv* on the male *t*, and presence of numerous *av* and *pv* on the male *t*. Judging from the hypopygium of the male *D. coei* may be closer to *Delia longitheca* sp. nov. described hereinafter rather than to the present species.

*12. Delia tristriata* (Stein)
(Figs. 429-432)


Material examined. **HOKKAIDO** — Sapporo, 1♂, 27-v-59 (S. Ueda); Eniwa, 46♂, 11♀♀, 25-v-66, & 72♂, 19♀♀, 27-v-71; Mt. Apoi, 1♂, 28-vi-67; Kushiro, 1♂, 16-vi-66; Shari, 7♂, 21-viii-68 (H. Torikura); Toyotomi, 1♂, 20-vi-61 (Y. Nishijima).

Figs. 425-428. *Delia takizawai* sp. nov., ♂: 425, hypopygium, dorsal view; 426, ditto, lateral view; 427, aedeagus; 428, 5th sternite, ventral view.

Figs. 429-432. *Delia tristriata* (Stein), ♂: 429, hypopygium, dorsal view; 430, ditto, lateral view; 431, aedeagus; 432, 5th sternite, ventral view.
6. Body-length 4.3–5.8 mm. Mesonotum with median vitta and lateral patches moderate or broad, and often with paramedian vittae along rows of pre dc.

Frons about 1.5–2 times as wide as anterior ocellus; arista distinctly pubescent, the longest hairs being twice or a little more as long as basal diameter of arista; occiput usually with a few or some setulae on upper part below postocular row of setulae. Mesonotum with pra at least as long as anterior ntpl; notopleura usually with one to some accessory setulae. Abdomen on anterior half of 3rd sternite with many long setae directed caudo-ventrad.

Fore tibia with 1 ad and 1–3 (usually 1) pv, apical pv being distinct or rather strong; f₉ with no pv except near apex. Wings with costal thorns strong.

♀. Fore tibia with 3 strong apical setae (d, pd and pv); t₂ with 1 av, 1–2 ad, 1–2 pd and 2–3 (usually 2) pv; t₃ with no pv. Wings with costal thorns very strong; costal setulae prominent and semierect.

Distribution. Japan; Europe.

Having compared the present Japanese specimens with an authentic European one (♂, Estonia) determined as tristriata by Elberg I have found no serious differences except in the wings, which are more darkened in the European form.

13. Delia pilicera sp. nov.
(Figs. 433–436)

Type-material. Honsheiro—Mt. Daibosatsu, Yamanashi-ken, 1 ♂ (holotype), 4♀, 6·viii·69.

♂. Body-length 4.4 mm; wing-length 4.2 mm. Body including appendages black or blackish in ground colour. Interfrontalia and cheeks whitish grey pollinose; parafacials silvery grey pollinose; haustellum with mentum pollinose. Thorax on pleura and humeral calli with whitish grey and a little bluish pollen; mesonotum rather thinly brownish grey pollinose and shining in some lights, when viewed from behind with median vitta broadening caudad and with broad lateral patches. Abdomen very thinly whitish grey pollinose and lustrous, hardly vittate. Wings strongly tinged with brown, darker basad; calyptrae pale yellow; halteres reddish brown at base, yellowish at knob.

Frons about as wide as anterior ocellus; interfrontalia about one-third as wide as frons, with a pair of rather fine if; parafrontals with 4 ori and no ors; A₃ about 2.2 times as long as wide; arista distinctly pubescent, the longest hairs being more than twice as long as basal diameter of arista; profrons slightly wider than A₃; cheeks slightly higher than A₃-width, with genal setae in a row; epistoma behind frons at lunule; occiput with no setulae on upper part below postocular row of setulae; palpi shorter than A₃ and A₉ combined; haustellum with mentum about as long as palpi.

Mesonotum very sparsely setulose; 2 pairs of pre acr present, setae of the 2nd pair being strong, 2 accessory setulae being present between the rows, which are more or less closer together than to dc; 3 pairs of fine post acr present, at most prsc acr of them being rather distinct; pra more or less longer than anterior ntpl; notopleura with no accessory setulae; mesopleura with no distinct anterior mpl, and with 1 strong pstg and 4 fine associated setulae; stpl 1:2; scutellum with no accessory setulae on dorsal surface. Abdomen depressed, nearly parallel-sided.
and a little longer than twice the width.

Fore tibia with 1 pv and no ad, apical pv being strong and pointed apically; f2 with no distinct av, and near base with 2 pv slightly longer than height of the femur; t2 with 1 ad, 2 pd and 1 pv, and with no av; t3 with a row of av becoming longer towards apex of the femur, proximal ones being the longest about 1.5 times as long as height of the femur, and with no pv except 1–2 preapical ones; t3 with 2–3 av, 4–5 ad, 3 pd and 5–6 pv, apical pd being weak. Wings with costal thorns minute and hardly distinguishable from costal setulae; m–m nearly erect and straight.

Figs. 433–436. Delia pilicerca sp. nov., ♂: 433, hypopygium, dorsal view; 434, ditto, lateral view; 435, aedeagus; 436, 5th sternite, ventral view.

♀. Body-length 4.7–5.3 mm; wing-length 4.1–4.7 mm. Interfrontalia brownish on lower part and darkening caudad, blackish near ocellar triangle; parafacials and cheeks dark brownish in ground colour; palpi dark brownish. Legs dark brownish. Wings tinged with pale yellow on basal half and clouded on apical half.

Frons about one-third as wide as head; interfrontalia with if distinct; parafrontals with 2–3 ori, and with 1 procline and 1–2 reclinate ors, the upper reclinate being shorter than the lower and vestigial or strong; profrons about 1.2–1.3 times as wide as A₃. Mesonotum with a few or some pairs of fine pre acr; mesopleura with 1 strong pstg and 0–2 fine associated setulae. Abdomen long-ovoid, with marginal setae not very strong.

Fore tibia with 1 ad and 1 pv, apical pd being rather distinct to strong; f2 with 1–2 fine pv near base; t2 with 1–2 (usually 1) av, 1 ad, 2 pd and 2–3 (usually 2) pv; f3 on apical half to two-thirds with 4–6 av; t3 with no pv. Wings with costal setulae rather prominent and semierect, and with costal thorns more or less stronger than the costal setulae.


This species runs out in a key to the North American species of Delia given
by Huckett (1965a) with Delia augusta (Huckett, 1965), from which it can, however, be readily distinguished by the following aspects:—Arista with longer hairs; $t_1$ with apical $pv$ not blunt; wings of the male with minute costal thorns; 5th sternite and hypopygium of the male different in shape.

14. Delia longitheca sp. nov.
(Figs. 9 & 437–440)

Type-material. HOKKAIDO — Mt. Soranuma, 40♂♂ (one the holotype, 17-vi-67), 25♀♀; Sapporo, 11♀♀; Jōzankei, 1♂; Shikotsu-ko, 3♂♂, 6♀♀; Rebun-tō, 1♀; Rishiri-tō, 4♂♂, 1♀; Toyotomi, 2♂♂, 3♀♀; Toikambetsu, 2♀♀; Horokanai, 1♂; Kumaneshiri, 1♂; Mt. Daisetsu, 2♀♀; Mt. Yūbari, 1♂, 1♀; Shikaribetsu-ko, 1♂, 3♀♀; Kushiro, 1♂; Akkeshi, 1♂, 1♀; Nemuro, 2♂♂, 1♀; Mt. Rausu, 2♂♂, 3♀♀; Abashiri, 1♂; Mt. Kariba, 4♂♂, 4♀♀; Mt. Sengen, 1♀. HONSHU — Mt. Hakkōda, Aomori-ken, 1♂; Mt. Hayachine, Iwate-ken, 11♀♀, 3♀♀; Mt. Chōkai, Mt. Asahi & Mt. Zaō, Yamagata-ken, 5♂♂, 7♀♀; Sado, Mt. Sumon & Mt. Naeba, Niigata-ken, 6♂♂, 4♀♀; Mt. Bandai, Fukushima-ken, 12♂♂, 6♀♀; Tairampyō, Gumma-ken, 1♂, 1♀; Mt. Mitake & Mt. Kawanori, Tōkyō-to, 4♂♂, 2♀♀; Nikkō, Tochigi-ken, 16♀♀; Masutomi & Mt. Daibosatsu, Yamanashi-ken, 6♂♂, 8♀♀; Mt. Yatsugatake, Mt. Kiso-Komagatake, Mt. Senjō, Mt. Hodaka & Mt. Chōgatake, Nagano-ken, 52♂♂, 31♀♀. SHIKOKU — Mt. Mimune, 15♂♂, 5♀♀; Mt. Ishizuchi, 5♂♂, 1♀. KYUSHU — Mt. Kirishima, 2♂♂.

♀. Body-length 5.7–8.7 mm; wing-length 5.3–7.5 mm. Interfrontalia in ground colour brownish or yellowish near lunule or on lower half, sometimes wholly brownish or blackish, and with whitish pollen; parafacials and cheeks in ground colour black, sometimes partly or wholly brownish or orange yellow, and in pollinosity silvery grey to whitish yellow; occiput in ground colour black, in pollinosity bluish grey and more or less tinged with brown; antennae blackish; palpi blackish or dark brownish, often more or less brownish at base; haustellum with mentum blackish and distinctly pollinose. Thorax blackish in ground colour and pale greyish or bluish grey in pollinosity, which is dense and more or less tinged with brown or brownish yellow on pleura, and rather thin and rather distinctly tinged with brown on mesonotum, or sometimes mainly bluish grey and hardly tinged with brown except on vittae on mesonotum; mesonotum variously darkened according to the point of view, with moderate or rather broad median and broad lateral vittae, which are distinct when viewed from behind, more or less obscured when viewed from front, and brownish pollinoise in some lights; scutellum brownish pollinosose dorsally. Abdomen blackish in ground colour and bluish grey in pollinosity, which is usually more or less tinged with brown or yellow; median vitta moderate in width, more or less dilated anteriorly on each tergite and often triangulate; fore marginal bands narrow and sharp, sometimes lacking; these markings brownish pollinosose; hypopygium rather thinly brownish grey pollinoise. Legs blackish or sometimes dark brownish. Wings with a brownish yellow tinge, strongly yellow at base; calyptrae yellow; halteres yellow at knob.

Head about 1.2–1.25 times as high as long; frons more or less wider or sometimes slightly narrower than anterior ocellus; interfrontalia slightly or distinctly narrower than anterior ocellus, yet not interrupted, with if fine; parafrontals with 3–6 strong ori and no ors; $A_3$ about 1.9–2.4 times as long as wide; arista distinctly
pubescent, the longest hairs being twice or a little more as long as basal diameter of arista; profrons slightly or distinctly wider than A₃, usually about 1.3–1.4 times so; parafacials slightly narrowing ventrad, at the narrowest part usually more or less wider than A₄; cheeks slightly less high than profrons-width, with genal setae in 2 (sometimes 1) rows; face distinctly concave near epistoma, which is more or less projecting forwards beyond frons at lunule; occiput bare on upper part below postocular row of setulae; palpi slender, about as long as A₂ and A₃ combined; haustellum slender, with mentum much longer than palpi.

Mesonotum very sparsely setulose, and with 1 to some fine pre acr and/or 1–2 (rarely 3) strong ones, or without any pre acr, if present the setae are regularly or irregularly paired and the rows are much closer together than to dc; apart from strong prsc acr 1 or a few posc acr present, usually weak and regularly or irregularly paired; notopleura with no accessory setulae; mesopleura with no distinct anterior mpl, and with 1 strong and 1 weaker pstg and a few or some fine associated setulae; stpl 1:3, the lowest posterior being indistinguishable from accessory setulae in smaller specimens; scutellum on dorsal surface hardly setulose, at most with a few setulae near lateral margin; pra more or less longer than anterior ntpl.

Abdomen depressed, nearly parallel-sided and about 2.3–2.7 times as long as wide; prebasal sclerite exposed and bare; 5th sternite (Fig. 440) on each process with 2 (sometimes 1 or 3) blunt setae at inner margin and 1 more or less blunt seta at apex; hypopygium and aedeagus as in Figs. 437–439.

Fore tibia with 1 pv and no ad, apical pd being vestigial, apical pv strong and blunt apically; f₁ with no distinct av, and on basal half to two-thirds with some strong pv, the longest one being about 1.3–1.8 times as long as height of the femur; t₂ with 1 (sometimes none) av, 1 (often none and sometimes 2) ad, 1 (sometimes 2 or none) pd and 2 (sometimes 1) pv; f₃ except near base with some strong av, the longest one being about 1.3–1.8 times as long as height of the femur, and apart from a few strong preapical and 1 weak basal pv, near middle usually with 1 or a few pv which are rather strong although at most as long as height of the femur; t₄ with some to about 10 av, 3–4 strong, some weaker and often some fine ad, 3–4 strong and some weaker pd and about 10 (sometimes about 5) pv, apical pd being weak; mid metatarsus with dorsal setulae variable in length from one extreme like accessory setulae to the other, in which they are much lengthened and as long as half of the metatarsus. Wings with costal thorns rather strong or minute; m–m oblique and more or less sinuate; costa very sparsely haired ventrally.

♀. Interfrontalia yellow or brown on lower part and blackish on the upper; parafacials and cheeks in ground colour yellow or brown, sometimes partly and rarely wholly blackish, and in pollinosity yellow, paler on cheeks. Thorax densely covered with yellowish grey pollen, which is hardly or slightly tinged with brown; mesonotum not darkened in any lights, with brownish pollinose vittae between rows of acr and along rows of dc and ia, the median vitta being always distinct, yet the paramedian and lateral ones are sometimes faint or indiscernible. Abdomen rather thinly covered with greyish pollen, which is more or less tinged with brown or yellow, hardly vittate, and with dark reflections in some lights. Wings more yellowish than in male.

Head only a little higher than the length, about 1.1 times so; frons as wide as or slightly wider than one-third head-width; parafrontals with 2–4 ori and 3 (sometimes 2) ors; cheeks with genal setae fewer and weaker than in male and usually
in a row. Thorax with stpl 1:2.

Fore tibia with 1–2 (usually 2) ad, 1–2 (usually 1) pd and 1 pv, apical pv being strong and pointed apically; t₁ often with 1 or a few strong av near base; t₂ with 1 av, 2 ad, 2 pd and 2 pv; t₃ with setae fewer and shorter than in male; t₄ with pv weaker than in male. Wings with costal thorns strong; costal setulae prominent; m-m slightly oblique and hardly or rather distinctly sinuate.


Judging from the arrangement of spine-like setae on the male 5th sternite, the structure of the male hypopygium and the blunt apical pv on t₁ of the male the present species may be closely related to the Nepalese Delia coei Ackland, 1967. However, D. longitheca can be readily distinguished from the latter by the following aspects: — Body much larger in size; haustellum with mentum slender and distinctly pollinose; pra longer than anterior ntpl; t₂ with av present usually in male and always in female; 5th sternite of the male on each process at apex with only 1 spine-like seta.

Figs. 437-440. Delia longitheca sp. nov., ♂: 437, hypopygium, dorsal view; 438, ditto, lateral view; 439, aedeagus; 440, 5th sternite, ventral view.

*15. Delia conversata (Tiensuu)
(Figs. 441-444)


Material examined. HOKKAIDÔ — Mt. Soranuma, 1 ♂, 1-viii-68; Rishiri-tô, 2 ♂, 14-vii-68 (H. Takizawa), & 2 ♂, 31-vii-69; Toyotomi, 3 ♂, 2 ♀, 10-vii-68; Toikambetsu, 3 ♂, 31-vii-66; Kunneppu, 1 ♂, 25-vii-66; Mt. Rausu, 1 ♂, 15-viii-69

♂. Body-length 4.3-5.8 mm. Thorax in pollinosity bluish grey or pale brownish grey on pleura, and brownish on mesonotum and scutellum. Abdomen in pollinosity pale grey and more or less tinged with brown or yellow, with distinct median vitta and fore marginal bands. Legs blackish. Wings tinged with brown or brownish yellow; calyptrae whitish, with a faint yellowish tinge.

Frons usually more or less narrower than anterior ocellus; interfrontalia linear caudad; A₃ about 1.8-2 times as long as wide; arista with the longest hairs about 2-3 times as long as basal diameter of arista; profrons usually more or less narrower than A₃; cheeks a little higher than A₃-width. Mesonotum with some pre acr, of which a few are strong and irregularly paired, the rows being much closer together than to dc and often nearly contiguous to each other; pra shorter than posterior ntpl. Abdomen with 5th sternite and hypopygium as in Figs. 441-444; cercal plate with blunt apex.

Fore tibia with 1 pv and no ad, apical pv being very strong, blunt apically and curved upwards; f₂ on basal half with some pv; t₂ usually with 1 pd, 2 pv and no ad; t₃ with no pv except for 1-2 ones near apex; t₄ with 1-2 av, 3-5 ad, 3 pd and 1-3 (sometimes none) pv; mid metatarsus with some dorsal setulae more or less longer than accessory setulae. Wings with costal thorns short although distinguishable from costal setulae.

♀. Thorax and abdomen pale yellowish grey in pollinosity; abdomen with no markings. Fore tibia with 1 ad, 1 (sometimes 2 or none) pd and 1-2 pv, and with apical pd and pv strong and not blunt apically; t₄ with 1 av, 1 ad, 2 pd and 2 pv; t₅ with 2-3 av, 4-5 (usually 4) ad, 2-4 (usually 3) pd and no pv. Wings with costal thorns distinct or strong; costal setulae prominent.

Distribution. Japan; Scandinavia.

16. Delia tenuis sp. nov.
(Figs. 445-448)

Type-material. HOKKAIDO — Kitami-Esashi, 9♂♂ (one the holotype), 29-vii-69; Sarobetsu, 1♂, 10-viii-65 (T. Kocha), & 7♂♂, 12-vii-68; Moshiri, 1♂, 2-viii-66; Obihiro, 1♂, 15-vii-66.

♂. Body-length 5.4-6.5 mm; wing-length 4.9-5.8 mm. Interfrontalia in ground colour blackish, or often brownish on lower part; parafacials in ground colour blackish, often more or less brownish near lunule, and in pollinosity more or less tinged with yellow; cheeks in ground colour blackish or dark brownish; haustellum with mentum pollinose. Thorax in ground colour blackish, and in pollinosity on pleura greyish and faintly tinged with brown or yellow; mesonotum in pollinosity brownish grey and more or less yellowish, with 3 brownish pollinose vittae along rows of acr and dc though obscure or indiscernible in darker pollinose specimens, these vittae being darkened in some lights; scutellum in pollinosity
brownish yellow. Abdomen in ground colour blackish, and in pollinosity yellowish grey, with golden reflections in some lights; median vitta distinct only at anterior part on each tergite, and very narrowly prolonged caudad on 4th and 5th tergites; besides on 2nd tergite narrow fore marginal band often present on 5th tergite. Legs blackish. Wings with a yellowish tinge; calyptrae pale or rather distinctly yellowish; halteres yellow at knob.

Head about 1.3–1.4 times as high as long; frons more or less wider than anterior ocellus; interfrontalia as wide as or a little narrower than anterior ocellus, with if about as long as postocular setulae or ocellar setae; parafrontals with 3–5 ori and no ors; A₃ about twice as long as wide; arista shortly plumose, the longest hairs being 3–4 times as long as basal diameter of arista; profrons more or less

Figs. 441–444. *Delia conversata* (Tiensuu), ♂: 441, hypopygium, dorsal view; 442, ditto, lateral view; 443, aedeagus; 444, 5th sternite, ventral view.
Figs. 445–448. *Delia tenuis* sp. nov., ♂: 445, hypopygium, dorsal view; 446, ditto, lateral view; 447, aedeagus; 448, 5th sternite, ventral view.

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wider than A₃; cheeks a little higher than profrons-width, with genal setae usually in 1 row; epistoma behind frons at lunule; occiput on upper part below postocular row of setulae usually bare, at most with 1 or a few setulae; haustellum not lengthened.

Mesonotum with a few strong and a few weak or fine *pre acr*, which are irregularly paired, the rows being nearly contiguous to each other; *pra* half to two-thirds of posterior *stpl* in length; *stpl* 1.2, if 2:3 the lower anterior and the lowest posterior being fine; scutellum bare on dorsal centre. Abdomen depressed and nearly parallel-sided, about 2.5–3 times as long as wide; 5th sternite and hypopygium as in Figs. 445–448; cercal plate narrowly prolonged apicad; distiphallus short, strongly chitinized and armed with many spinules on dorsal side.

Fore tibia with 1–2 *pv*, and usually with no *ad* nor *pd*, apical *pv* being weak; *f₂* on basal half with some (6–7 in the holotype) long *pv*, the longest one about 1.3–1.8 (in the holotype 1.8) times as long as height of the femur; *t₂* with 1 *ad*, 2 *pd* and 2 *pv*; *f₃* with a row of 10 or more long *av*, the longest one being 1.6–1.8 times as long as height of the femur, and on basal two-thirds with a row of 6–9 *pv* which are weaker than *av* although longer than height of the femur; *t₃* with 1 or a few (1 in the holotype) *av*, 4–6 *ad*, 3–4 strong and often 1 or a few weak *pd* and 0–6 (usually 1–2) *pv*; mid metatarsus with dorsal setulae not lengthened. Wings with costal thorns rather distinct; costa very scatteringly haired on ventral surface; *m-m* hardly or slightly sinuate.

♀. Unknown.


This species can be readily distinguished from the preceding *conversata* by the much weaker apical *pv* on *t₄* and the presence of some *pv* apart from preapical ones on *f₄*. Judging from the genital structures of the male this species may be closely related to the Scandinavian *D. tenuiventris* (Zetterstedt, 1860), whose genital structures are figured by Ringdahl (1959: Figs. 36 & 89, under *Leptohylemyia*). However, a few distinct differences can be seen between the two: — In *tenuiventris* surstyli in profile strongly curved near apex of cercal plate, and distiphallus rather longer and nearly straight in profile; on the other hand, in *tenuis* surstyli in profile are loosely curved near apex of cercal plate, and distiphallus is rather shorter and more or less sinuate in profile.

17. *Delia auricolor* sp. nov.

(Figs. 449–452)

Type-material. HONSHO-Mt. Daibosatsu, Yamanashi-ken, 77♀♂, 6-viii-69; Okukinu, Tochigi-ken, 16, 22-vn-69 (H. Takizawa); Mt. Kiso-Komagatake, Nagano-ken, 1♀, 25-vii-70; Mt. Shirouma, Nagano-ken, 1♀, 5-viii-70; Mt. Hodaka, Nagano-ken, 1♀, 3-viii-70.

♂. Body-length 4–5.6 mm; wing-length 4–4.9 mm. Interfrontalia in ground colour blackish or sometimes brownish; parafacials and cheeks in ground colour black or dark brown, and in pollinosity whitish grey and more or less tinged with yellow; antennae and palpi blackish or dark brownish; haustellum with mentum blackish or dark brownish and distinctly pollinose. Thorax blackish in ground colour and rather densely pollinose; pleura more or less tinged with yellow in pollinosity; mesonotum in pollinosity yellow or yellowish grey and sometimes
slightly tinged with brown, with narrow brownish pollinose vittae along rows of de and often also medially, and not darkened in any lights, at most with faint dark median vitta and lateral patches when viewed from behind. Abdomen in ground colour blackish, and in pollinosity yellowish grey, with golden reflections in some lights; median vitta more or less dilated anteriorly on each tergite and usually not interrupted, at most interrupted at hind margin of 2nd tergite; fore marginal bands absent. Legs blackish or dark brownish. Wings with a yellowish tinge; calyptrae pale yellow; halteres pale yellow, at base more or less brownish.

Head about 1.3–1.4 times as high as long; frons usually more or less narrower than anterior ocellus, at most as wide as the latter; interfrontalia not interrupted though very narrow, with if fine; parafrontals with 3–5 ori and rarely with 1 vestigial ors; As about 2–2.2 times as long as wide; arista shortly plumose, the longest hairs being nearly 4 times as long as basal diameter of arista; profrons as wide as or a little narrower than As; cheeks as high as or a little higher than As-width, with genal setae in 1 row; epistoma behind frons at lunule; occiput bare on upper part below postocular row of setulae; palpi and haustellum not lengthened.

\[\text{Figs. 449--452. } Delia \text{ auricolor } \text{ sp. nov., } \delta : \text{449, hypopygium, dorsal view; 450, ditto, lateral view; 451, aedeagus; 452, 5th sternite, ventral view.}\]

Mesonotum very sparsely setulose, with a single or sometimes 2 strong pre acr and with a few pairs of post acr including a pair of prsc ones; pra shorter and weaker than posterior nspl, half to two-thirds as long as the latter; mesopleura with no distinct anterior mpl, and with 1 strong and 0–2 fine pstg; stpl 1:3, the lowest posterior being weak; scutellum not setulose on dorsal surface. Abdomen depressed and nearly parallel-sided, about 2.7–2.9 times as long as wide; 5th sternite and hypopygium as in Figs. 449–452; cercal plate narrowly prolonged apicad; distiphallus very long and armed with spinules on apical third of dorsal side.

Fore tibia with 1 ad and 1 pv, apical pv being rather strong and more or less curved upwards though not blunt; \(t_3\) near base with 1–2 pv longer than height of the femur; \(t_4\) with 1 ad, 2 pd and 2 pv; \(t_5\) with a row of 7 to about 10 av, the longest
one being 1.5 times or slightly more as long as height of the femur, and except for a few preapical ones with no \( pv \), only occasionally with 1 or a few fine ones near middle; \( t_2 \) with 1 or a few \( av \), 3-4 \( ad \), 3 \( pd \) and 1 to some fine \( pv \); mid metatarsus with dorsal setulae not lengthened. Wings with costal thorns minute and only a little stronger than costal setulae; costa hardly haired ventrally; \( m-m \) nearly erect and slightly curved inwards.

\( \varphi \). Interfrontalia yellow or brown on lower half in ground colour. Abdomen densely yellowish grey pollinose and with no markings. Head about 1.1-1.2 times as high as long; frons about 0.4 times as wide as head; interfrontalia with \( if \) strong; parafrontals with a few \( ori \) and 3 (sometimes 2) \( ors \); profrons and cheeks respectively in width and height nearly equal to or a little more than \( A_3 \)-width. \( Stpl 1:2. \) Fore tibia sometimes with 1 \( pd \); \( t_2 \) with or without 1 \( av \); \( f_a \) with 4-6 \( av \); \( t_3 \) with no \( pv \). Wings with costal thorns rather distinct, yet not so strong as in \( conversata \).


Judging from the genital structures of the male this species may be closely related to the North American species, \( Delia angustitarsis \) (Malloch, 1920), from which it is, however, distinctly different in the colour pattern of the body and in the chaetotaxy of the legs.

21. Genus \( Paradelia \) Ringdahl

\( Paradelia \) Ringdahl, 1933:33, as subgenus of \( Hylemyia \). Type-species: \( Pegomyia lundbeckii \) Ringdahl, 1918.

\( Pegomyiella \) Ringdahl, 1938:191, as subgenus of \( Pegomyia \). Type-species: \( Anthomyza lunatifrons \) Zetterstedt, 1846.

This genus is represented by 2 species distributed in the Holarctic region. On this occasion will be recorded 1 species out of the two for the first time from Japan.

*1. \( Paradelia lunatifrons \) (Zetterstedt)

(Figs. 453-457)

\( Anthomyza lunatifrons \) Zetterstedt, 1846:1708. \( Pegomyia \) (\( Pegomyiella \)) \( lunatifrons \): Ringdahl, 1938:212. \( Paradelia lunatifrons \): Hennig, 1972:442.

Material examined. HOKKAIDO — Mt. Muine, 2♀♂, 3-ix-72 (S. Aoki).

♀. Body-length 4.5-4.8 mm. Head including appendages blackish in ground colour, at most narrowly brownish on parafacials near lunule; haustellum with mentum polished. Thorax blackish in ground colour; mesonotum brownish pollinose. Abdomen in ground colour dark brownish and with blackish bands on hind margins of tergites, and in pollinosity brownish grey, with very narrow and interrupted median vitta. Legs dark brownish, at most narrowly yellowish on \( t_1 \) basally. Wings with a brownish yellow tinge; calyptrae brownish yellow; halteres yellow at knob.

Frons much narrower than anterior ocellus; parafrontals broadly contiguous to each other, with 2 strong and 0-2 fine \( ori \); interfrontalia with \( if \) not strong though distinct; \( A_3 \) about twice as long as wide; arista minutely, and yet distinctly pubescent; profrons about two-thirds as wide as \( A_3 \); cheeks about as high as \( A_3 \)-width; epistoma behind frons at lunule.

Mesonotum with 2-3 pairs of \( pre aev \) and with no setulae between the rows,
which are separated by a distance nearly equal to that between 
short, about half of posterior ntpt in length; stpt 1:2. Abdomen depressed only 
at base, elongate and 3.1–3.5 times as long as wide; 5th sternite and hypopygium 
as in Figs. 453–457.

Fore tibia with 1 short ad and with no pv; t2 with 1 pd and with or without 1 
p−pv; t3 with a row of av becoming longer towards apex of the femur; t4 with 1 av, 
2 ad and 2 pd, the distal one of the pd being much longer than the other and about 
one-third of the tibial length. Wings with costal thorns minute and only a little 
stronger than costal setulae; m–m semierect and nearly straight.

♀. Unknown to me.

Distribution. Japan; Kamchatka; Europe; North America.

Figs. 453–457. Paradelia lunatifrons (Zetterstedt), ♂: 453, hypopygium, dorsal view; 
454, ditto, lateral view; 455, aedeagus; 456, 5th sternite, ventral view; 457, ditto, lateral 
view.

22. Genus Pseudonupedia Ringdahl


This genus is a small group represented by 8 species. In the course of the 
present study has been found the following species from Japan.

*1. Pseudonupedia brunneonigra (Schnabl) 
(Figs. 458–462)

Pegomyia (Anthomyia) brunneonigra Schnabl, in Schnabl & Dziedzicki, 1911:271. 

Material examined. HOKKAIDÔ — Nopporo, 1 ♂, 17-v-70; Mt. Soranuma, 5♂♂, 
11-vii-67; Shikotsu-ko, 1 ♂, 18-v-71.

♂. Body-length 3.6–4.7 mm. Frons narrower than anterior ocellus; para­ 
frontals broadly contiguous to each other, with 3 ori, the middle one being more 
or less weakened, and usually with 1 vestigial ors; interfrentalia with if usually 
lacking, yet in 2 specimens present though fine or vestigial; A3 about twice as long 
as wide; profrons two-thirds to three-fourths as wide as A3; cheeks two-thirds to 
three-fourths as high as A3-width, with genal setae in 1 row or nearly so; occiput

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setulose on upper part below postocular row of setulae.

Mesonotum with 3 pairs of \textit{pre acr} and with 1 or a few setulae between the rows; \textit{pre} shorter than posterior \textit{ntpl}, about 0.6 times of the latter; \textit{ph} duplicated; notopleura with no accessory setulae; \textit{ntpl} 1:2. Abdomen depressed, about twice as long as wide; prebasal sclerite devoid of setulae and fused to basal sclerite; 5th sternite and hypopygium as in Figs. 458–462.

Fore tibia with apical \textit{pv} much weaker than apical \textit{d} although distinct; \textit{t₃} with 1 \textit{av}, 3 \textit{ad} and 2 \textit{pd}, and with no \textit{pv}, apical \textit{pd} being vestigial. Wings with costal thorns minute and only a little stronger than costal setae.

♀. Unknown to me.

Distribution. Japan; Europe.

23. Genus 	extit{Nupedia} Karl

\textit{Nudaria} Karl, 1928:171, nec Haworth, 1809 (Lepidoptera), as subgenus of \textit{Chortophila}. Type-species: \textit{(Anthomyia dissecta} Meigen sensu Karl, 1928 et auctt.)=\textit{Anthomyia infirma} Meigen, 1826.

\textit{Nupedia} Karl, 1930:174, pro \textit{Nudaria} Karl, 1928, as subgenus of \textit{Chortophila}. Type-species: \textit{(Anthomyia dissecta} auctt.)=\textit{Anthomyia infirma} Meigen, 1826.

As pointed out by Ackland (1967) \textit{Nupedia} may be closely related to \textit{Pegoplata} in the following aspects: — Interfrontalia with \textit{if} present in both sexes; parafrentals with 1 vestigial \textit{ors} in male; haustellum with mentum pollinose; palpi broadening apicad; prebasal sclerite of male hypopygium setose\(^1\)); 5th sternite of male more or less heart-shaped; distiphallus developed and enlarged apically, with teeth or sharp projections; \textit{t₃} with 2 \textit{ad} and 2 \textit{pd}. This genus, however, differs from \textit{Pegoplata} in the following characters: — Arista not plumose; abdomen depressed; 5th sternite of male with no tufts of short setae; surstyli more simple.

According to Hennig (1968) 6 species belonging to this genus are distributed in the Palaearctic region. On this occasion the following species is recorded from Japan.

*1. \textit{Nupedia nigroscutellata} (Stein)

(Figs. 463–466)


♂. Body-length 4.3–5.3 mm. Blackish in ground colour and whitish grey or bluish grey in pollinosity. Mesonotum more or less tinged with brown in pollinosity, and with broad median and lateral vittae, the median one being much broadened caudad; scutellum very faintly covered with brownish pollen, which is visible only when viewed from front in low angle. Abdomen slightly tinged with

\(^{1)}\) According to Ackland (1967) \textit{Pegoplata}-species differ from \textit{Nupedia}-ones in the setose prebasal sclerite in the male. However, at least in \textit{nigroscutellata}, which is the only species known to me, the prebasal sclerite is armed with some setae along the hind margin.
brown in pollinosity; median vitta broad, and interrupted at hind margins of tergites; fore marginal bands present and broad or narrow. Wings with a dark brownish tinge; calypterae whitish, only a little yellowish marginally.

Parafrontals contiguous to each other or very narrowly separated, with 1 vestigial ors; A₃ usually less than twice (about 1.6–1.7 times) as long as wide; profrons two-thirds to three-fourths of A₃ in width; cheeks as high as or slightly higher than profrons-width; occiput bare on upper part below postocular row of setulae; palpi distinctly broadening apicad and blade-like.

Mesonotum with 3 pairs of pre acr, distance between the rows being nearly equal to that between dc and acr, and with some accessory setulae between the rows; ph duplicated; pra half to two-thirds of posterior ntpl in length; stpl 1:2 or 1:3. Abdomen with prebasal sclerite of hypopygium exposed and setose marginally.

Fore tibia with 1 ad, which is very minute and often indiscernible, and with 1 distinct pv; t₂ with 1 ad, 1 pd and 2 (rarely 1) p–pv; t₃ with 1 av, 2 ad and 2 pd, and with 3 strong apical setae (av, ad and d). Wings with costal thorns rather distinct.

♀. Unknown to me. According to Huckett (1941) the female differs most notably from that of allied species in having the ventral stpl of caudal pair relatively well developed, being longer than posterior ntpl.

Distribution. Japan; Europe; North America.

24. Genus Pegoplata Schnabl & Dziedzicki

Pegoplata Schnabl & Dziedzicki, 1911:108, as subgenus of Pegomyia. Type-species: (Pegomyia (Pegoplata) palpata Stein sensu Schnabl & Dziedzicki, 1911) = Hydrophoria palpata Stein, 1897.
This genus resembles Hydrophoria as pointed out by Hennig (1968) in having a plumose arista. The stout body and the large lower calyptra of *palposa* are shared by some members of *Hydrophoria*. Moreover, the surstyli of *virginea* and *palposa* are similar to those of the *frontata*-group of *Hydrophoria* rather than to those of *Nupedia*. Nevertheless, judging from the 5th sternite and distiphallus, *Pegoplata* may be more closely related to the latter. This genus is represented by 3 species, namely *P. virginea* (Meigen), *P. palposa* (Stein) and *P. juvenilis* (Stein), of which *virginea* and *palposa* are distributed in the Palaearctic region and *palposa* and *juvenilis* in the Nearctic region.

**Key to the species (♂ & ♀)**

1. Calyptrae strongly tinged with yellow, the lower one being much protruded beyond the upper. ............................................. 1. *palposa* (Stein)

- Calyptrae weakly tinged with yellow, the lower one being not protruded beyond the upper. ........................................... 2. *virginea* (Meigen)

*1. Pegoplata palposa* (Stein)

(Figs. 467-470)


Material examined. **HOKKAIDO** — Mt. Daisetsu, 15♂, 1♀, 23-vii-68; Nukabira, 1♂, 12-vii-59 (K. Kamijo); Mt. Apoi, 1♂, 21-vi-59 (S. Ueda). **HONSHU** — Mikuni-tōge, Gunma-ken, 1♂, 7-vi-70 (H. Takizawa); Okukini, Tochigi-ken, 3♂, 23-24-vii-69 (T. Kocha); Mt. Sukai, Tochigi-ken, 5♂, 1♀, 4-vii-71 (H. Takizawa); Hatano, Kanagawa-ken, 3♂, 29-v-70 (H. Takizawa); Urayama, Saitama-ken, 1♂, 20-vii-71 (H. Takizawa); Mt. Senjō, Nagano-ken, 2♂, 10-vii-71. **SHIKOKU** — Mt. Tsurugi, 1♂, 16-vii-71; Mt. Mimune, 1♂, 1♀, 18-vii-71.

**Figs. 467-470.** *Pegoplata palposa* (Stein), ♂: 467, hypopygium, dorsal view; 468, *ditto*, lateral view; 469, aedeagus; 470, 5th sternite, ventral view.
6. Body-length 7-9 mm. Mesonotum almost blackish when viewed from front. Abdomen with metallic reflections in some lights; basal sclerite thinly pollinose although shining. Fore femur faintly yellowish at apex. Wings strongly tinged with yellow; calypterae yellowish as strongly as wing-base.

Frons much narrower than anterior ocellus; parafrontals broadly contiguous to each other, and with 4-7 ori and 1 vestigial ors; eyes rather distinctly haired. Mesonotum with \( ph \) duplicated. Abdomen stout as in *Hydrophoria ambigua*, about 1.8-2 times as long as wide, and densely covered with accessory setulae; 5th sternite and hypopygium as in Figs. 467-470.

Fore tibia with 1 short \( ad \) at apical third and 1 strong \( pv \) near middle, and sometimes with 1 additional \( pv \) at apical fourth or fifth, some accessory setulae in apical third on anterodorsal surface being rather distinct; \( t_2 \) with 1 \( ad \), 1 \( pd \), 1 or sometimes 2 \( p \) and 1 \( pv \); \( t_3 \) with 1 or rarely 2–3 \( av \), 2 or sometimes 3 \( ad \) and 2 \( pd \), and often with 1 additional \( pd \). Wings with costal thorns distinct though short; \( m-m \) oblique and sinuate; lower calyptera much protruded beyond the upper.

♀. Body-length 7-7.5 mm. Parafrontals with 3 ori and 3 ors; occiput setulose on upper part below postocular row of setulae. Mesonotum with 2nd \( ph \) rather distinct or fine; \( stpl \) 1:2 or 2:2. Fore tibia with \( ad \) strong. Wings with costal thorns as strong as those of male; \( m-m \) nearly straight.

**Distribution.** Japan; Europe; North America.

2. *Pegoplata virginea* (Meigen)


Material examined. There are at hand a lot of specimens collected from various localities in Hokkaidō, Honshū, Shikoku and Kyūshū.

♀. Body-length 4.7-8 mm. More densely pollinose than in *palposa*. Abdomen with basal sclerite of hypopygium polished. Calypterae pale or whitish yellow. Fore femur at apex and \( t_1 \) at base rather distinctly yellowish.

Body more or less slender; abdomen about 2.2-2.5 times as long as wide. Frons as wide as or slightly wider than anterior ocellus; parafrontals broadly contiguous to each other, with 3-5 ori and 1 vestigial ors. Mesonotum with 2nd \( ph \) fine; \( stpl \) 2:2, the lower anterior being sometimes fine. Lower calyptera not protruded beyond the upper.

Mid tibia with 1 \( ad \), 1 \( pd \), 1 \( p \) and 1 \( pv \); \( t_3 \) with 1 \( av \), 2 \( ad \) and 2 \( pd \), apical \( pd \) being rather strong. Wings with costal thorns short although distinct.

♀. Wings with costal thorns much stronger than those of male and longer than \( h \)-vein.

**Distribution.** Japan; Europe.

25. Genus *Hydrophoria* Robineau-Desvoidy


*Acroptena* Pokorny, 1893:60. Type-species: (*Acroptena simonyi* Pokorny, 1893) = *Anthomyza frontata* Zetterstedt, 1838.
Recently the Palaearctic species of this genus were revised by Hennig (1969), who recognized 32 species and divided them into 3 species-groups (with 3 dubious species), namely the conica-group, the frontata-group and the barbiventris-group. In Japan 3 species have been known to occur (Suwa, 1970b). On this occasion 2 other species will be added to the fauna. Of the 5 species ruralis and montana belong to the conica-group, frontata to the frontata-group, and hyalipennis and ambiguа to the barbiventris-group.

Key to the species (♂ & ♀)

1. Arista shortly plumose, the longest hairs being shorter than A2-width; t2 with av; t2 with 3 or more pd. .......................................................... 2
   - Arista longly plumose, the longest hairs being longer than A2-width; t2 without av; t2 usually with 2 pd. ........................................... 5
2. Male. .................................................................. 3
   - Female. .......................................................... 4
3. Fore tibia with apical ad longer, about as long as apical d; notopleura with 1–7 accessory setulae near posterior nipl; t3 with no pv. ............. 4. ambiguа (Fallén)
   - Fore tibia with apical ad shorter, less than half as long as apical d; notopleura with no accessory setulae; t3 with 1 pv. ............... 5. hyalipennis (Zetterstedt)
4. Hypopleura with a few hair-like setulae on upper border; parafrontals broader, about half as wide as interfrontalia at level of if, and near ors with many distinct accessory setulae. ............................................. 3. frontata (Zetterstedt)
   - Hypopleura with no setulae; parafrontals narrower, about one-third as wide as interfrontalia at level of if, and near ors with at most only a few minute accessory setulae. .................................................. 5. hyalipennis (Zetterstedt)
5. Darker in colour, abdomen blackish in ground colour, at most faintly yellow basally in female; each process of male 5th sternite swollen apically, and with a row of setulae on apical half; surstyi of male hypopygium nearly straight in profile; ovipositor longer and with sternites more slender. .................................................. 2. montana Suwa
   - Lighter in colour, abdomen usually yellowish in ground colour basally; t3 with or without pv; each process of male 5th sternite not swollen apically, and with a row of setulae on basal half; surstyi of male hypopygium sinuate in profile; ovipositor shorter and with sternites less slender. ..................................... 1. ruralis (Meigen)

1. Hydrophoria ruralis (Meigen)


Material examined. There have been examined a lot of specimens collected from various localities in Hokkaido, Honshū, Shikoku and Kyūshū.

Distribution. Palaearctic region. In North America there is a closely related species, *H. subpellucida* Malloch, 1918, which was treated as a synonym of *ruralis* by Huckett (1944) and Hennig (1969) and later recognized as a good species by Huckett (1965b & 1971).

2. Hydrophoria montana Suwa


Material examined. *Honshū*—Mt. Kurikoma, Miyagi-ken, 8♂♀; Mt. Zaō,
Yamagata-ken, 1♂; Mt. Bandai, Fukushima-ken, 1♂; Mt. Mitake, 21♂♂ (one the holotype), 12♀♀, Mt. Mitō, 1♂, Mt. Kariyose, 2♂♂, & Takao-san, 2♂♂, Tōkyō-to; Mt. Daibosatsu, Yamanashi-ken, 10♂♂, 1♀; Mt. Shirouma & Mt. Chōgatake, Nagano-ken, 3♂♂, 2♀♀. SHIKOKU — Mt. Tsurugi, 6♂♂.


This species may be placed between ruralis and conica in having the external appearance similar to that of ruralis and having the hypopygium similar to that of conica.

*3. Hydrophoria frontata (Zetterstedt)


Material examined. HONSHU — Mt. Akaishi, Shizuoka-ken, 1♀, 25-viii-72 (T. Hattori).

♀. Body-length ca. 7 mm. Blackish in ground colour. Interfrontalia somewhat brownish near lunule, with pollen pale yellow on lower half and brownish grey on upper half; parafrontals dark brownish pollinose; parafacials and cheeks yellowish grey pollinose; occiput brownish grey pollinose, darker on upper half. Mesonotum brownish grey pollinose, paler on humeral calli and notopleura, and rather obscurely vittate, when viewed from behind with moderate median, narrow paramedian, narrow sublateral and broad lateral vittae. Abdomen pale greyish pollinose, with a trace of yellowish or brownish tinge in the pollinosity, and with tessellations in some lights; median vitta moderate in width, narrowing caudal; fore marginal bands lacking. Legs black. Wings tinged with brown at base; calyptrae pale, on margin rather distinctly yellow; halteres brownish yellow at knob.

Head hardly higher than the length; frons about 0.4 times as wide as head; parafrontals broad, about half as wide as interfrontalia at level of if, with 3–4 strong or distinct and some minute ori and 4–5 strong ors, and outside ors with many setae about as strong as secondary ocellar setae; A₃ short and rounded, about 1.3 times as long as wide; arista with the longest hairs about 3 times as long as basal diameter of arista; profrons and cheeks respectively about 1.5 times as wide and high as A₃-width; epistoma projecting forwards as far as frons at lunule and situated at level of eye-bottom; occiput setulose on upper part below postocular row of setulae.

Mesonotum with acr fine and hardly distinguishable from accessory setulae situated between the rows; pra more or less shorter than posterior mpl; notopleura with no accessory setulae; mesopleura with no distinct anterior mpl, and with more than 10 accessory setulae around pstg; judging from the sockets of missing setae, stpl probably 1:3, the lowest posterior being weaker; hypopleura with a few setulae on upper embossed ridge; scutellum setulose on dorsal surface, yet not so densely as in ruralis or conica and almost bare on basal centre.

Fore tibia with 1 ad and 1 pv, apical ad and pd being rather strong; t₂ with 1 av, 1 ad, 1 pd and 4 p–pv, proximal one of the last being rather on posterodorsal surface; t₃ with 6–7 av, 5–6 ad, 3 strong and some weak pd and no pv, apical pd being distinct and somewhat longer than height of the tibia. Wings with costal
thorns distinct; costa bare ventrally beyond the outlet of subcosta; m-m oblique and sinuate.

Distribution. Japan; Siberia; Europe; North America.

The present specimen runs out in a key to the Palaearctic species of *Hydrophoria* given by Hennig (1969) with *frontata*, *spiniclunis* and *septimalis*, which are hardly distinguishable from each other in the females (after Hennig, l.c.). Among the three *frontata* is widely distributed in the Holarctic region, whereas the remaining two are restricted to some localities in Europe. In this regard the present Japanese specimen may possibly belong to *frontata*.

4. *Hydrophoria ambigua* (Fallén)


Distribution. Asia; Europe: North America.

The female specimens which were formerly identified with *ambigua* by Suwa (1970b) may be referred to *hyalipennis* in having the notopleura with no accessory setulae.

5. *Hydrophoria hyalipennis* (Zetterstedt)


Material examined. HOKKAIDO — Eniwa, 1♀, 2♂♂, 27-v-71; Sapporo, 2♂♂, 17-vi-66; Nemuro, 1♀, 20-vii-66; Sarobetsu, 2♂♂, 2-viii-61 (G. Kuno) & 11-vii-68 (T. Nakashima).

Distribution. Japan; Europe.

This species is closely related to *ambigua*, from which it may be distinguished by the notopleura with no accessory setulae in both sexes, t3 with 1 distinct pv in the male and the 5th sternite with many long setae in the male. The female specimens at hand are tentatively identified with this species by the absence of accessory setulae on the notopleura. However, further study based on many specimens is necessary for the precise identification of female *hyalipennis* and *ambigua*.

26. Genus *Phorbia* Robineau-Desvoidy


The Palaearctic species of this genus were recently revised by Hennig (1969), who recognized 21 species in this region. In the course of the present study have been found 4 species, of which two are described as new species.
Key to the species (♂♂)

1. Hind tibia with strong apical pv; t1 with apical ad stronger, only a little shorter than apical d. .................................................. 4. subgrisea Ringdahl
   - Hind tibia without apical pv; t1 with apical ad weaker, much shorter than apical d.

2. Mid tibia with av; cercal plate with a shaggy tuft of numerous long setae almost on whole dorsal surface. ......................... 3. fascicularis Tiensuu
   - Mid tibia without av; cercal plate at most with a loose grouping of long setae near apex.

3. Larger in size, body-length 4.7-5.8 mm; interfrontalia with if strong; parafrontals with 1 distinct ors; 5th sternite densely setose on outer margin and with a patch of short setulae at inner margin near apex of each process. ................. 1. kochai sp. nov.
   - Smaller in size, body-length 2.8-4.5 mm; interfrontalia with if fine; parafrontals usually with no ors; 5th sternite sparsely setose on outer margin and without a patch of setulae at inner margin of each process. .... 2. asymmetrica sp. nov.

1. Phorbia kochai sp. nov.
   (Figs. 471-474)

Type-material. HONSHÔ — Mt. Yatsugatake, Nagano-ken, 3♂♂ (one the holotype), 2-4-vi-67 (T. Kocha); Takao-san, Tôkyô-to, 1♂, 11-v-71 (T. Kocha); Mt. Mitô, Tôkyô-to, 1♂, 27-v-68 (H. Takizawa).

♂. Body-length 4.7-5.8 mm; wing-length 4-4.8 mm. Blackish in ground colour and bluish grey in pollinosity. Interfrontalia blackish or dark brownish, with whitish grey pollen; parafacials and cheeks in ground colour blackish or at most partly brownish, and in pollinosity silvery white and slightly or hardly tinged with yellow; antennae and palpi black; haustellum with mentum blackish and pollinose. Thorax densely pollinose; mesonotum slightly or hardly tinged with brown in pollinosity, with brownish pollinose median vitta, and when viewed from behind hardly vittate, only with dark lateral patches. Abdomen variously dark-reflecting according to the point of view although rather densely pollinose, when viewed from front wholly pollinose and with faintly brownish pollinose median vitta, and when viewed from behind largely blackish except on pollinose lateral sides of 2nd to 4th tergites. Legs black. Wings with a tinge dark brownish, strongly at base; calyptrae whitish, more or less yellowish marginally; halteres yellow at knob.

Frons about twice as wide as anterior ocellus; interfrontalia about as wide as anterior ocellus, with a pair of strong if; parafrontals with 4-6 ori and 1 rather distinct ors; A3 about 1.5-1.8 times as long as wide; aristal pubescence distinct although minute; profrons more or less wider than A3; cheeks as high as or a little higher than A3-width, with genal setae in 2 rows (1 row in 1 specimen).

Mesonotum with 3 (2 in 1 specimen) pairs of pre acr, the rows being separated from each other by a distance half to two-thirds of that between dc and acr; pra more or less longer than anterior ntpl; stpl 2:3, the lower anterior and the lowest posterior being at least distinguishable from accessory setulae; scutellum with no accessory setulae on dorsal surface, and bare on ventral surface, at most only 1 hair being visible in 2 specimens including the holotype. Abdomen 2-2.35 times as long as wide, with 5th sternite and hypopygium as in Figs. 471-474.

Fore tibia with 1 ad and 1 pv, apical ad being distinct and about half as long

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as apical $d$; $f_2$ on basal third with some rather distinct $av$ and on middle third with 1 or a few strong $av$, the longest one being about 1.2-1.5 times as long as height of the femur, and on basal half with some strong $pv$, the longest one slightly or distinctly longer than height of the femur; $t_2$ with 1-2 $ad$, 2-3 $pd$ and 2 $pv$; $f_3$ with a row of strong $av$, the longest one about 1.5-1.8 times as long as height of the femur, and with a row of $pv$, setae near base and apical third being fine, the longest one near middle about 1.3-1.4 times as long as height of the femur; $t_3$ with 5-6 $av$, 5 strong (not uniform in length) $ad$, 5 $pd$ (of them 1-2 being much shorter and weaker than the others) and some (3-6) $pv$, apical $pd$ being strong. Wings with costal thorns distinct or rather strong; costa on ventral surface haired rather anteriorly; $m-m$ erect and hardly sinuate.

Figs. 471–474. *Phorbia kochai* sp. nov., $\delta$: 471, hypopygium, dorsal view; 472, ditto, lateral view; 473, aedeagus; 474, 5th sternite, ventral view.

♀. Unknown.
The present species has the hypopygium closely resembling that of the North American *barbicula* Huckett, 1948 in dorsal view and that of the European *junco-rum* Ringdahl, 1959 in lateral view. From the two species, however, this species can be readily distinguished by the body larger in size, by $t_2$ without $av$ and by $t_3$ with setae more numerous.

2. *Phorbia asymmetrica* sp. nov.
(Figs. 475–479)
Type-material. HONSHU—Mt. Chôkai, Yamagata-ken, 2$\delta$, 9-viii-70; Mt. Kiso-Komagatake, Nagano-ken, 18$\delta$ (one the holotype), 26-27-vii-70; Mt. Yatsugatake, Nagano-ken, 1$\delta$, 3-vi-67 (T. Kocha); Mt. Senjô, Nagano-ken, 14$\delta$, 10-vii-71; Mt. Hodaka, Nagano-ken, 1$\delta$, 3-viii-70.
$\delta$. Body-length 2.8-4.5 mm; wing-length 2.7-3.9 mm. Body including appendages blackish in ground colour. Haustellum with mentum rather thinly
pollinose. Thorax shining in some lights and rather thinly covered with more or less bluish grey pollen, which is more or less tinged with brown, distinctly on mesonotum. Abdomen shining in some lights and rather thinly covered with brownish grey pollen, when viewed from front wholly pollinose and when viewed from behind very broadly blackish medially. Legs sometimes more or less brownish (probably due to young age of the specimens). Wings tinged with dark brown, strongly at base; calyptrae slightly yellowish marginally; halteres dark reddish brown at base and brownish yellow at knob.

Frons wider than anterior ocellus, about 1.5–2 times as wide as the latter; interfrontalia as wide as or slightly narrower than anterior ocellus, with if vestigial or sometimes rather distinct; parafrontals with 5–7 oris and rarely with 1 vestigial ors; A₉ about 1.5–1.7 times as long as wide; aristal pubescence distinct though minute; profrons and cheeks respectively more or less wider and higher than A₉-width; cheeks with genal setae usually in 2 rows; face rather distinctly concave near epistoma, the latter more or less behind frons at lunule; haustellum rather slender, with mentum more or less longer than palpi.

Mesonotum with a few or some fine pre acr, which are irregularly paired or sometimes nearly uniserial, and if arranged in 2 rows the distance is very short, at most one-third of that between dc and acr; pra more or less longer than anterior ntpl; stpl 1:2; scutellum on dorsal surface with no accessory setulae or nearly so, and on ventral surface rather distinctly haired.

Abdomen half-depressed basally, and usually more or less shorter than twice the width; 5th sternite (Figs. 478 & 479) strongly chitinized and edged on inner margin of each process, which is densely armed with minute setulae inside; cercal plate (Fig. 475) produced distad on left side only; praegonites also asymmetric, the right one being much broader than the left (Fig. 477).

Fore tibia with 1 short pv and sometimes with 1 fine ad, apical ad being rather distinct though much shorter and weaker than apical d, apical pv vestigial; f₂ on basal half to two-thirds with some av, setae on basal third being often very fine, 1 or a few near middle being strong and slightly shorter or longer than height of the femur, and on basal half with 3–5 strong pv, the longest one about 1.3–1.5 times as long as height of the femur; t₂ with 1 ad, 2 pd and 2 pv, and without av; f₃ with some to about 10 strong av becoming longer towards apex of the femur, the longest one about 1.2–1.6 times as long as height of the femur, and on basal half with a few weaker pv at most as long as height of the femur; t₃ with a few av, 3–4 ad, 3–4 pd and 1 or a few pv, apical pv being lacking. Wings with costal thorns minute though distinguishable from costal setulae; costa hardly haired ventrally; m-m upright.

♀. Unknown.


P. asynmetria may be closely related to the Nepalese P. morula Ackland, 1967 and P. tysoni Ackland, 1967. However, the new species is quite distinct from morula in the surstyli and the cercal plate, and from tysoni in the conspicuously asymmetrical cercal plate.

*3. Phorbia fascicularis Tiensuu (Figs. 480–483)


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Material examined. 

HONSHÔ — Hannô, Saitama-ken, 1♂, 2-v-68 (H. Taki­
zawa); Mt. Usuki, Tôkyô-to, 1♂, 26-v-67 (T. Kocha); Tôkyô, Tôkyô-to, 1♂, 7-iv-
67 (T. Kocha); Mt. Kiso-Komagatake, Nagano-ken, 3♂♂, 25-vii-70; Mt. Senjô, 
Nagano-ken, 1♂, 10-vii-71.

♂. Body-length 3.6-4.3 mm. Blackish in ground colour and bluish grey in 
pollinosity. Mesonotum strongly or rather distinctly tinged with brown in pollino-
sity, not wholly blackish in any lights and hardly vittate, at most with very faint
median, paramedian and lateral vittae when viewed from behind. Abdomen hardly or rather distinctly tinged with brown in pollinosity, when viewed from front wholly pollinose and sometimes with faint brownish median vitta, and when viewed from behind largely blackish except on narrow lateral pollinose areas. Wings tinged with dark brown, strongly at base; calypterae whitish, more or less tinged with brown marginally; halteres dark brownish at base and yellow or brownish yellow at knob.

Frons wider than anterior ocellus, usually 1.5–2 times as wide as the latter; interfrontalia as wide as anterior ocellus, or sometimes about half of the latter, with if fine; parafrontals with 4–5 ori and 1 fine ors; A₃ about 1.4–1.6 times as long as wide; arista practically bare; profrons as wide as or slightly wider than A₃; cheeks more or less higher than A₃-width.

Mesonotum with pre acr usually in 3 pairs, distance between the rows being half to one-third of that between dc and acr; pra about as long as anterior ntpl; stpl 1:2; scutellum bare ventrally. Abdomen with 5th sternite and hypopygium as in Figs. 480–483.

Fore tibia with 1 pv and with or without 1 ad; t₄ with 1 av, 1 ad, 2 pd and 2 pv; t₃ with 3–4 av, 3–4 ad, 3 pd and 2–6 pv. Wings with costal thorns short although distinguishable from costal setulae; m-m upright.

*4. Phorbia subgrisea

(Figs. 484–488)


Material examined. HONSHÔ — Mt. Yatsugatake, Nagano-ken, 1♂, 1♀, 2–3-vi-67 (T. Kocha).

♂. Body-length 6.2 mm. Black in ground colour and whitish grey in pollinosity. A₃ brownish yellow apically. Mesonotum with brownish pollinose median vitta, and when viewed from behind with broad median and sublateral vittae. Abdomen with broad median vitta and with broad fore marginal bands. Wings tinged with brown, strongly at base; calypterae pale yellow; halteres reddish brown at base and yellow at knob.

Frons about as wide as distance between posterior ocelli inclusive; interfrontalia about one-third as wide as anterior ocellus, with if vestigial; parafrontals with 7 ori and no ors; A₃ short, about 1.4 times as long as wide; profrons and cheeks respectively wider and higher than A₃-width, about 1.6 times; face not concave; epistoma distinctly behind frons at lunule.

Mesonotum with 3 irregular pairs of pre acr, distance between the rows being about one-third of that between dc and acr; pra a little longer than anterior ntpl; stpl 2:2; scutellum not haired ventrally.

Fore tibia with 1 ad and 2 p–pv, apical ad being strong and only a little shorter than apical d; t₄ with 1 ad, 1 pd, 3–4 p–pv and no av; t₃ with a row of about 10 av, the longest one about 1.5 times as long as height of the femur, and on basal two-thirds with 6 pv, the longest one being as long as the longest av; t₄ with 3–5 av,
3 ad, 3–4 pd and about 6 pv, apical pv being strong. Wings with costal thorns short; costa haired ventrally between the base and the outlet of subcosta; m–m nearly erect and hardly sinuate.

♀. Interfrontalia about 1.3 times as wide as parafrontalia, with if rather distinct, as strong as weaker secondary ocellar setae; parafrontals with 3–4 strong ori and 3–4 strong ors. Hind tibia with 2–4 av, 5 ad, 4 pd and no pv, apical pv being strong as in male.

Distribution. Japan; Kamchatka.

Figs. 484–488. Phorbia subgrisea Ringdahl, ♂: 484, hypopygium, dorsal view; 485, ditto, lateral view; 486, aedeagus; 487, 5th sternite, ventral view; 488, ditto, lateral view.

27. Genus Mycophaga Rondani

Mycophaga Rondani, 1856:102. Type-species: (Musca fungorum Degeer, 1776, nec Scopoli, 1763) = Coenosia testacea Gimmerthal, 1834.

This genus is represented by a single species, M. testacea, which has been known from Europe. On the basis of the present specimens I will give Japan as a locality of the species.

*1. Mycophaga testacea (Gimmerthal) (Figs. 489–492)


Material examined. HOKKAIDO — Sapporo, 1♀, 3-x-67 (K. Kusigemati); Jōzankei, 1♂, 20-vi-67 (K. Kusigemati); Mt. Soranuma, 1♀, 30-viii-67 (K. Kusigemati), & 1♂, 1-viii-68. HONSHU — Towada, Aomori-ken, 1♂, 24-viii-66 (K. Kusigemati).

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♂. Body-length 6.4–7 mm. Interfrontalia brownish yellow or reddish on lower half or wholly brownish yellow, with whitish grey pollen; parafacials on anterior margin or wholly brownish, with whitish grey pollen which is hardly or slightly tinged with yellow; cheeks brownish in ground colour, with whitish and slightly yellowish pollen; A₃ blackish; A₂ more or less yellowish apically; palpi blackish; haustellum with mentum blackish or dark brownish, with greyish pollen; occiput blackish in ground colour, more or less brownish in pollinosity on upper half. Thorax yellowish in ground colour on humeral calli, ridges of posterior calli, prosternum, vicinities of posterior spiracles and scutellum excluding base and dorsal centre, and blackish on the rest, and in pollinosity pale greyish; mesonotum with brownish median vitta. Abdomen largely yellowish in ground colour, at most with brownish spots on tergites anteriorly, and very thinly whitish pollinosose. Coxae, trochanters, femora and tibiae all yellow; tarsi blackish. Wings nearly hyaline, with a faint yellowish suffusion; calyptrae hyaline, on margin more or less yellowish; halteres yellow, at base slightly brownish.

Frons about 0.3 times as wide as head; interfrontalia about 3 times as wide as parafrontalia at level of if; parafrontals with 3 ori and 3 ors; A₃ a little longer than twice the width; arista with the longest hairs longer than A₂-width; profrons more or less narrower than A₂; cheeks about as high as profrons-width, with genal setae in 1 row.

Mesonotum with some accessory setulae between rows of pre acr, distance between the rows being about two-thirds of that between dc and acr; pra about half as long as posterior mpl; mesopleura with a strong anterior mpl; stpl 1:2; scutellum setulose dorsally.

Abdomen conical, less than twice as long as wide, about 1.7–1.9 times so; prebasal sclerite bare, although in 1 specimen with 1 short setula; 5th sternite and hypopygium as in Figs. 489–492.

Figs. 489–492. Mycophaga testacea (Gimmerthal), ♂: 489, hypopygium, dorsal view; 490, ditto, lateral view; 491, aedeagus; 492, 5th sternite, ventral view.
Fore tibia with 1 ad and 1 pv; t₃ with 1 av near base and 3 pv on basal half; t₄ with 1 ad, 1 pd, 1 p and 1 pv; t₅ with 5–7 av scattered on whole length, 2 pv on basal half and 1 pv near apex; t₆ with 1 av, 3 ad and 2 pd, apical pd being weak. Wings with costal thorns minute; costa haired ventrally; R₄+₅ with 1 or a few short setulae at base on each of dorsal and ventral surfaces; m–m oblique and sinuate.

2. Body-length 8–8.8 mm. Mesonotum with pollen more yellowish than in male. Abdomen with sharp and very narrow dark bands on hind margins of 2nd to 4th tergites. Wings rather distinctly tinged with yellow. Frons about 0.4 times as wide as head; aristal hairs rather shorter than those of male, about as long as A₂-width. Wings with costal thorns stronger than in male, as long as or longer than h-vein.

Distribution. Japan; Europe.

The presence of setulae on the vein R₄+₅ in both sexes may be worthy of mention. This character, so far as known to me, is shared by some members of *Emmesomyia*, from which it is, however, separated by the absence of setulae on the pteropleura, by the simple surstyli and by the dissimilar general appearance.

28. Genus *Emmesomyia* Malloch


*Emmesomyia* is closely related to *Pegomya*, especially to the *geniculata*-group of Hennig (1972); from this group it is separated only by the presence of 1 or several setae on the pteropleura. So far as known to me this genus is represented by 19 species, of which 12 species are distributed only in the Ethiopian region (after Séguy, 1937 & Emden, 1941), other 2 species (*apicalis* and *socialis*) only in the Nearctic region (after Hackett, 1965b), other 2 species (*socia* and *villica*) in the Palaearctic region (after Hennig, 1972) and 4 species (*dorsalis*, *kempi*, *ovata* and *socia*) in the Oriental region (after Ackland, in litt.). In the course of the present study have been found from Japan 4 species, of which two are recognized as new to science.

Key to the species (♂♀)

1. Legs with tarsi yellowish. ................................................................. 2
   — Legs with tarsi blackish or dark brownish. .................................. 3
2. Fifth sternite (Figs. 505 & 506) with processes much broadened apically and expanded ventrad. ..................................................... 2. *villica* (Meigen)
   — Fifth sternite (Figs. 497–500) with processes not broadened apically and not expanded ventrad. ......................................................... 1. *flavitarsis* sp. nov.
3. Surstyli (Fig. 507) notched at inner base of outer projection; praegonites (Fig. 510) with dorsal lobe broader; postgonites (Fig. 510) bi-lobed apically. ......................................................... 3. *socia* (Fallén)
   — Surstyli (Fig. 513) not notched at outer projection; praegonites (Fig. 516) with dorsal lobe narrower; postgonites (Fig. 516) uni-lobed apically. .............................................. 4. *orients* sp. nov.

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1. *Emmesomyia flavitarsis* sp. nov.  
(Figs. 493–500)

Type-material. HOKKAIDO — Sapporo, 1♀, 1–vii-66, & 1♂, 8–vii-66.  
HONSHU — Mt. Kariyose, Tôkyô-to, 1♂ (holotype), 16–v-68 (H. Takizawa); Mt.  
Mitake, Tôkyô-to, 1♂, 26–v-67.

♀. Body-length 5.4–6.6 mm; wing-length 5.4–6.1 mm. Body blackish in  
ground colour. Haustellum with mentum blackish and thinly pollinose. Meso­  
notum when viewed from front largely blackish and when viewed from behind  
wholly pollinose and not vittate, at most weakly darkened laterally, the pollinosity  
being slightly or rather distinctly tinged with brown. Abdomen in pollinosity  
whitish grey and slightly or hardly tinged with yellow; median vitta rather broad  
and sharp; fore marginal bands absent. Femora blackish or dark brownish, with  
yellowish apex; tibiae and tarsi yellow. Wings more or less tinged with yellow;  
calyptre pale yellow, rather distinctly on margin; halteres yellowish at knob.

Head about 1.6 times as high as long; frons much narrower than anterior ocellus;  
parafrontals broadly contiguous to each other, with 3–4 ori and 1 microscopical  
ors, the latter being hardly discernible unless carefully examined; Aa about 2–2.7 times  
as long as wide although in depressed condition in all of the present specimens; arista  
with the longest hairs about twice as long as basal diameter of arista; profrons  
much narrower than Aa; cheeks about as high as profrons-width; occiput bare  
on upper part below postocular row of setulae.

Mesonotum with 3 pairs of pre acr, rather densely setulose between the rows,  
which are separated from each other by a distance distinctly longer than that  
between dc and acr; 2nd ph fine, at most only a little stronger than accessory  
setulae; pra about two-thirds as long as posterior ntpt; pteropleura with 1 seta;  
stpt 1:2; mesopleura with 1 strong and 1 weaker pstg and 3–6 fine associated  
setulae; scutellum bare on dorsal centre.

Abdomen depressed, long-ovoid and about 1.6–1.9 times as long as wide;  
prebasal sclerite bare; distiphallus (Fig. 495) minutely serrated on side-projections  
dorsally.

Fore tibia with 1 pv; t₂ with 1 pd and 2 p–pv; f₃ with a row of strong av and  
on basal two-thirds with 4–5 strong pv; t₃ with 1 av, 3 ad and 2 pd. Wings with  
costal thorns very minute and only a little stronger than costal setulae; costa  
haired ventrally; R₄₊₅ with 1 or a few short setulae at base on ventral surface, and  
usually also on dorsal surface; m–m more or less oblique and slightly or distinctly  
sinuate; lower calyptra much larger than the upper.

♀. Unknown.


In general appearance this species closely resembles *E. socia*, from which it is  
hardly distinguishable unless its genital structures are seen. However, the yellow­  
ish tarsi may be useful to distinguish this species from socia, at least so far as the  
Japanese specimens are concerned (see also *E. socia*).

*2. Emmesomyia villica* (Meigen)  
(Figs. 501–506)


Material examined. HOKKAIDO — Sapporo, 1♀, 10–vi-71 (T. Kumata); Eniwa,
Figs. 493-500. *Emmesomyia flaviaris* sp. nov., ♂: 493, hypopygium, dorsal view; 494, *ditto*, lateral view; 495, basi- and distiphalli; 496, praec- and postgonites; 497, 5th sternite (from Mt. Kariyose), ventral view; 498, 5th sternite (from Sapporo), ventral view; 499, 5th sternite (from Mt. Kariyose), lateral view; 500, 5th sternite (from Sapporo), lateral view.

2♂♂, 27-v-71; Bifuka, 2♂♂, 29-vii-66; Sarobetsu, 1♂, 18-vii-68 (T. Nakashima). Kyōshō — Hikosan, 1♂, 18-v-59 (K. Kamijo).

♂. Body-length 5.3–5.8 mm. Mesonotum slightly or distinctly tinged with yellow in pollinosity, and when viewed from behind hardly or faintly vittate. Abdomen usually with a distinct or strong yellowish tinge in pollinosity; median vitta narrow and sharp. Femora blackish, with yellowish apex; tibiae yellow; tarsi yellow although more or less darkened on apical half.

Frons narrower than anterior ocellus; parafrontals broadly contiguous to each other, with 4–5 ori and 1 microscopical ors, the latter being indiscernible unless carefully examined; arista with the longest hairs about 2–3 times as long as basal diameter of arista.

Mesonotum with pra about 0.6 times as long as posterior ntpl; pteropleura with 1 seta; mesopleura with 1 strong and 1 weaker pstg and 4–10 fine associated setulae. Abdomen long-ovoid and about 1.5–1.7 times as long as wide; 5th sternite and hypopygium as in Figs. 501–506; praegonites with 4 setae on dorsal lobe apically.

♀. Unknown to me.

Distribution. Japan; Manchuria; Europe.

There are found a few serious differences between the Japanese form and the European one: — In the European form, 5th sternite with processes narrowly prolonged and turned ventrad at apex, and praegonites with narrower dorsal lobe and thereon with a single seta (see Hennig, 1972: text-figs. 400 & 403). The Japanese form may possibly represent a different subspecies.

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*3. Emmesomyia socia (Fallén)
(Figs. 507–512)


Material examined. SHIKOKU — Mt. Tsurugi, 3♂, 16-vii-71.

♂. Body-length 5.7–6.5 mm. Mesonotum more or less tinged with brown in pollinosity, when viewed from behind wholly pollinose and hardly or faintly vittate. Abdomen whitish grey and more or less bluish in pollinosity, which is strongly tinged with brown near median vitta on 3rd and 4th tergites; median vitta sharp and rather narrow. Femora blackish, at most slightly yellowish apically; tibiae yellow; tarsi blackish or dark brownish. Wings distinctly tinged with yellow; calyptrae yellowish, paler basad.

Frons narrower than anterior ocellus; parafrontals with 3–4 ori and 1 microscopical ors; arista shortly pubescent, the longest hairs being about 1.5–2 times as long as basal diameter of arista.

Mesonotum with 2nd ph rather developed; pra a little shorter than posterior ntpl; pteropleura with 1 seta (in 1 specimen with 2 setae on the left body-side); stpl 1:2. Abdomen about twice as long as wide, long-ovoid; praegonites (Fig. 510) with dorsal lobe very broad.

♀. Unknown to me.

Distribution. Japan; Taiwan; Manchuria; Europe.

As in the case of villica this species also has a distinct difference between the Japanese form and the European one in the genital structure: — In the Japanese form the praegonites with the dorsal lobe large and blunt apically; on the other
hand in the European form the praegonites with the dorsal lobe small and pointed apically (see Hennig, 1972: text-fig. 398).

Figs. 507–512. *Emmesomyia socia* (Fallén). ♀: 507, hypopygium, dorsal view; 508, ditto, lateral view; 509, basi- and distiphalli; 510, praec- and postgonites; 511, 5th sternite, ventral view; 512, ditto, lateral view.

4. *Emmesomyia oriens* sp. nov.

(Figs. 513–520)

Type-material. **HonsHtJ** — Mt. Kiso-Komagatake, Nagano-ken, 3♀♂ (one the holotype), 27-vii-70; Mt. Kariyose, Tōkyō-to, 1♂, 16-v-68 (H. Takizawa). **Kyoʃsh0** — Kosugidani, Yaku-shima, 1♂, 1-vi-69 (K. Kusigemati).

♀. Body-length 6.5–7.2 mm; wing-length 6.2–7 mm. Body blackish in ground colour. Interfrontalia with grey pollen; parafacial silvery white in pollinosity; cheeks whitish grey pollinose; antennae and palpi blackish; haustellum with mentum blackish and shining though sparsely pollinose. Thorax in pollinosity bluish grey, on pleura hardly or rather distinctly and on mesonotum faintly or strongly tinged with brown; mesonotum when viewed from front wholly blackish, and when viewed from behind wholly pollinose and not vittate. Abdomen in pollinosity whitish grey and more or less bluish, usually tinged with brown on 3rd to 5th tergites triangularly; median vitta narrow and sharp. Femora blackish, with yellowish apex at least on f₁; tibiae yellow; tarsi blackish or dark brownish. Wings strongly tinged with yellow or brownish yellow; calyptrae yellowish; halteres

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Figs. 513-520. *Emmesomyia oriens* sp. nov., ♂: 513, hypopygium, dorsal view; 514, ditto, lateral view; 515, basi- and distiphalli; 516, prae- and postgonites; 517, 5th sternite (from Mt. Kiso-Komagatake), ventral view; 518, 5th sternite (from Mt. Kariyose), ventral view; 519, 5th sternite (from Yakushima), ventral view; 520, 5th sternite (from Mt. Kiso-Komagatake), lateral view.

Yellow at knob.

Head about 1.6 times as high as long; frons distinctly narrower than anterior ocellus and parafrontals contiguous to each other except in 1 paratype from Mt.
Kariyose, in this paratype frons about as wide as anterior ocellus and parafrontals separated from each other by linear interfrontalia; parafrontals with 4–5 ori and 1 microscopical ors; $A_5$ about 2.6–2.8 times as long as wide; arista with the longest hairs about 2–3 times as long as basal diameter of arista; occiput bare on upper part below postocular row of setulae.

Mesonotum with 2nd $ph$ rather well developed in the specimens from Mt. Kiso-Komagatake, yet reduced and like accessory setula in the others; $pra$ as long as or slightly shorter than posterior $ntpl$; pteropleura with 1 seta; $stpl$ 1:2. Abdomen long-ovoid or subparallel-sided, about 1.8–2.3 times as long as wide; 5th sternite and hypopygium as in Figs. 513–520.

Fore tibia with 1 $pv$ and with or without 1 minute $ad$; $t_2$ with 1 $pd$ and 2 $p$–$pv$; $f_3$ with a row of 7–9 strong $av$, and with 1 rather strong $pv$ near base rather ventrally and a few strong $pv$ on middle third, some $pv$ on apical fourth being rather distinct; $t_3$ with 1 $av$, 3 (4 in 1 paratype on the right body-side) $ad$ and 2 $pd$. Wings with costal thorns very minute though distinguishable from costal setulae; costa haired ventrally; $R_{4+5}$ usually with 1 or a few short setulae at base on each surface; $m$–$m$ strongly oblique and sinuate.

♀. Unknown.


This species is closely related to the preceding E. socia, from which it can be hardly distinguished unless its genital structures are examined. In oriens:—Surstyi more or less longer and without a notch at outer projection; basiphallus more broadened on cephalic part, with epiphallus more or less longer; praegonites with dorsal lobe much narrower; postgonites uni-lobed apically.

29. Genus Pegomya Robineau-Desvoidy

Pegomya Robineau-Desvoidy, 1830:598. Type-species: Anthomyia hyoscyami Panzer, 1809.

In this study the genus Pegomya is restricted to the geniculata-hyoscyami complex (the geniculata-group and the hyoscyami-group) of Hennig (1973), who recognized 75 species of the complex in the Palaearctic region. His connexa-group of Pegomya is transferred to the following genus Eutrichota. In the course of the present study have been found 30 species, of which ten are described as new to science. They may be distinguished by the following key.

**Key to the species (♂)**

1. Metathoracic spiracle with some or many setulae. ..........26. acklandi sp. nov.
   - Metathoracic spiracle with no setulae. ......................... 2
2. Lower calyptra larger than the upper. .............................. 3
   - Lower calyptra not larger than the upper ...................... 5
3. Metathoracic spiracle larger than knob of haltere; $f_3$ with the longest $pv$ more than twice as long as height of the femur. ..........19. spiraculata sp. nov.
   - Metathoracic spiracle smaller than knob of haltere; $f_3$ with the longest $pv$ less than twice as long as height of the femur. ..........4
4. Occiput with yellowish setulae on ventral region; abdomen largely blackish on caudal half in ground colour. ..........20. kusigematis sp. nov.
   - Occiput without yellowish setulae; abdomen largely yellowish all over in ground colour. ..........21. winthemi (Meigen)

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5. Hind tibia with only 1 pd (practically d); t₁ with no pv. ........................................ 6
- Hind tibia with 2 or more pd; t₁ with 1 or more pv ........................................ 6

6. Pra absent; 5th sternite (Fig. 524) with numerous long and strong setae on outer margins. .................................................. 6. criniventris sp. nov. ........................................ 6
- Pra present even if short; 5th sternite without so many long and strong setae. .................................................. 7

7. Mesonotum when viewed from behind with 4 sharp vittae apart from lateral patches. .................................................................. 8
- Mesonotum when viewed from behind not with 4 vittae, or hardly vittate. .................................................. 10

8. Parafrentals separated from each other by narrow interfrontalia; t₁ with apical p (practically pd) strong; t₂ usually with 1 distinct p near basal third. .................................................. 9. quadrivittata (Karl) .................................................. 9
- Parafrentals contiguous to each other; t₁ with both apical p and apical pd fine and like accessory setulae; t₂ with no p. .................................................. 9

9. Mid and hind femora yellowish, at most darkened apically; profrons at least as wide as A₃. .................................................. 14. esuriens (Meigen) .................................................. 14
- Mid and hind femora blackish or dark brownish; profrons distinctly narrower than A₃. .................................................. 7. albimargo Pandelle .................................................. 7

10. Prebasal sclerite of hypopygium exposed and at least with a row of marginal setae. .................................................. 11
- Prebasal sclerite of hypopygium partly or wholly concealed beneath 5th tergite and usually bare, at most abnormally with a few setulae. .................................................. 15

11. Abdomen depressed on basal half; prebasal sclerite of hypopygium hardly setulose except for a row of marginal setae. .................................................. 17. rubivora (Coquillett) .................................................. 17
- Abdomen cylindrical or club-shaped, not depressed basally; prebasal sclerite of hypopygium densely setulose besides a row of marginal setae. .................................................. 12

12. Hind femur blackish, with a tuft of stiff setulae near base on posterior surface. .................................................. 28. vera sp. nov. .................................................. 28
- Hind femur usually yellow, if blackish without a tuft of setulae. .................................................. 13

13. Hind tibia with 1 p; 5th sternite brownish or yellowish at least on processes. .................................................. 27. orientis sp. nov. .................................................. 27
- Hind tibia with no p; 5th sternite wholly blackish. .................................................. 14

14. Mid tibia with 1 a; stpl 1:3 or 1:4, at most with a fine additional seta below the anterior one. .................................................. 30. robusta sp. nov. .................................................. 30
- Mid tibia with no a; stpl 2:3 or 2:4. .................................................. 29. japonica sp. nov. .................................................. 29

15. Fore tibia with strong apical pd; t₁ with weak apical pd; ph not duplicated; pra about as long as anterior ntpl. .................................................. 11. nigrisaris (Zetterstedt) .................................................. 11
- Otherwise in combination of characters. .................................................. 16

16. Profrons as wide as or wider than A₃, if narrower then cheeks higher than A₃-width. .................................................. 17
- Profrons and cheeks respectively narrower and less high than A₃-width. .................................................. 24

17. Pra longer than posterior ntpl. .................................................. 18
- Pra shorter than posterior ntpl. .................................................. 19

18. Processes of 5th sternite horn-like and without a tuft of setae at apex. .................................................. 15. nigra sp. nov. .................................................. 15
- Processes of 5th sternite not horn-like and with a tuft of short setae at apex. .................................................. 10. haemorrhhoa (Zetterstedt) .................................................. 10

19. Mid tibia with 1 ad. .................................................. 20
- Mid tibia with no ad. .................................................. 22

20. Fore tibia with 1 distinct ad; t₁ with apical pd strong. ........................................ 8. bicolor (Wiedemann) .................................................. 8
- Fore tibia with no ad; t₁ with apical pd short and fine. ........................................ 21

21. Fifth sternite with many short and strong setae at base of each process. .................................................. 2. mixta Villeneuve .................................................. 2
- Fifth sternite without such setae. ........................................ 1. hyoscymyami (Panzer) .................................................. 1

22. Femora yellow or brown only at apex, and almost blackish; t₁ with apical ad distinct; cheeks much higher than A₃-width. ........................................ 3. falciforetis Suwa .................................................. 3
- Femora almost yellow except on f 1 ; t 1 with apical ad vestigial; cheeks only a little higher than A 3 -width. ................................................................. 23
23. Body larger in size, about 8 mm, and yellowish grey pollinose; mesonotum strongly vittate; wings with costal thorns distinct. ............... 4. auricolor Suwa - Body smaller in size, about 5 mm, and pale grey pollinose; mesonotum weakly vittate; wings with costal thorns vestigial. ........................................ 5. dulcamarae Wood
24. Legs wholly blackish. .......................................................... 25
- Legs at least partly yellowish. .................................................. 26
25. Parafrontals separated from each other by linear interfrontalia; haustellum with mentum rather distinctly pollinose; t 3 with apical pd about as strong as apical d. ........................................ 16. holostaeae (Hering)
- Parafrontals contiguous to each other; haustellum with mentum hardly pollinose; t 3 with apical pd much weaker than apical d. .............. 13. avida Hennig
26. Pra longer than posterior ntpl; tibiae blackish, at most brownish on t 3 ; palpi wholly black. ....................................................... 12. angustiorbitae sp. nov.
- Pra at most as long as posterior ntpl; tibiae yellow at least on t 3 ; palpi yellowish at least basally. .................................................. 27
27. Mesonotum with rows of pre acr separated from each other by a distance longer than that between dc and acr; 5th sternite with processes not protruded ventrad. ........................................ 22. geniculata (Bouché)
- Mesonotum with rows of pre acr separated from each other by a distance at most as long as that between dc and acr; 5th sternite with processes protruded ventrad. ........................................ 28
28. Antennae yellow on two basal segments and at base of A 2 ; occiput with yellow setulae on ventral region; femora largely yellow; f 1 near middle with 1 pv about twice as long as height of the femur. ..................... 23. pulchripes (Loew)
- Antennae blackish, at most yellowish on A 2 apically; occiput without yellow setulae; femora largely blackish or dark brownish; f 1 near middle with 0–2 pv at most a little longer than height of the femur. ..................... 29
29. Hind femur with the longest av more than twice as long as height of the femur; t 3 with ad as long as one-fourth to one-third of the tibial length. . . 25. pilosa Stein
- Hind femur with the longest av less than twice as long as height of the femur; t 3 without ad as long as or longer than one-fourth of the tibial length. ............................................................ 24. tenera (Zetterstedt)

1. Pegomya hyoscyami (Panzer)


Material examined. There are at hand a lot of specimens taken from various localities in Hokkaidō and Honshū.


Distribution. Asia; North Africa; Europe; North America.

Most of the forms described or treated as varieties or subspecies of P. hyoscyami are suppressed as synonyms of the species by Hennig (1973). However, at present I have the opinion that there may be recognized within Hennig’s hyoscyami at least 3 distinct species, namely, P. hyoscyami (Forms A & D of Suwa, 1970a), P. betae (Form B of the same) and P. mixta (Forms C & E of the same).
2. Pegomya mixta Villeneuve


Material examined. There are at hand a lot of specimens collected from Hokkaido, Honshu and Kyushu.


Distribution. Japan; North Africa; Europe; North America.

P. mixta might be suppressed as a synonym of Pegomya tristriata Stein, 1908 (see Hennig, 1973: 578).

3. Pegomya falciforcipis Suwa


Material examined. Hokkaido — Sapporo, 2♂♀ (holotype and paratype); Nopporo, 2♂♀ (paratypes).

Host plants. Cirsium sp.


As pointed out by Hennig (1973) this species may be closely related to the European Pegomya depressiventris (Zetterstedt), from which it differs by the following characters: — Frons distinctly wider than anterior ocellus; A3 less than twice as long as wide; haustellum with mentum pollinose though thinly; 5th sternite with much broader processes; surstyli with much narrower apical projections; epiphallus arising from the base of basiphallus; distiphallus much broader; postgonites with a seta situated near apex.

4. Pegomya auricolor Suwa


Material examined. Hokkaido — Sapporo, 1♂ (holotype), 2♀♀ (paratypes), ex Arctium lappa, as leaf-miner.

Host plants. Arctium lappa.


Through the courtesy of Dr. Steyskal I have been able to see figures of the male 5th sternite and hypopygium of the North American Pegomya carduorum Huckett, 1939 produced by him. The male genital structures of Pegomya terebrans (Rondani, 1866), which is distributed in Europe and Palestine, are also figured by Hennig (1973: text-fig. 564 and plate-figs. 808, 810 & 942). Judging from these figures carduorum and terebrans might be conspecific, and P. auricolor is closely related to both. This species is, however, distinguishable from the two by the following aspects: — Body longer than 6 mm; A3 more than 1.5 times as long as wide; cercal plate more prolonged apicad and not bifurcated at apex; surstyli with outer extension less triangulate.

5. Pegomya dulcamarae Wood

Material examined. HOKKAIDO — Hamatombetsu, 1♂, 1♀; Utanobori, 1♀; Otoshibe, 2♀♀, 17-vii-71 (T. Hanada), ex Solanum tuberosum; Otoineppu, 1♀, 10-viii-66 (H. Inouye), ex Solanum tuberosum.


6. Pegomya criniventris sp. nov. (Figs. 521–525)

Type-material. HOKKAIDO — Mt. Soranuma, 2♀♀, 30-viii-67 (K. Kusigemati), & 1♀, 1-viii-68; Mt. Yūbari, 1♀, 11-vii-66 (K. Kusigemati); Mt. Daisetsu, 4♀♀, 26-vii-67 (K. Kusigemati); Rishiri-tō, 1♂, 31-vii-69. HONSHU — Mt. Bandai, Fukushima-ken, 6♀♀, 5♀♀, 28-vii-71; Mt. Yatsugatake, Nagano-ken, 21♂♂ (one the holotype), 1♀, 20–21-vii-70; Mt. Kiso-Komagatake, Nagano-ken, 3♀♀, 26–27-vii-70.

♂. Body-length 6–7 mm; wing-length 6–7 mm. Interfrontalia black, sometimes slightly reddish brown near lunule, with whitish grey pollen; parafacials and cheeks black or sometimes dark brown in ground colour and whitish grey in pollinosity, which is usually more or less tinged with yellow or brown; occiput in ground colour black and in pollinosity bluish grey and a little brownish; antennae and palpi blackish; haustellum with mentum blackish and pollinosity. Thorax black in ground colour and bluish grey in pollinosity; mesonotum very faintly vittate, when viewed from front with narrow paramedian vittae between rows of acr and dc, when viewed from above with lateral patches covering bases of ia, and when viewed from behind with median, paramedian and sublateral vittae, the median and paramedian vittae being often confused to each other. Abdomen black in ground colour, and densely covered with pale brownish grey pollen; median vitta narrow and sharp; fore marginal bands lacking; hypopygium concolorous with abdomen; cercal plate yellow; 5th sternite with processes largely yellowish or brownish and rarely blackish. Coxae blackish or partly brownish; trochanters brownish or yellowish; f1 largely blackish, only brownish or yellowish on apical part ventrally; f2 and f3 yellow, slightly darkened apically; f4 usually yellowish on apical part and blackish on the remaining part; t2 and t3 yellow, more or less darkened basally; tarsi blackish. Wings strongly yellow at base; calyptrae strongly yellow; halteres yellow, at base more or less brownish or reddish.

Head about 1.3 times as high as long; frons more or less wider than anterior ocellus; interfrontalia about half as wide as anterior ocellus; parafrontals with 8 to about 10 slender ors and usually with 1 vestigial ors; A3 1.7–2 times as long as wide; aristae minutely and rather densely pubescent; profrons 1.3–1.6 times as wide as A3; parafrontals broadly maintained ventrad, at the narrowest part more or less wider than A3; cheeks 1.7–2.1 times as high as A3-width, with genal setae in a few rows; face rather distinctly concave near epistoma; epistoma distinctly behind frons at lunule; palpi slightly widening apicad; haustellum rather slender.

Mesonotum with a few irregular pairs of rather strong pre acr, the rows being much closer together than to dc; 2nd ph usually developed, often as long as the 1st; pra lacking, if present hardly distinguishable from accessory setulae; notopleura with no accessory setulae; mesopleura with no distinct anterior mpt; stpl 1:2.
sometimes with rather distinct lower anterior one; scutellum setulose on dorsal surface laterally.

Abdomen depressed, nearly parallel-sided on 2nd and 3rd tergites and a little narrowing caudad; prebasal sclerite not setose; 5th sternite (Figs. 524 & 525) strongly chitinized on outer part of each process and thereon with numerous long and strong setae, yet on inner part weakly chitinized and blade-like; hypopygium as in Figs. 521–523.

Figs. 521–525. *Pegomya criniventris* sp. nov., ♂: 521, hypopygium, dorsal view; 522, ditto, lateral view; 523, aedeagus; 524, 5th sternite, ventral view; 525, ditto, lateral view.

Fore tibia with 1–2 (usually 1) *pv* and no *ad*, apical *pd* being indistinct; *t₂* with no *av*, and on basal half with some *pv*, the longest one being a little longer than height of the femur; *t₃* with no *ad*, 1 *pd* and 1–3 (usually 2) *p–pv*, of which the proximal one is often located rather on postero-dorsal surface; *t₄* with 7–10 strong *av* except near base, the setae becoming longer towards apex of the femur, the longest one about 1.6–1.8 times as long as height of the femur, and near middle with 1 or a few weaker *pv*, which are more or less shorter than height of the femur; *t₅* with 1 strong and often 1–2 weaker *av*, 2–4 *ad* and 2–4 *pd*, and sometimes with 1 *a* near middle, apical *pd* being usually weak. Wings with costal thorns very
minute and indistinguishable from costal setulae; m-m more or less oblique and a little or hardly sinuate; lower calyptra smaller than the upper.

♀. Body-length 6.5-7.6 mm. Head in ground colour black on upper half of each parafrontalia and on occiput, and yellow on the remaining part; A₁ usually reddish yellow or brownish; A₂ and A₃ blackish, at most sometimes faintly brownish on A₃ apically; palpi usually yellow basally; haustellum with mentum blackish or dark brownish and distinctly pollinose. Thorax more thickly pollinose than in male. Abdomen concolorous with thorax and not vittate. Coxae largely or sometimes partly yellow; trochanters yellow; femora yellow; tibiae yellow, at most slightly darkened basally.

Head about 1.2 times as high as long; frons about 0.4 times as wide as head; interfrontalia without if, only with some scattering microscopical setulae; parafrontals with 4-6 or₁, and with 3-4 or₂ which are usually directed outwards; A₃ 1.6-1.9 times as long as wide; profrons 1.6-1.7 times as wide as A₃; cheeks about twice as high as A₃-width, with genal setae fine and arranged in 2 rows. Mesonotum with 2nd ph₁ fine and like accessory setula; st₁₂ :2, the lower posterior being shorter than the upper though strong; scutellum less densely setulose than in male. Mid tibia with 1 strong ad.


This species runs out in a key to the North American species of *Pegomya* given by Huckett (1965a) with *P. alticola* Huckett, 1939, and may be closely related to that species by the male 5th sternite armed with many long and strong setae and sinuate along inner margin of each process. Having read the original description and other statements on *alticola* given by Huckett (1939, 1941 & 1965a) I have found some differences other than in colour; — In *alticola*: ♀, A₃ about 1.25 times as long as wide; pre acr finely developed; f₉ with fine av. ♀, interfronsalia with if; haustellum with mentum polished; lower posterior st₁₂ short and weakly developed; abdomen with marginal setae weakly developed; t₁ with 1 ad.

7. *Pegomya albimargo* Pandellé


Material examined. HOKKAIDO — Sapporo, 4 ♀♀, 11 ♀; Nopporo, 4 ♀♀, 1 ♀; Ono, 2 ♀♀, 1 ♀; Mt. Kariba, 1 ♀, 1 ♂. HONSHU — Mt. Hakkoda, Aomori-ken, 1 ♀; Mt. Yatsugatake, Nagano-ken, 3 ♀♀.

Host plants. *Melachium aquaticum*, *Stellaria media*, *S. neglecta* & *S. sessiliflora* (in Japan, after Suwa, 1971b). In Europe various plants, most of which belong to Caryophyllaceae, are known as hosts of this species (see Hennig, 1973).

Distribution. Japan; North Africa; Europe.

Judging from a redescriptions of *albimargo* given by Hennig (1973) and 2 British specimens (♀♀) determined as *albimargo* by Ackland the Japanese form is slightly different from the European one in having a much darker abdomen, which is blackish in ground colour and never yellowish or brownish.

8. *Pegomya bicolor* (Wiedemann)

*Anthomyia bicolor* Wiedemann, 1817:77. *Pegomyza jynx* Seguy, 1926:44. *Pegomya*

Material examined. **Hokkaido** — Sapporo, 32♂♂, 30♀♀; Nopporo, 14♂♂, 6♀♀; Józankei, 1♂; Eniwa, 2♂♂, 1♀♀; Hiroshima-mura, 4♀♀; Shimamatsu, 2♂♂, 7♀♀; Shikotsu-ko, 1♂; Mt. Apoi, 1♂; Hamatombetsu, 1♂, 1♀♀; Akkeshi, 2♀♀; Ono, 1♂, 3♀♀. **Honshó** — Shiki, Saitama-ken, 2♂♂; Tókyó, Tókyó-to, 4♂♂, 1♀♀; Kiyosumi-yama, Chiba-ken, 2♂♂, 1♀. **Kyushu** — Fukuoka, 2♂♂, 2♀♀.  

♂. Body-length 5–7 mm. Antennae usually blackish on all segments, sometimes brownish on A2 apically or at a more extensive area; palpi blackish; haustellum with mentum blackish and shining though slightly pollinose. Thorax and abdomen black in ground colour and pale or whitish grey in pollinosity. Fore femur largely darkened though yellow at least apically; f2 and f3 yellow, at most slightly darkened near apex dorsally; tibiae yellow; tarsi blackish.

Mesonotum with 2nd ph usually fine and only distinguishable from accessory setulae, yet in a few specimens it is well developed; mesopleura with or without 1 fine setula near pstg (1 strong and 1 weaker). Hind tibia with 1 av, 2 long and 0–2 shorter ad, and 2 long and 0–2 shorter pd, and with no a. Wings with costal thorns usually short.

♀. Palpi brownish yellow on basal half in a few specimens, but usually blackish as in male; haustellum with mentum sometimes brownish. Abdomen in ground colour usually black as in male, yet in a few specimens partly or largely yellowish although at least blackish medially and on hind margins of tergites. Fore femur sometimes wholly yellow. Mesonotum with 2nd ph always fine; lower anterior stpl sometimes very fine.


Distribution. Holarctic region.

The Japanese form is slightly different from the European one and referred to the *jynx*-form.

9. *Pegomya quadrivittata* Karl


Material examined. The present specimens (30♂♂, 35♀♀) have been taken from the following localities: — **Hokkaidó** — Sapporo; Chitose; Hiroshima-mura; Mt. Shokambetsu. **Honshó** — Tazawa-ko, Akita-ken; Mt. Kurikoma, Miyagi-ken; Urabandai, Fukushima-ken. **Kyushu** — Hikosan; Yaku-shima.

Host plants. *Polygonum nepalense, P. sieboldii* & *P. thunbergii* (in Japan, after Suwa, 1971b); *Polygonum filiforme* (Sapporo, 1♂, 2♀♀, 25-vi-72).

Distribution. Japan; Taiwan; India, Burma & Ceylon (after Ackland, 1972, in litt.).

By the courtesy of Dr. Steyskal and Mr. Ackland I have noticed that the Japanese form, which was identified with *P. setaria* by myself in 1971, is different from the North American and the European forms of *P. setaria* (Meigen) in some aspects, especially in the genital structures of the male and in the presence of 1 strong p on t3. Furthermore, by the kindness of Mr. Ackland I have examined a male specimen of *setaria* from England and a male specimen of *quadrivittata* from
India, and I have been convinced that the present Japanese form should be referred to *quadrivittata* as pointed out by Ackland (in litt.) and Hennig (1973).

10. *Pegomya haemorrhhoa* (Zetterstedt)


Material examined. The specimens examined were taken from the following localities: — HOKKAIDO — Sapporo; Mt. Apoi; Mt. Daisetsu; Rishiri-tō; Kamino-kuni. HONSHÔ — Mt. Chôkai, Yamagata-ken; Mt. Hodaka & Mt. Shirouma, Nagano-ken.


Distribution. Japan; Europe; North America.

By the courtesy of Mr. Ackland I have been able to examine 2 European specimens (1 ♀, 1 ♂) of *haemorrhhoa*. Having examined them and read a redescriptions of *haemorrhhoa* given by Hennig (1973) I have found no remarkable differences between the Japanese form and the European one except in colour of the female abdomen. The European form is yellow on the whole 5th tergite and on the posterior part of the 4th, whereas the Japanese form differs by having yellow at most only on the caudal half of the 5th tergite.

*11. Pegomya nigritarsis* (Zetterstedt)

(Figs. 526-530)


Material examined. HOKKAIDO — Eniwa, 1 ♀, 27-v-71.

♂. Body-length 6.5 mm. Antennae yellow on two basal segments and blackish on the 3rd; palpi more or less brownish basally and blackish apically; haustellum with mentum blackish and polished. Thorax wholly blackish in ground colour, thickly covered with pale grey pollen. Abdomen pale grey pollinose, with median vitta rather obscurely margined; dorsal surface in ground colour largely blackish on basal half and largely yellowish on caudal half; each tergite yellow in ground colour along hind margin; ventral surface in ground colour yellowish, only partly darkened. Fore femur blackish dorsally; $f_3$ and $f_4$ yellow; tibiae yellow. Calypttrae whitish, only a little yellowish marginally.

Mesonotum with 2nd *ph* fine and like accessory setula; *pra* about as long as anterior *mpl*; mesopleura with a strong anterior *mpl*. Abdomen with 5th sternite and hypopygium as in Figs. 526-530. Fore tibia with 1 *ad* and 2 *pv*, apical *pd* being strong; $f_3$ with no *av* and on basal half with 4-5 *pv*, of which 2 are strong; $t_3$ with 1 *ad*, 1 *pd*, 1 *p* and 1 *pv*; $f_4$ with some *pv*, of which 2 are situated near middle and a few being near apex; $t_3$ with 2 *av*, 3 *ad* and 2-3 *pd*, apical *pd* being short. Wings with costal thorns minute, only a little stronger than costal setulae.

♀. Unknown to me.

Host plants. In Europe some species belonging to *Rumex*, *Polygonum* and *Oxyria* are known as host plants of this species (see Hennig, 1973).

Distribution. Japan; Europe; North America.
Judging from a redescription of *nigritarsis* given by Hennig (1973) the European form of this species is more yellow in colour on the abdomen than the Japanese one. It should be noted here that this is also the case in *hyoscyami*, *bicolor* and *albimargo*.

12. *Pegomya angustiorbitae* sp. nov.
(Figs. 531–535)

Type-material. HONSHÔ — Mt. Yatsugatake, Nagano-ken, 3♂♂ (one the holotype), 20–21-vii-70; Mt. Senjô, Nagano-ken, 1♂, 10-vii-71.

♂. Body-length 4.7–5.4 mm; wing-length 4.4–4.9 mm. Head including appendages blackish in ground colour; interfrontalia, parafacials and cheeks whitish grey pollinose; haustellum with mentum polished. Thorax in ground colour black and in pollinosity brownish grey; mesonotum with shifting vittae, when viewed from behind with median vitta before the suture and covering the bases of *pre acr* and with sublateral vittae behind the suture between *dc* and *ia*, and when viewed from lateral with narrow paramedian vittae along rows of *dc*, the median vitta being continuous caudad in some lights. Abdomen black in ground colour and blue in pollinosity, which is of fine texture and shining in some lights; median vitta rather broad, narrowly interrupted at hind margin of each tergite; marginal bands absent. Coxae and trochanters blackish or dark brownish; *f₁* blackish, at most slightly brownish basally; *f₂* and *fa* on apical third to fourth blackish or dark brownish, and on the remaining part yellow; *t₁* and *t₂* blackish; *ts* blackish to brownish; tarsi blackish. Wings with a distinct brownish yellow tinge; calyptrae yellowish; halteres brownish or reddish at base and yellowish at knob.

Head about 1.35–1.45 times as high as long; frons about half as wide as anterior ocellus; parafrontals broadly contiguous to each other, with 3–5 ori; *A₄* a little broadening apicad, and 1.8–2 times as long as wide; arista minutely pubescent; *profrons about half as wide as *A₄*; parafacials still more narrowing ventrad; cheeks about half as high as *A₄*-width, with genal setae in 1 row; epistoma distinctly behind frons at lunule; palpi somewhat broadened apically.

Mesonotum with 3 pairs of distinct *pre acr*, setae of the middle pair being the strongest, about as long as posterior *ntpl*, and with 1 or a few setulae between the rows, which are separated from each other by a distance as long as or a little shorter than that between *dc* and *acr* at the 1st pair and becoming closer together caudad; 2nd *ph* well developed; *pra* about as long as anterior *ntpl*; *stpl* 1:2; mesopleura with anterior *mpl* fine though distinguishable from accessory setulae, and with only 2 normal *psg*; scutellum with only a few accessory setulae on dorsal surface laterally.

Abdomen depressed, about twice as long as wide, widest at 3rd tergite and slowly narrowing cephalad and caudad; preabdominal sclerite bare; 5th sternite and hypopygium as in Figs. 531–535. Fore tibia with 1 *ad* and 2 *pv*, apical *pd* being vestigial; *f₄* with no *av*, and on basal half with 3–5 *pv*, the longest one being more or less longer than height of the femur; *t₃* with 1 *ad*, 1 *pd*, 1 *p* and 1 *pv*; *f₃* with 7–8 *av* becoming longer towards apex of the femur, the longest one being 1.5–1.7 times as long as height of the femur, and near middle with 1 or a few *pv* about as long as height of the femur;
t₃ with 2–3 (usually 2) av, 2 ad and 2 pd, apical pd being weak. Wings with costal thorns minute, hardly distinguishable from costal setulae or nearly so; m-m nearly erect and hardly or slightly sinuate; lower calyptra not larger than the upper.

♀. Unknown.


Judging from the 5th sternite and hypopygium this species may be closely related to *P. nigritarsis*, from which it can, however, be readily distinguished by the darker colouration, the narrower orbits, the duplicated ph and the structures of the 5th sternite and hypopygium different in details.

Figs. 526–530. *Pegomya nigritarsis* (Zetterstedt), ♀: 526, hypopygium, dorsal view; 527, ditto, lateral view; 528, aedeagus; 529, 5th sternite, ventral view; 530, ditto, lateral view.

Figs. 531–535. *Pegomya angustiorbita* sp. nov., ♀: 531, hypopygium, dorsal view; 532, ditto, lateral view; 533, aedeagus; 534, 5th sternite, ventral view; 535, ditto, lateral view.

♀. Body-length 5.3–5.6 mm. Head including appendages, thorax, abdomen and legs all black in ground colour. Interfrontalia whitish grey pollinose; parafacials and cheeks brownish grey pollinose; haustellum with mentum polished. Mesonotum brownish pollinose and very faintly vittate, when viewed from behind with rather broad median vitta, narrow paramedian vittae along rows of dc and sublateral patch-like vittae between dc and ia behind the suture. Abdomen brownish grey in pollinosity, with median vitta rather narrow, interrupted at hind margin of each tergite and more or less dilated anteriorly on each tergite. Wings with a distinct dark brownish tinge; calyptrae dark brownish; halteres dark or reddish brown at base and yellow at knob.

Head about 1.35 times as high as long; frons narrower than anterior ocellus; parafrontals broadly contiguous to each other, with 4 strong and 1 or 2 finer ori; A₃ 1.6–1.7 times as long as wide; arista minutely pubescent; profrons about 0.7 times as wide as A₃; cheeks about 0.7 times as high as A₃-width, with genal setae in 2 rows; epistoma behind frons at lunule; palpi a little broadened apically.

Mesonotum with 3 pairs of distinct pra acr and with or without 4 accessory setulae between the rows, which are more or less closer together than to dc; 2nd ph well developed; pra as long as or a little longer than posterior ntbl; mesopleura with 1 or a few slender and distinct anterior mpl, and with 1 fine setula above the 2 normal pstg; stpl 1:2; scutellum with 3–5 accessory setulae on each lateral area of dorsal surface.

Abdomen depressed, nearly parallel-sided and about twice as long as wide; prebasal sclerite bare; 5th sternite and hypopygium as in Figs. 536–539.

Fore tibia with 1–2 pv and no ad, apical pd being vestigial; t₂ with no distinct av, and on basal half with some pv, the longest one about 1.5 times as long as height of the femur; t₃ with 1 ad, 1 pd, 1 p and 1 pv; t₃ with a row of about 10 long av, the longest one being 1.7–1.9 times as long as height of the femur, and on basal two-thirds with 6–8 long pv, the longest one being 1.7–1.8 times as long as height of the femur; t₄ with 1 av, 3 ad and 2 pd, and with or without 1 short additional pd, apical pd being weak. Wings with costal thorns minute and only a little stronger than costal setulae; m–m nearly erect and straight; lower calyptra not protruded beyond the upper.

♀. Unknown.

Distribution. Japan; Lapland.

As pointed out by Hennig (1973) this species may closely be related to P. esurientes on account of its similarity in the distiphallus. However, it can be readily distinguished from that species by the much darker colouration, the stronger pra and the much longer setae on the femora. Judging from the original description of avida the Japanese form is slightly different from the European one in having A₃ less than twice as long as wide and t₁ with no ad.
14. **Pegomya esuriens** (Meigen)  
(Figs. 540–543)


♂. Body-length 5.4–6.2 mm; wing-length 4.7–5.5 mm. Antennae more or less brownish on A2 apically, or wholly blackish; haustellum with mentum blackish or dark brownish, and faintly pollinose. Thorax in pollinosity bluish grey to brownish grey; mesonotum when viewed from behind with 4 sharp vittae between *dc* and *acr* and between *dc* and *ia*; scutellum brownish pollinose at least on dorsal centre. Abdomen in pollinosity bluish grey to pale brownish grey; median vitta narrow and sharp, more or less wedge-shaped on each tergite; 5th sternite more or less brownish on processes at least apically. Femora yellowish, more or less darkened dorsally on *f1* and apically on *f2* and *f3*; tibiae yellow. Wings distinctly tinged with brownish yellow; calypterae brownish yellow.

Frons about as wide as anterior ocellus; parafrontals usually contiguous, with 4–6 strong and 1 or a few fine *ori*, and in 1 specimen with 1 minute *ors* near middle between anterior ocellus and the uppermost *ori*; A3 about twice as long as wide; cheeks with genal setae in 2 rows.

Mesonotum with 3 pairs of strong *pre acr* and with some fine setulae between the rows; 2nd *ph* rather well developed; *pra* half to two-thirds of posterior *ntpl* in length; *ntpl* 1:2, if 1:3 the lowest posterior being much weaker than the upper.

Fore tibia with 1 *ad* and 1 *pv*; *f1* on basal half with some *pv*, the longest one more or less longer than height of the femur; *f2* with 7–8 *av*, the longest one about 1.5 times as long as height of the femur, and on basal half to two-thirds with some *pv*, the longest one as long as or a little longer than height of the femur; *t3* with 1–2 (usually 1) *av*, 3–6 *ad* and 2–4 *pd*, apical *pd* being weak or somewhat distinct.

♀. Unknown to me.

Host plants. In Europe some plants belonging to *Chenopodium*, *Beta* and *Datura* are recorded as host plants of this species (see Hennig, 1973).

Distribution. Japan; Europe.

At a glance this species much resembles the Japanese form of *P. hyoseyami*, although it can be readily distinguished from the latter by the markings on the mesonotum. Judging from the distiphallus, however, this species is more closely related to the preceding *P. avida* rather than to *hyoseyami*.

15. **Pegomya nigra** sp. nov.
(Figs. 544–548)

Type-material. **HONSHU** — Mt. Yatsugatake, Nagano-ken, 9♀♂ (one the holotype), 19–20-vii-70; Mt. Senjō, Nagano-ken, 1♂, 10-vii-71.

♂. Body-length 4.3–5.2 mm; wing-length 4.3–5.5 mm. Interfrontalia black or sometimes brownish on lower half in ground colour, and pale brownish grey in pollinosity; parafacials in ground colour black, at most brownish on anterior margin, and in pollinosity pale brownish grey; cheeks black or sometimes brownish in ground colour, and pale brownish grey in pollinosity; occiput in ground colour black, and in pollinosity with a weak bluish tinge; antennae and palpi black;
Figs. 536-539. Pegomya avida Hennig: ♂: 536, hypopygium, dorsal view; 537, ditto, lateral view; 538, aedeagus; 539, 5th sternite, ventral view.

Figs. 540-543. Pegomya esuriens (Meigen): ♂: 540, hypopygium, dorsal view; 541, ditto, lateral view; 542, aedeagus; 543, 5th sternite, ventral view.

Figs. 544-548. Pegomya nigra sp. nov.: ♂: 544, hypopygium, dorsal view; 545, ditto, lateral view; 546, aedeagus; 547, 5th sternite, ventral view; 548, ditto, lateral view.
haustellum with mentum black and very thinly pollinose. Thorax black in ground colour, rather thinly covered with whitish grey pollen more or less tinged with blue; mesonotum very faintly vittate, when viewed from above in front light with only lateral patches, and when viewed from behind in some lights with median and paramedian vittae. Abdomen in ground colour black, and in pollinosity dull grey and more or less brownish, with median vitta narrow; 5th sternite polished on processes. Legs black. Wings dark brownish tinged, strongly at base.

Head about 1.3 times as high as long; frons as wide as or a little wider than anterior ocellus; interfrontalia linear caudad, half to one-third as wide as anterior ocellus; parafrontals with some strong and some finer ori; A₃ 1.7–2.1 times as long as wide; arista rather distinctly swollen at base and shortly pubescent, the longest hairs being shorter than basal diameter of arista; profrons usually more or less wider than A₃ (1.2 times in the holotype); cheeks about 1.2–1.6 (in the holotype 1.4) times as high as A₃-width, with genal setae in a few rows; epistoma behind frons at lunule.

Mesonotum with 4–7 (7 in the holotype) pre aca, which are regularly or irregularly paired, the rows being much closer together than to dac and the distance between the setae of the 1st pair is distinctly shorter than that between dac and aca, sometimes half of the latter; 2nd ph well developed; pra more or less longer than anterior ntpl; stpl 1:2, if 1:3 the lowest posterior much weaker than the uppers; scutellum hardly setulose on dorsal surface.

Abdomen depressed except on caudal part, nearly parallel-sided, and about twice as long as wide; prebasal sclerite bare; 5th sternite and hypopygium as in Figs. 544–548.

Fore tibia with 1 short ad and 1 or sometimes 2 pv, apical pd being vestigial; f₂ with no distinct av and on basal half with some pv, the longest one being 1.4–1.8 (in the holotype 1.5) times as long as height of the femur; t₃ with 1 ad, 1–2 (usually 1) pd, 1 ph and 1–2 (usually 1) pv; f₃ on apical two-thirds with 5–8 av, the longest one usually twice or a little more as long as height of the femur, and on basal half with 4–5 pv, the longest one about 1.5–2 times as long as height of the femur; t₄ with 1–3 av, 2 ad and 2 pd, apical pd being fine. Wings with costal thorns minute and hardly distinguishable from costal setulae; m–m nearly erect and slightly sinuate; lower calyptra not larger than the upper.

♀. Unknown.


In the 5th sternite which has a tuft of many setae at inner base of each process and in the distiphallus which is weakly chitinized on the median projection and provided with curled side-projections P. nigra is closely related to haemorrhhoa. However, it is readily distinguished from the latter by the darker colouration, the broader parafacials and cheeks, and the 5th sternite with horn-like processes.

*16. Pegomya holosteae (Hering)  
(Figs. 549–556)


Material examined. HOKKAIDO — Sapporo, 1 δ, 15-v-65 (T. Kocha), 1 δ, 11-vi-65.

♂. A blackish species; legs black; wings tinged with dark brownish colour. Body-length 4.5-5 mm. Frons as wide as or a little narrower than anterior ocellus; parafro nta n not contiguous to each other; Aa 1.6-2 times as long as wide. Mesonotum with 2nd ph well developed; pra usually more or less shorter than posterior ntpl, at most as long as the latter. Abdomen depressed, long-ovoid, and about 1.5-1.8 times as long as wide; prebasal sclerite usually bare, only in 1 specimen with 2 setulae at hind margin; 7th tergite (?) present just behind hypandrium.

Fore tibia with no distinct ad, only a few or some setulae near apex being discernible though very minute, and with 1 distinct pv, apical pd being vestigial and indistinguishable from accessory setulae, yet apical p is rather discernible and distinguishable from accessory setulae; t₉ with 1 ad, 1 pd, 1 p and 0-1 pv; t₈ with 2 av, 2 strong and 1 weaker ad and 2 pd, apical pd being strong.

♀. Unknown to me.

Host plants. Some species belonging to Stellaria and Cerastium (Caryophyllaceae) are known as host plants of this species in Europe (see Hennig, 1973).

Distribution. Japan; Europe.

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Figs. 549-556. Pegomya holosteae (Hering), ♂: 549, hypopygium, dorsal view; 550, ditto, lateral view; 551, aedeagus; 552, 7th tergite (?); 553, 8th sternite, ventral view; 554, ditto, lateral view; 555, ditto, caudal view; 556, ditto, inside view.

*17. Pegomya rubivora (Coquillett)
(Figs. 557-561)


Material examined. Hokkaido — Sapporo, 1♀, 15-v-59 (S. Ueda), 2♂♂, 1-v-68 (T. Kocha), & 1♀, 27-v-68 (K. Kusigemati); Jozankei, 1♂, 30-v-65 (T. Kocha), & 1♂, 2-v-68; Mt. Soranuma, 1♂, 27-v-66, 6♂♂, 2♀♀, 17-vi-67, 1♂, 30-vi-68 (T.
Kocha, 2♂♂, 15-vi-68 (M. Suzuki), 1♀, 19-v-68 (S. Umezawa), & 17♂♂, 15-vi-68 (K. Kusigemati); Shikaribetsu-ko, 1♀, 14-vii-66; Mt. Daisetsu, 1♀, 14-vi-60 (K. Kamijo). HONSHU — Izugatake, Saitama-ken, 1♂, 28-iv-69 (H. Takizawa).

♂. A blackish species; haustellum with mentum polished; wings with a brownish tinge; calyptrae pale yellow. Body-length 4.7–6.4 mm. Frons about 1.5–2 times as wide as anterior ocellus; parafrontals contiguous to each other; arista slowly narrowing apicad and practically bare. Mesonotum with ph duplicated; pra as long as anterior or posterior ntpl. Abdomen depressed on basal half; prebasal sclerite with a row of strong setae on hind margin and with or without some setulae before the row. Fore tibia with 1 ad and 1–3 (usually 1–2) pv, apical pd being distinct; t5 with 1 av, 3 ad and 2–3 (usually 2) long and usually 1 shorter pd, apical pd being distinct although shorter and weaker than apical ad.

♀. Antennae often brownish on A2 apically although slightly. Frons 0.3–0.34 times as wide as head; parafrontals with 2–3 (usually 2) ori and with 1 procinate and 2 reclinate ors. Mesonotum with 2nd ph shorter and weaker than the 1st though readily discernible from accessory setulae. Abdomen with ovipositor depressed and strongly chitinized on terminal segment, with no setulae or setae on suranal plate except for a pair of long setae.

Distribution. Japan; Kamchatka; Europe; North America.

Figs. 557–561. Pegomya rubivora (Coquillett). ♂: 557, hypopygium, dorsal view; 558, ditto, lateral view; 559, aedeagus; 560, 5th sternite, ventral view; 561, ditto, lateral view.

*18 Pegomya ruficeps (Zetterstedt) (Figs. 562–569)


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Figs. 562–569. *Pegomya ruficeps* (Zetterstedt), ♂: 562, hypopygium, dorsal view; 563, ditto, lateral view; 564, aedeagus; 565, 5th sternite (from Mt. Zaō), ventral view; 565', ditto, lateral view; 566, 3rd (lower) and 4th (upper) sternites, ventral view; 567, abdomen (from Mt. Muine), lateral view; 568, 5th sternite (from Mt. Muine), ventral view; 569, ditto, lateral view.

♂. Body-length 5.3-6.4 mm. Antennae blackish, or partly brownish on two basal segments especially at apical margin of the 2nd; palpi yellow or brown and with blackish apex, or wholly blackish; haustellum with mentum blackish and polished. Thorax blackish in ground colour; mesonotum brownish or brownish yellow in pollinosity. Abdomen rather thinly covered with pale grey pollen which is faintly tinged with brown; median vitta narrow and faint if visible; in ground colour yellowish to dark brownish, with a narrow black band on hind margins of 2nd to 4th tergites. Femora dark brownish to blackish; tibiae yellow. Wings and calyptrae distinctly tinged with brown or brownish yellow.

Frons about half as wide as anterior ocellus; parafrontals broadly contiguous to each other; profrons and cheeks distinctly less than A₈-width in width and height respectively. Mesonotum with 2nd ph more or less shorter and weaker than the 1st; pra about half as long as posterior ntpl. Hind tibia with 1 pd, which is migrated rather on dorsal surface and practically recognized as d, apical d being indistinguishable from accessory setulae and practically absent.

♀. Interfrontalia brownish yellow on lower half; legs including coxae and trochanters yellowish, at most darkened on f₁; tarsi blackish. Parafrontals with 2-3 ori and 2 ors. Stpl 1:1.

Distribution. Japan; Kamchatka; Manchuria; Europe; North America.

19. Pegomya spiraculata sp. nov.

(Figs. 570-573)

Type-material. **HOKKAIDO** — Kami-no-kuni, 1♂ (holotype), 20-vi-68.

♂. Body-length 7.3 mm; wing-length 6.5 mm. Interfrontalia blackish, with whitish pollen; parafacials in ground colour blackish, only brownish at tip of profrons, and in pollinosity silvery grey; cheeks blackish, with pale grey pollen; occiput in ground colour black and in pollinosity pale grey and faintly brownish, with brownish or yellowish setulae on ventral region; antennae dark brownish, at base of A₈ faintly brownish; arista yellow basally; palpi yellowish, more or less darkened apically; haustellum with mentum dark brownish and polished. Thorax black in ground colour, greyish and slightly brownish in pollinosity; mesonotum rather distinctly tinged with brown in pollinosity, hardly vittate, when viewed from behind in front light with large lateral patches, and in certain view-points with dark shifting reflections. Abdomen thinly covered with dull grey pollen, with rather broad median vitta; in ground colour, 1st tergite largely yellowish, only blackish at bottom of basal concavity and at lateral sides; 2nd tergite yellowish, with rather broad black median vitta and a narrow black hind marginal band; 3rd tergite largely and triangulately blackish, and yellowish laterally to posteriorly, with a narrow black hind marginal band; 4th and 5th tergites blackish; cercal plate reddish. Coxae and trochanters black and dark brownish; f₁ blackish posteriorly and dark brownish anteriorly, with basal and apical parts yellow; f₂ yellow, with apical third blackish; f₃ yellow, with apical fourth blackish; tibiae yellow; tarsi yellow basally and dark brownish apically. Wings with a yellow tinge, stronger basad; calyptrae yellowish; halteres brownish
yellow at base and yellowish at knob.

Head about 1.5 times as high as long; frons very narrow, less than half as wide as anterior ocellus; parafrontals broadly contiguous to each other, with 4 long and slender and a few short and fine ori: A₃ (in depressed condition) about 2.3 times as long as wide; arista not swollen at base and lithely narrowing apicad, the longest hairs being about as long as basal diameter of arista; profrons about 0.7 times as wide as A₃; cheeks somewhat less high than A₃-width, with genal setae in 1 row; epistoma behind frons at lunule; palpi more or less broadening apicad and somewhat blade-like.

Thorax comparatively large, in lateral view more or less rounded, and rather densely covered with fine accessory setulae; spiracles large, especially the posterior one being larger than the knob of haltere; 2nd ph well developed and slightly longer than the 1st; 3 pairs of strong pre acr present, setae of the middle pair being the strongest, about as long as anterior ntpl, and widely separated from each other by a distance about 1.3 times as long as that between dc and acr; rather densely setulose between the rows of acr both before and behind the suture; pra only a little shorter than anterior ntpl; mesopleura with 1 rather distinct anterior mpl, and with 1 strong pslg and 14–15 associated fine setulae; stpl 1:2; scutellum on dorsal surface rather densely setulose except mid-basally, and between apical setae with only 1 setula.

Abdomen depressed, somewhat ovoid and about 1.6 times as long as wide; pre-basal sclerite bare; 5th sternite and hypopygium as in Figs. 570–573.

Fore tibia with 1 pv and no distinct ad, at most on apical third with some minute setulae, apical pd being indistinguishable from accessory setulae; t₄ with no av, on basal half with 5 long pv, the longest one being more than twice as long as height of the femur, and on apical half with a row of fine pv; t₅ with 1 ad, 1 pd, 1 p and 1 pv; t₆ slightly sinuate vertically, with 7–8 long av, the longest one being a little longer than twice the femur-height, at base with 1 slender pv and near middle with 2 long pv; t₇ with 1 av, 3 ad and 2 pd, apical pd being short and fine. Wings with costal thorns minute and hardly distinguishable from costal setulae; m–m oblique and strongly sinuate; lower calyptra much larger than the upper.

♀. Unknown.


By the large lower calyptra, the sinuate t₆ and the structures of the prae- and postgonites P. spiraculata is closely related to the European P. transversa (Fallén), from which it may, however, be distinguishable by the following aspects:
—First abdominal tergite with accessory setulae black and not yellow; palpi more or less darkened apically; surstyli in profile distinctly expanded dorsad near apex of cercal plate.

20. Pegomya kusigemati sp. nov. (Figs. 574–577)

Type-material. HOKKAIDO — Mt. Soranuma, 1♂ (holotype), 29-viii-65 (K. Kusigemati); Mt. Shokambetsu, 1♂, 1-vii-71.

♂. Body-length 6.3–6.4 mm; wing-length 5.9–6 mm. Interfrontalia blackish or dark brownish, with whitish grey pollen; parafacials and cheeks in ground colour blackish, more or less brownish along facial ridge, and in pollinosity

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silvery white or whitish grey; occiput black in ground colour and pale grey in pollinosity; A₁ and A₂ yellow; A₃ brownish or blackish yellow, only yellow at base; arista yellow basally; palpi yellow; haustellum with mentum brownish and polished. Thorax in ground colour largely blackish, and partly yellowish on humeral and posterior calli and on scutellum excluding dorsal base, and in pollinosity rather thick, pale grey and with a yellowish tinge; mesonotum hardly vittate, when viewed from front almost blackish and when viewed from behind almost greyish. Abdomen rather thinly whitish grey pollinose, with faint and interrupted median vitta; in ground colour, 1st tergite wholly yellow; 2nd tergite
yellow, with narrow black hind marginal band; 3rd tergite yellow, with dark brownish median vitta and black hind marginal band; 4th and 5th tergites blackish or dark brownish, in the holotype partly yellowish on 4th tergite; 1st to 4th sternites yellow, 4th sternite being partly darkened; 5th sternite brownish; hypopygium blackish or dark brownish except on yellowish anal sclerite. Fore coxa yellow; mid coxa blackish and partly yellow; hind coxa yellow and partly darkened; trochanters yellow; femora, tibiae and tarsi yellow although f₉ and f₆ being darkened apically. Wings strongly tinged with yellow; calypterae yellow; halteres yellow, at base more or less brownish. Yellow accessory setulae present on ventral region of occiput, lower part of humeral calli, vicinities of pstg, basal part of fore coxae and ventral base of abdomen.

Head about 1.7 times as high as long in the holotype; frons very narrow, less than half as wide as anterior ocellus; parafrontals broadly contiguous to each other, with 3-4 slender and 1-2 short and fine ori; A₃ long, nearly reaching to epistoma, and about 2.6 times as long as wide in the holotype although in depressed condition; arista lithely narrowing apicad and shortly pubescent, the longest hairs being about as long as basal diameter of arista; profrons about half as wide as A₃; cheeks about half as high as A₃-width, with genal setae in 1 row; epistoma behind frons at lunule; occiput bare on upper part below postocular row of setulae; palpi only a little broadening apicad.

Mesonotum with 3 pairs of distinct pre acr, setae of the middle pair being the strongest, about as long as posterior ntpl although somewhat weaker than the latter, and widely separated from each other by a distance about 1.4 times as long as that between de and acr; densely setulose between the rows of acr before the suture and to a little behind the suture; ph duplicated, the 2nd being about as long as the 1st; pra more or less shorter than posterior ntpl; mesopleura with a distinct anterior mpl, and with 1 strong pstg and 6-9 associated fine setulae; stpl 1:2; scutellum on dorsal surface rather densely setulose except on mid-basal part narrowly.

Abdomen depressed, nearly parallel-sided and about twice as long as wide; prebasal sclerite bare; 5th sternite and hypopygium as in Figs. 574-577.

Fore tibia with 1 minute ad at apical third and 1 rather weak pv near middle, apical pd being indistinguishable from accessory setulae and apical pv being distinct; f₃ with no distinct av, and on basal half with 2-3 pv longer than height of the femur; t₃ with 1 short ad, 1 pd and 2 p-pv; f₆ on apical two-thirds with 5-6 av, the longest one being about twice as long as height of the femur, near base with 1 pv rather on ventral surface, near middle with 1 (2 in the paratype on the left body-side) pv more or less longer than height of the femur, and on basal fourth with a row of some distinct p; t₄ with 1 av, 3 ad and 2 pd, apical pd being vestigial. Wings with costal thorns minute though distinguishable from costal setulae; m-m oblique and strongly sinuate; lower calyptera much larger than the upper.

♀. Unknown.


This species may be placed between the preceding spiraculata and the European transversa, yet it is distinguished from the former by the smaller spiracles and yellowish accessory setulae on the 1st abdominal tergite and from the latter by the more strongly bent surstyli.
21. *Pegomya winthemi* (Meigen)  
(Figs. 578–581)


Material examined. HOKKAIDO — Sapporo, 12♂♂, 1♀♀; Nopporo, 6♂♂; Jōzankei, 1♂, 1♀♀; Mt. Soranuma, 1♂, 1♀♀; Chitose, 4♂♂; Tomakomai, 1♀♀; Kōshunai, 2♂♂; Shimamatsu, 1♂; Tōya, 1♀♀; Rebun-tō, 2♂♂, 1♀♀; Mt. Apoi, 7♂♂; Kushiro, 1♂, 1♀♀; Akkeshi, 12♂♂; Kawayu, 9♂♂.

♀. Body-length 4.3–6.2 mm. A1 and A2 yellow; A3 dark brownish, with yellowish base; palpi yellow; haustellum with mentum blackish or dark brownish and shining. Thorax in ground colour blackish except on scutellum, which is more or less yellowish apically. Abdomen in ground colour yellow, often partly darkened, and with black hind marginal bands on tergites. Femora and tibiae yellow, f1 being more or less darkened; tarsi at base yellowish or brownish, and darker apically. Wings and calyptrae strongly tinged with brownish yellow.

Head about 1.5–1.6 times as high as long; frons half to two-thirds as wide as anterior ocellus; parafrontals contiguous to each other. Mesonotum with ph duplicated, the 2nd being more or less shorter than the 1st; pra at most as long as posterior ntpl; stpl 2:2, the lower anterior being much shorter than the upper though rarely indistinguishable from accessory setulae.

♂. Pale than in male; humeral calli yellow or not in ground colour. Interfrontalia with a pair of strong if. Distal segments of mid and hind tarsi much widened and discoid.

Host plants. Mushrooms belonging to *Boletus*, *Inocybe*, *Muscidula*, *Agaricus* and *Armillaria* are recorded as hosts of this species (see Hennig, 1973).

Distribution. Japan; Europe; North America.

22. *Pegomya geniculata* (Bouché)  
(Figs. 582–585)


Material examined. A lot of specimens (162♂♂, 4♀♀) have been seen, their localities are as follows: — HOKKAIDO — Sapporo; Nopporo; Jōzankei; Mt. Soranuma; Mt. Yūbari; Mt. Shokambetsu; Mt. Daisetsu; Toyotomi; Mt. Apoi; Nukabira; Mt. Kariba. HONSHŪ — Mt. hakkôda, Aomori-ken; Mt. Bandai, Fukushima-ken; Okukinu, Tochigi-ken; Masutomi, Yamanashi-ken; Mt. Yatsugatake, Mt. Kiso-Komagatake, Mt. Senjō, Mt. Chōgatake & Mt. Shirouma, Nagano-ken.

♀. Body-length 5.6–7.3 mm. A1 and A2 yellow; A3 largely darkened although more or less yellow basally; haustellum with mentum yellow or sometimes brown, and polished. Thorax in ground colour largely blackish, more or less brownish in part on pleura and calli. Abdomen in ground colour dark brown on dorsal surface basally and yellow to brown on ventral surface basally, becoming darker caudad; tergites with black hind marginal bands even if indistinct owing to dark ground colour.
A₃ long, reaching to epistoma or nearly so, and usually more than 2.5 times as long as wide. Mesonotum with pra half to two-thirds as long as posterior ntpl; pre acr-rows widely separated from each other by a distance distinctly longer than that between do and acr. Abdomen nearly parallel-sided and about 2.3–2.6 times as long as wide; 5th sternite and hypopygium as in Figs. 582–585. Hind femur with the longest av less than twice as long as height of the femur.

Figs. 578–581. Pegomya winthemi (Meigen). ♂: 578, hypopygium, dorsal view; 579, ditto, lateral view; 580, aedeagus; 581, 5th sternite, ventral view.
Figs. 582–585. Pegomya geniculata (Bouche), ♂: 582, hypopygium, dorsal view; 583, ditto, lateral view; 584, aedeagus; 585, 5th sternite, ventral view.

Distribution. Japan; Europe; North America.

*23. Pegomya pulchripes (Loew)
(Figs. 586–590)


Material examined. There have been examined a lot of specimens (173♂♂, 14♀♀) collected from the following localities: HOKKAIDO — Sapporo; Nopporo; Mt. Soranuma; Shikotsu-ko; Bifuka; Moshiro; Mt. Daisetsu; Mt. Shokambetsu; Rishiri-tō; Mt. Apoi; Kushiro; Akkeshi; Erimo; Shiretoko; Mt. Kariba. HONSHU — Mt. Hakkōda, Aomori-ken; Hiraniwa & Mt. Hayachine, Iwate-ken; Mt. Kurikoma, Miyagi-ken; Mt. Zaō, Yamagata-ken; Mt. Bandai & Mt. Adatarra, Fukushima-ken; Mt. Daibosatsu, Yamanashi-ken; Mt. Kiso-Komagatake, Mt. Yatsugatake, Mt. Senjō & Mt. Hodaka, Nagano-ken.

♀. Body-length 5.3–6.7 mm. Dark-form (most of the specimens examined, 171♂♂): — Antennae yellow on two basal segments; A6 blackish, with yellowish base; haustellum with mentum yellow to brown, and polished; interfrontalia, parafacials, cheeks and occiput blackish in ground colour; occiput with yellowish accessory setulae on lower part. Thorax blackish to dark brownish in ground colour. Abdomen in ground colour on dorsal surface dark brownish to blackish or sometimes brownish basally, and on ventral surface yellowish to brown at basal part and darkening caudad; tergites with black hind marginal bands even if indistinct owing to dark ground colour. Legs yellowish; femora darkened apically; tarsi yellowish or brownish at base, darkening apicad. Light-form (only 2♀♀, from Sapporo, 21-v-64, & from Mt. Shokambetsu, 1-vii-71): — In the specimen from Sapporo, body mostly yellow in ground colour, only darkened at the following parts: A6 blackish, at base faintly yellow; f2 and f3 darkened apically; tarsi darkened apically. In the specimen from Mt. Shokambetsu, mesonotum broadly darkened medially; abdomen on dorsal surface largely darkened and on ventral surface partly darkened, with 5th sternite blackish; all femora darkened apically; tarsi brownish, darkening apicad.

Mesonotum with pre acr-rows separated from each other by a distance as long as or a little shorter than that between dc and acr, and with a few or some setulae between the rows; ph duplicated though the 2nd one being more or less shorter than the 1st; pra about two-thirds of posterior ntpl in length. Abdomen about 2–2.5 times as long as wide. Mid tibia with 1 minute ad, which is usually hardly distinguishable from accessory setulae, or practically absent; f5 with long av, the longest one being more than twice (usually about 2.5 times) as long as height of the femur, and near middle with 1 long pv, which is twice as long as height of the femur or nearly so.

♀. Head in ground colour mostly yellow, only blackish on upper part of frons, upper part of occiput and A6. Thorax in ground colour yellow, at most sometimes darkened on mesonotum medially. Abdomen in ground colour yellow,

with black hind marginal bands on tergites, and sometimes darkened medially. Interfrontalia with if absent, if present microscopic and hardly discernible unless carefully examined. Fore and mid tibia with a strong ad.

Distribution. Japan; Europe.

*24. Pegomya tenera (Zetterstedt)
(Figs. 591–595)


Material examined. HONSHÔ — Mt. Chôgatake, Nagano-ken, 6♀♂, 30-vii-70; Mt. Hodaka, Nagano-ken, 1♀, 1-vii-70.

♀. Body-length 4.8–5.9 mm. Antennae blackish although more or less yellowish or brownish on A2 apically; interfrontalia blackish or dark brownish; parafacials, cheeks and occiput blackish in ground colour; palpi yellowish, and faintly or rather distinctly darkened apically; haustellum with mentum blackish or dark brownish and polished. Thorax blackish in ground colour; mesonotum brownish grey pollinose. Abdomen in ground colour of dorsal surface dark brownish on basal half and almost blackish on caudal half, and of ventral surface dark brownish; tergites with black hind marginal bands even if indistinct owing to dark ground colour. Femora dark brownish although more or less yellowish on f1 apically and basally; tibiae yellowish; tarsi brownish. Wings with a brownish yellow tinge, rather distinctly yellow at base; calyptrae yellowish.

Frons very narrow, one-third to half as wide as anterior ocellus. Mesonotum with pre acr-rows separated from each other by a distance as long as or a little shorter than that between dc and acr, and with a few or some setulae between the rows; ph duplicated although the 2nd one being more or less shorter than the 1st; pra about two-thirds of posterior n ih p in length. Abdomen about 2.2–2.5 times as long as wide. Mid tibia with 1 ad, which is short, yet always easily distinguishable from accessory setulae; f2 with the longest av less than twice as long as height of the femur, and near middle with 1–2 pv, which are at most only a little longer than height of the femur.

♀. Uncertain to me. There are at hand 5 female specimens which might be referred to tenera or pilosa, or separated into the two species, yet no reliable differences have been found among them.

Distribution. Japan; Europe; North America.

In having the darker colouration the Japanese form is referred to the obscurior-form described as a variety of tenera by Collin (1931) from Greenland.

*25. Pegomya pilosa Stein
(Figs. 596–600)


♀. Body-length 5.3–5.4 mm. Antennae blackish, at most very faintly brown-
Frons less than half as wide as anterior ocellus. Mesonotum with pre acr-rows more or less closer together than to de, and with a few or some setulae between the rows; ph duplicated although the 2nd one being shorter than the 1st; pra two-thirds to three-fourths of posterior ntpl in length. Fore femur with a row of p, of which 3-4 on basal half are longer than pv near the p; t1 with or without 1 vestigial ad; t3 with 1 minute ad on the left body-side only in 1 specimen; f3 with the longest av about 2.5 times as long as height of the femur, and near middle with or without 1-2 fine pv, which are at most only a little longer than height of the femur; t3 with 1-2 av, 3 ad (the middle one being the longest and one-fourth to one-third of the tibial length) and 2 pd (the distal one being very long, a little longer than one-third of the tibial length), accessory setulae on anterior and anteroventral surfaces being much longer than those on the other surfaces.

♀. Uncertain to me.

Distribution. Japan; Scandinavia.

So far as known to me this species has been known only from Scandinavia except for a questionable record from North America made by Hukett (1941, 1965a
It seems to me that the North American form is not conspecific with *pilosa* (compare Huckett, 1941 with Ringdahl, 1938 and Hennig, 1973). The Japanese form agrees well with the Scandinavian form except in the darker colouration. Such a colour difference is seen also in *tenera*.

26. *Pegomya acklandi* sp. nov.
(Figs. 601–605)


♂. Body-length 5.1–7.8 mm; wing-length 5–7.2 mm. Antennae blackish; palpi yellow; haustellum with mentum blackish and polished; interfrons blackish or sometimes brownish, with whitish grey pollen; parafacials blackish in ground colour and silvery grey in pollinosity; cheeks in ground colour blackish or sometimes faintly brownish especially near vibrissal angle, and in pollinosity whitish grey and often with a faint yellowish tinge; occiput in ground colour blackish and in pollinosity grey, with bluish and brownish tinges. Thorax in ground colour black, in pollinosity whitish- or bluish-grey, often more or less tinged with brown especially on mesonotum; mesonotum rather obscurely vittate, when viewed from behind with median and sublateral vittae and lateral patches, the median vitta being rather broad anteriorly and narrowing caudad, ending far from hind margin of the mesonotum. Abdomen black in ground colour, rather thickly covered with bluish grey pollen which is sometimes faintly tinged with yellow or brown, and in some lights with black reflections; median vitta usually narrow and sharp, sometimes rather broad and obscure; hypopygium pollinose. Coxae and trochanters blackish; f1 blackish except for yellow apical third; f2 and f3 blackish basally and yellow on the remaining part; tibiae yellow; tarsi yellowish basally and brownish apically. Wings rather strongly tinged with yellow, especially at base; calypterae strongly yellow; halteres yellow at knob.

Head about 1.4–1.5 times as high as long; frons at most as wide as anterior ocellus; parafrontals broadly contiguous to each other, with 5–7 ori and no ors; A3 large, broadening apicad, and twice or slightly less than twice as long as wide; arista slowly narrowing apicad and minutely pubescent; profrons more or less narrower than A3; parafacials distinctly narrowing ventrad; cheeks about as high as profrons-width, with terminal setae in 1 row although usually with a few or some oral setae below the genal setae; epistoma behind frons at lunule; palpi more or less broadening apicad.

Thorax rather densely covered with slender and fine accessory setulae; meso-
notum with 2–3 pairs of pre acr, setae of the 2nd pair being much stronger than the rest and about as long as anterior ntpl though somewhat weaker than the latter; mesonotum rather densely setulose between the rows of pre acr, which are separated from each other by a distance as long as or a little shorter than that
between ac and acr; ph duplicated, the 2nd one being about as long as the 1st; pra longer than anterior ntpl; mesopleura usually with no distinct anterior mpl, and with 1 strong and 1 weaker pslg and about 7–15 associated fine setulae; stpl 1:2; scutellum rather densely setulose dorsally; posterior spiracle with some or many (4–15) upwardly directed setulae on lower edge.

Abdomen ovoid and half-depressed, about 1.3–1.5 times as long as wide and rather densely covered with fine and slender accessory setulae; prebasal sclerite with many setulae; 5th sternite and hypopygium as in Figs. 601–605.

Fore tibia with 1 short ad and 2–3 (usually 2) strong pv, apical pd being fine and indistinguishable from accessory setulae, apical p sometimes rather distinct, and apical pv strong; f₃ with no distinct av, and with a row of pv becoming shorter and weaker towards apex of the femur, the longest one being 1.5–2 times as long as height of the femur; t₃ with 1 ad, 1 pd and 2–4 (usually 3) p–pv; f₄ with 6–9 strong av, the seta near middle being the longest, twice as long as height of the femur or nearly so, and on middle third with a few or some strong pv, the longest one being 1.4–1.8 times as long as height of the femur; t₄ with 1–2 (rarely 3) av, 3 (rarely 4) ad and 2 (rarely 3) pd, apical pd being weaker than apical ad although more or less distinct. Wings with costal thorns minute and only a little stronger than costal setulae; m–m oblique and sinuate; lower calyptra not larger than the upper.

♀. Interfrontalia in ground colour more or less reddish or brownish near lunule, or sometimes wholly blackish. Abdomen not vittate.

Head about 1.3 times as high as long; frons about one-third as wide as head; interfrontalia with a pair of strong if; parafrontals with 3 ors; palpi dilated and blade-like. Thorax with accessory setulae shorter and sparser than in male; mesopleura often with a distinct anterior mpl. Abdomen with accessory setulae and marginal setae shorter than those of male.

Fore tibia with 1 strong ad, apical p being usually distinct; f₄ with pv weaker than in male, setae on apical half being fine except for 1 or 2 strong ones near apex; f₅ near middle with 1 or a few pv, which are much weaker than those of male, often fine and shorter than height of the femur. Wings with costal thorns more or less stronger than those of male; m–m slightly oblique and sinuate, or distinctly so.


The present new species can be readily distinguished from any other known species by the setulose metathoracic spiracle, the ovoid and half-depressed abdomen and the setulose prebasal sclerite in the male, and by the setulose metathoracic spiracle and the yellow and blade-like palpi in the female. The genital structures show that this species is more or less related to the Chinese P. phyllostachys Fan, 1964.

27. Pegomya orientis sp. nov.
(Figs. 606–614)

Body-length 4.6-7.8 (7.4 in the holotype) mm; wing-length 4.4-7.3 mm. Interfrontalia blackish or sometimes brownish, with whitish grey pollen; parafacials and cheeks in ground colour blackish or sometimes brownish and in pollinosity silvery grey or pale yellowish grey; occiput black in ground colour and greyish in pollinosity, which is more or less tinged with blue and brown; antennae blackish, at most faintly brownish on A2 apically; palpi blackish, often brownish on basal half; haustellum with mentum blackish and distinctly pollinose. Thorax black in ground colour and thickly covered with pale grey pollen, which is more or less bluish and usually a little tinged with brown, especially on mesonotum; mesonotum shiftingly vittate, when viewed from behind with long median and short sublateral vittae and before the suture with lateral patches. Abdomen black in ground colour, thickly covered with whitish- or bluish-grey pollen, which is often tinged with brown although faintly; median vitta narrow or moderate and sharp, continuous to prebasal sclerite (6th tergite) and not dilated anteriorly on any tergites except the 2nd one; 5th sternite yellowish or brownish at least on processes. Legs yellowish; f1 darkened dorsally, or sometimes largely blackish; f2 and f3 usually yellow and at most weakly darkened at apex dorsally, yet sometimes largely darkened except at base and apex; tibiae yellow; tarsi yellowish or brownish, darkening apicad. Wings tinged with yellow, rather distinctly at base; calyptrae pale or rather distinctly yellow; halteres brownish at base and yellowish at knob.

Head about 1.3-1.4 times as high as long; frons as wide as or a little wider or narrower than anterior ocellus; parafrontals contiguous to each other, with 4-7 ori; Aa twice or a little more as long as wide, usually about 2.2 times so; arista minutely pubescent; profrons about as wide as Aa; cheeks 1.2-1.4 times as high as Aa-width, with genal setae in 1 or sometimes 2 rows. Abdomen (Figs. 606 & 607) stout; prebasal sclerite (Fig. 608) large and densely setose; 5th sternite and hypopygium as in Figs. 609-613. Fore tibia with 1-2 (usually 1) short ad and 1-2 (usually 1) pv; f3 with no av, on basal half with a few or some pv, the longest one about 1.2-1.5 times as long.
Figs. 606–613. *Pegomya orientis* sp. nov., ♂: 606, abdomen, dorsal view; 607, ditto, lateral view; 608, 6th tergite; 609, hypopygium, dorsal view; 610, ditto, lateral view; 611, aedeagus; 612, 5th sternite, ventral view; 613, ditto, lateral view.

as height of the femur; \( t_a \) with 1–2 (usually 1) \( ad \), 1–2 (usually 1) \( pd \), 1 \( p \) and 1–2 \( pv \), and without \( a \) or \( av \); \( f_a \) except near base with 6–9 strong \( av \), the longest one being 1.5–1.9 times as long as height of the femur, and usually with no distinct \( pv \)
except near apex, only sometimes with a few or some ones which are at most slightly longer than height of the femur; t₃ with 1–4 (usually 2–3) av, 2–4 (usually 3) ad, 3–4 (2 long and 1–2 shorter) pd and 1 distinct or rather strong p. Wings with costal thorns short or minute; m-m oblique and more or less sinuate; lower calyptra not protruded beyond the upper.

♀. Body-length 5.8–8.2 mm. Interfrontalia brownish or yellowish on lower half and blackish or dark brownish on the upper; cheeks always brownish in ground colour. Thorax and abdomen thickly covered with pale grey pollen and hardly vittate, at most on mesonotum with a brownish pollinose median vitta although this vitta is not very distinct. Fore femur darkened dorsally or wholly yellowish.

Head usually about 1.2 times as high as long; frons about one-third as wide as head; parafrontals with 3–4 ori and with 1 proclinate and 1–2 (usually 1) reclinate ors. Mesonotum with 1 or a few pairs of very fine or vestigial pre acr; stpl 1:2 or 1:3. Abdomen with compressed ovipositor as seen in the genus Phorbia. Fore tibia with ad strong; t₃ sometimes lacking p especially in smaller specimens. Wings with costal thorns rather strong; m-m nearly erect and hardly sinuate.


![Fig. 614. Pegomya orientis sp. nov., ♀: ovipositor, lateral view.](image-url)
P. orientis is, in reality, very closely related to the Chinese P. chinensis Hennig, 1973, from which it can be distinguished only by the longer postgonites and the more sinuate distiphallus. The succeeding 3 new species also have a large and setose prebasal sclerite on the hypopygium and a strongly sinuate projection on the surstyli in the male, and have a compressed ovipositor in the female. Although the female of chinensis has not yet been described, it has probably a similar ovipositor. All these species may form a close group, which should be called the chinensis-group. The present species can be distinguished from other members of this group by the absence of a on t₂, the absence of a tuft of setulae on t₅, the presence of p on t₃ and the different structures of the male 5th sternite and hypopygium and the female ovipositor.

28. Pegomya vera sp. nov. (Figs. 615–623)


KYUSHU — Kagoshima, 1 ♂, 12-iii-70 (H. Takizawa).

♂. Body-length 6.3–7.6 mm; wing-length 6.1–7.5 mm. Interfrontalia black or sometimes brownish in ground colour, with whitish grey pollen; parafacials and cheeks black or dark brownish in ground colour, and whitish grey or silvery grey in pollinosity, which is usually more or less tinged with yellow; antennae black; palpi blackish; haustellum with mentum blackish and thinly pollinose, at least partly shining. Thorax in ground colour black and in pollinosity pale or bluish grey, usually with a faint brownish tinge; mesonotum rather distinctly tinged with brown in pollinosity, and when viewed from behind with median, paramedian and sublateral vittae and lateral patches, these markings being very shifting according to the point of view. Abdomen in ground colour black and in pollinosity pale or bluish grey and often with a faint yellowish or brownish tinge; median vitta rather broad; 5th sternite black. Coxae and trochanters black; femora black, at most very slightly yellow at apex; tibiae yellow, rarely dark brownish; tarsi blackish. Wings tinged with yellow, rather strongly at base; calyptrae yellow; halteres reddish brown or brownish yellow at base, and yellowish at knob.

Head 1.3–1.4 times as high as long; frons about as wide as anterior ocellus, sometimes a little wider than the latter; parafrontals contiguous to each other or sometimes separated by a very narrow interfrontalia, and with 5–7 ori; A₃ 2.2–2.4 times as long as wide; arista minutely pubescent; profrons as wide as or slightly wider than A₃; cheeks more or less higher than A₃-width, with genal setae in a few rows.

Thorax rather densely setulose; mesonotum with 1–2 pairs of strong pre acr and some pairs of fine and slender ones, and usually setulose between the rows; ph duplicated, the 2nd one being as strong as the 1st; pra at least as long as anterior ntpl; stpl 1:3 or 1:4. Abdomen (Figs. 615 & 616) with 5th sternite (Figs. 621 &
Figs. 615–622. *Pegomya vera* sp. nov., ♂: 615, abdomen, dorsal view; 616, *ditto*, lateral view; 617, 6th tergite; 618, hypopygium, dorsal view; 619, *ditto*, lateral view; 620, aedeagus; 621, 5th sternite, ventral view; 622, *ditto*, lateral view.

622) densely tomentose and velvety on processes.

Fore tibia with 1 *ad* and 1 *pv*; *f₂* with a row of *pv* becoming shorter and weaker towards apex of the femur, the longest one being 1.4–1.8 times as long as height of
the femur, and with rather long accessory setulae just behind the \( pv \)-row especially near base; \( t_2 \) with 1 \( ad \), 1 \( pd \), 1–2 (usually 1) \( p \) and 1–2 (usually 1) \( pv \); \( f_3 \) swollen near base on posterior surface and thereon with a tuft of stiff setulae; \( f_3 \) with 7 to about 10 strong \( av \), the longest one about 1.7–2 times as long as height of the femur, and on middle third with some (5–6 in the holotype) strong \( pv \) shorter than the \( av \), at most only a little longer than height of the femur; \( t_3 \) with 2 long \( pd \) on middle half and a few or some shorter ones on apical fourth, and with 1–2 (usually 1) weak \( av \) and 3 strong \( ad \). Wings with costal thorns usually minute and hardly distinguishable from costal setulae; \( m-m \) more or less oblique and sinuate; lower calyptera not larger than the upper.

♀. Interfrontalia reddish yellow or brown on lower part in an inverse V-shape. Thorax and abdomen very thickly pollinose and hardly vittate, at most with faint vittae in some lights on mesonotum. Femora blackish as in male.

Head about 1.2 times as high as long; frons about one-third as wide as head; parafroontals with 3–4 \( or \) and with 1 procline and 2 reclinate \( ors \), the upper reclinate \( ors \) being shorter than the lower. Mesonotum with some pairs of very fine \( pre acr \), and not setulose between the rows; \( stpl \) 1:3. Abdomen with compressed ovipositor (Fig. 623); 7th and 8th segments with minute blunt setulae on tergites and sternites, setulae on 8th segment are stouter than those on 7th segment.

Mid femur only with a few or some slender \( pv \) on basal half; \( f_3 \) without a tuft of setulae, near middle with \( pv \) only 1 or 2 in number and fine; \( t_3 \) with 2 long and 1 shorter \( pd \). Wings with costal thorns rather strong; \( m-m \) nearly erect.


This species can be readily distinguished from other members of the \( chinensis \)-group by the tuft of setulae on \( f_3 \) in the male, and by the absence of \( a \) on \( t_2 \), by the setal pattern of \( stpl \) arranged in 1:3, by the presence of 2 reclinate \( ors \) and by the characters of the ovipositor in the female.

Figs. 623. Pegomya vera sp. nov., ♀:

ovipositor, lateral view.

29. Pegomya japonica sp. nov.
(Figs. 624–632)

Type-material. HOKKAIDÔ — Sapporo, 50♂♂, 20♀♀, 7-v–22-vi-59–69 (T. Kuma-
ta, S. Ueda, T. Kocha & M. Suwa); Nopporo, 1♂ (holotype), 18-vi-66, & 27♂♂, 4♀♀, 2-30-vi-66-68; Jozankei, 2♂♂, 10-vi-66; Mt. Soranuma, 11♂♂, 2♀♀, 15-17-vi-67-68 (K. Kusigemati & M. Suwa); Shimamatsu, 1♂, 7♀♀, 10-14-vi-67-68 (K. Kusigemati); Eniwa, 3♂♂, 27-v-71; Hiroshima-mura, 1♂, 11-vi-66; Mt. Shokam-betsu, 1♂, 1-vii-71; Mt. Apoi, 9♀♀, 10-vii-66 & 28-vi-67; Gabino, 2♂♂, 29-v-69 (T. Kocha); Kami-no-kuni, 1♂, 20-vi-68; Tōya, 1♂, 1♀, 13-vi-67-68 (M. Miyazaki).

Honshō — Tsumakoi, Gumma-ken, 1♀, 11-vii-71 (T. Kocha); Sayama, Saitama-ken, 3♀♀, 20-iv-68 (H. Takizawa); Utsunomiya, Tochigi-ken, 3♀♀, 6-v-68 (H. Takizawa); Tōkyō, Tōkyō-to, 1♂, 7-iv-67 (T. Kocha); Zushi, Kanagawa-ken, 1♀, 25-iv-71 (T. Kocha); Amagi, Shizuoka-ken, 2♀♀, 17-v-66 (T. Kocha); Gōkei, Okayama-ken, 1♂, 24-iv-66 (M. Miyazaki); Tachikue-kyō, Shimane-ken, 1♂, 10-v-66 (M. Miyazaki); Sandan-kyō, Hiroshima-ken, 1♂, 30-iv-66 (M. Miyazaki). Kyūshū — Fukuoka, 1♀, 17-iv-67; Kumamoto, 5♀♀, 24-iv-67.

♀. Body-length 5.6-7.8 (7 in the holotype) mm; wing-length 4.9-7.1 mm. Interfrontalia black or dark brownish in ground colour; parafacials and cheeks black in ground colour and silvery grey or whitish grey in pollinosity; antennae blackish, at most brownish on A2 apically; palpi blackish although more or less brownish yellow basally; haustellum with mentum blackish and thinly pollinose, shining in some lights. Thorax in ground colour black and in pollinosity bluish grey and with a faint brownish tinge on pleura; mesonotum in pollinosity largely brownish or largely bluish grey and with brownish pollinose median and paramedian vittae, when viewed from behind with dark median vitta and lateral patches, the latter being often indistinct. Abdomen black in ground colour and bluish grey in pollinosity; median vitta narrow or rather broad, more or less dilated anteriorly on each tergite; fore marginal bands often present and distinct; these markings brownish pollinose; 5th sternite black, shining on process apically. Fore femur largely blackish or dark brownish and only yellow at base and apex, or sometimes largely yellowish or brownish; f2 and f3 brownish or yellowish, often more or less darkened; tibiae yellow; tarsi brownish, darkening apicad. Wings tinged with yellow, distinctly at base; calyptrae yellowish, often with a brownish tinge; halteres brownish or reddish at base, yellowish at knob.

Head about 1.3-1.4 times as high as long; frons as wide as anterior ocellus or nearly so; parafrontals contiguous to each other or nearly so, and with 4-6 or1; Aq 2-2.5 times as long as wide; arista minutely pubescent; pronotum as wide or slightly wider than Aq; cheeks about 1.3-1.6 (1.4 in the holotype) times as high as Aq-width, with genal setae in 1-2 rows.

Mesonotum with about 3 pairs of strong pro acr, the strongest one being as long as or a little longer than posterior ntpl although somewhat weaker than the latter, and usually with a few setulae between the rows; ph duplicated; pra at least as long as anterior ntpl; styl 2:3, sometimes with 1 additional posterior one. Fore tibia with 1 ad and 1 pv; f4 with no av, on basal half with some pv, the longest one about 1.2-1.6 times as long as height of the femur; t2 with 1 ad, 1 pd, 1-2 (usually 1) p and 1-2 pv; f5 with 5-8 (6 in the holotype) strong av, the longest one being 1.4-2 times as long as height of the femur, and near middle with a few rather strong pv, which are somewhat longer or shorter than height of the femur; t3 with 1-3 (usually 2) av, 3 ad and 3-4 (proximal 2 being longer) pd. Wings with costal thorns rather distinct, if short they are not indistinguishable from costal setulae; m-m a little oblique and slightly sinuate; lower calyptrae not larger than 226
Figs. 624–631. *Pegomya japonica* sp. nov., emachine: 624, abdomen, dorsal view; 625, ditto, lateral view; 626, 6th tergite; 627, hypopygium, dorsal view; 628, ditto, lateral view; 629, aedeagus; 630, 5th sternite, ventral view; 631, ditto, lateral view.

\[\text{the upper.}\]

\(\Phi\). Body-length 5.2–8 mm. More thickly covered with paler pollen than in male. Interfrontalia near lunule or largely brownish or yellowish in ground colour; cheeks brownish to blackish in ground colour. Abdomen not vittate, at most with tessellations in some lights. All femora wholly yellow in most speci-
mens, especially in those from Hokkaidō.

Head 1.2–1.3 times as high as long; frons slightly wider than one-third head-width; parafrontals with 2–4 (usually 3) ors and 3 ors; cheeks with genal setae in 1 row. Mesonotum with a few pairs of distinct pre acr and with or without 1–2 setulae between the rows; stpl 2:2 or 2:3. Abdomen with compressed ovipositor. Fore tibia sometimes with 2 pv; f₃ with a few pv near base; f₄ with no distinct pv except for basal and preapical ones. Wings with costal thorns strong.


From other members of the chinensis-group the present species can be distinguished in the male by the stpl arranged in 2:3 or 2:4 and by the 5th sternite densely armed with short setae along inner margin of each process, and in the female by the stpl arranged in 2:2 or 2:3 and by the characters of the ovipositor.

30. Pegomya robusta sp. nov. (Figs. 633–641)


♀. Body-length 5.8–7.4 (6.5 in the holotype) mm; wing-length 5.4–7.1 mm. Interfrontalia, parafacials and cheeks usually black in ground colour; antennae blackish; palpi blackish, sometimes brownish at base; haustellum with mentum blackish and thinly pollinose. Thorax in ground colour black, and in pollinosity pale grey or bluish grey and usually with a brownish tinge especially on mesonotum along rows of setae; mesonotum when viewed from behind with median vitta and
Figs. 633–640. *Pegomya robusta* sp. nov., ♀: 633, abdomen, dorsal view; 634, ditto, lateral view; 635, 6th tergite; 636, hypopygium, dorsal view; 637, ditto, lateral view; 638, aedeagus; 639, 5th sternite, ventral view; 640, ditto, lateral view.
lateral patches, and in some lights with paramedian vittae, these markings being very shifting according to the point of view. Abdomen in ground colour black, and in pollinosity pale grey or bluish grey and often with a faint brownish or yellowish tinge; median vitta rather broad, often dilated anteriorly on each tergite; 5th sternite black. Fore femur largely blackish, only yellow at base and apex; f₃ and f₅ yellow, at most darkened apically; tibiae yellow; tarsi blackish.

Frons about as wide as anterior ocellus; parafrontals usually contiguous to each other, with 4–6 orl; A₃ 2–2.4 times as long as wide; arista minutely pubescent; profrons as wide as or a little wider than A₃; cheeks 1.3–1.6 times as high as A₃ width, with genal setae in 1 row.

Mesonotum with 2–4 pairs of pre acr, of which 1–2 pairs are strong, the strongest seta being usually as long as or longer than posterior ntpl; ph duplicated; pra at least as long as anterior ntpl; stpl 1:3 or 1:4, if lower anterior seta present, it is much weaker than the upper.

Fore tibia with 1 short ad and 1 strong pv; f₂ with no av, on basal half with some pv, the longest one being 1.5–2 times as long as height of the femur; t₂ with 1 ad, 1 pd, 1–3 ρ and 1–3 (usually 1–2) pv, and with 1 a; f₅ with 6–9 strong av, the

Fig. 641. *Pegomya robusta* sp. nov., ♀: ovipositor, lateral view.
longest one being twice or more as long as height of the femur, and near middle
with 2-4 strong pv, the longest one being usually 1.5 times or more as long as height
of the femur, yet in some smaller specimens only a little longer than the height;
t₃ with 2-4 (usually 2-3) ad and 2 long and 1-2 shorter pd, and with 1 or a few
short and weak av, which are sometimes very fine and hardly distinguishable from
accessory setulae. Wings with costal thorns usually distinct or strong; m-m
oblique and more or less sinuate; lower calyptera not larger than the upper.
♀. Body-length 5.4-8.1 mm. Interfrontalia brownish or reddish brown at
least near lunule in ground colour; parafrontals and cheeks usually blackish or
dark brownish in ground colour. Mesonotum hardly vittate. Abdomen rather
distinctly tessellated in some lights. Fore femur largely yellowish to largely black-

Head about 1.2 times as high as long; frons a little wider than one-third head-
width; interfrontalia usually with a pair of vestigial if, which are indiscernible
unless carefully examined; parafrontals with 2-4 (usually 3) ori and 3 ors. Mesonotum with acr much weaker than those of male; stpl 1:2 or sometimes 1:3. 
Abdomen with compressed ovipositor. Fore tibia with ad strong; t₂ with 1 a, 1
ad, 1 pd, 1-2 (usually 1) φ and 1 (sometimes none) pv; t₃ near middle with 0-1 strong
pv; t₄ sometimes with 1 a. Wings with costal thorns strong.


By having a distinct a on t₂ in either sex this species can be readily distin-
guished from other members of the chinensis-group.

30. Genus Eutrichota Kowarz

_Eutrichota_ Kowarz, 1893:140. Type-species: _Coenosia inornata_ Loew, 1873.
_Pegomyza_ Schnabl & Dziedzicki, 1911:109, as subgenus of _Pegomyia_. Type-species:
_Anthomyia praepotens_ Wiedemann, 1817. Syn. nov.
_Arctopegomyia_ Ringdahl, 1938:190, as subgenus of _Pegomyia_. Type-species:
_Anthomyza tunicata_ Zetterstedt, 1846. Syn. nov.

In this study the genus _Eutrichota_ is recognized as a group characterized by
the following characters: — ☯ & ♀. Interfrontalia without if; occiput setulose
on upper part below postocular row of setulae; epistoma behind frons at lunule. Mesonotum setulose between the rows of pre acr; propleura, pteropleura, hypopleu-
ra and prosternum all bare; scutellum haired ventrally. Hind tibia without
apical pv. ☯. Abdomen conical or cylindrical, sometimes half-depressed; 5th
sternite with processes subcylindrical and rounded apically; surstyli stick- or club-
shaped and incised apically; distiphallus strongly chitinized, with side-projections
well developed.

With disproportionate emphasis on the width of the male frons this genus
would be represented by the type-species alone. However, in the definition
mentioned above _Pegomyza_ and _Arctopegomyia_ may be suppressed as synonyms of
_Eutrichota_. Hereinafter 7 species will be recorded from Japan.

Key to the species (♂♀)

1. Frons wider than one-third head-width. ........................................... 1: _inornata_ (Loew)
   – Frons much narrower than one-third head-width. .............................. 2
2. Arista plumose or semi-plumose. ..................................................... 3
1. Arista plumose or semi-plumose. ........................................ 2
   - Arista shortly or minutely pubescent. ................................ 5

2. Mid tibia with av; pra shorter than anterior mpl. .............. 1. inornata (Loew)
   - Mid tibia without av; pra longer than anterior mpl. ........... 3

3. Arista with the longest hairs much longer than A2-width; abdomen thickly pollinose and not shining, at most with tessellations in some lights; all femora yellow. ..................................................... 2. praepotens (Wiedemann)
   - Arista with the longest hairs at most as long as A2-width; abdomen thinly pollinose and shining; all femora largely blackish or dark brownish. .......................... 4

4. Mid femur with av; distance between the rows of pre acr nearly equal to that between de and acr; t4 with 1 or a few p. ....... 5. consanguinea (Tiensuu)
   - Mid femur without av; distance between the rows of pre acr distinctly longer than that between de and acr; t4 with no p. ................................................................. 6. socculata (Zetterstedt)

5. Thorax reddish yellow in ground colour; palpi yellow; fore tarsus with 2nd to 4th segments not broader than those of mid tarsus. ....... 7. labradorensis (Malloch)
   - Thorax black in ground colour; palpi blackish; fore tarsus with 2nd to 4th segments more or less broader than those of mid tarsus. ....... 4. frigida (Zetterstedt)

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Key to the species (♀)

1. Arista very shortly or minutely pubescent; .............. 5
   - Arista with the longest hairs much longer than A2-width; hypopygium yellow; all femora yellow. ........................... 2. praepotens (Wiedemann)
   - Arista with the longest hairs at most as long as A2-width; hypopygium black; all femora largely blackish or dark brownish. .......................... 4

2. Mid tibia with av; pra shorter than anterior mpl. .............. 1. inornata (Loew)
   - Mid tibia without av; pra longer than anterior mpl. ........... 3

3. Profrons about as wide as A2; distance between the rows of pre acr nearly equal to that between dc and acr; t4 with 1 or a few p. ....... 5. consanguinea (Tiensuu)
   - Profrons more or less narrower than A2; distance between the rows of pre acr distinctly longer than that between dc and acr; t4 with no p. ................................................................. 6. socculata (Zetterstedt)

4. Mid femur with no av on apical half; prebasal sclerite usually setose; mesopleura with at least 1 strong anterior mpl. .............. 3. longimana (Pokorny)
   - Mid femur with 1-2 strong av on apical half; prebasal sclerite not setose; mesopleura with no strong anterior mpl. ........... 6

5. Palpi blackish; thorax blackish in ground colour; t4 with no pv. ................................................................. 4. frigida (Zetterstedt)
   - Palpi yellow; thorax at least partly brownish yellow; t4 with 1 or a few pv. ................................................................. 7. labradorensis (Malloch)

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*1. Eutrichota inornata (Loew)
(Figs. 642–645)


Material examined. HOKKAIDO — Sapporo, 1 ♂, 16-v-68 (H. Torikura), 12 ♂♂, vii-66, & 1 ♂, 14-x-67; Ishikari-hama, 1 ♂, 16-v-71; Hiroshima-mura, 1 ♂, 11-vi-66; Obihiro, 1 ♂, 15-vii-66.

♂. Body-length 5.4–6.2 mm; wing-length 4–4.6 mm. Interfrontalia in ground colour usually reddish or brownish yellow near lunule or on lower half and blackish on the upper, and in pollinosity whitish on lower part and brownish yellow around ocellar triangle; A1 brownish to dark brownish; A2 yellowish at

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apex or a more extensive area; \(A_3\) blackish, sometimes brownish at base. Abdomen with median vitta very faint and often indiscernible, if discernible it is brownish pollinose; 5th sternite sometimes more or less brownish on processes. Legs variable in colour; coxae black or partly yellow; trochanters yellow, sometimes more or less darkened; femora largely or partly darkened, at least yellowish apically; tibiae yellow; tarsi blackish. Wings slightly tinged with yellow; calyptrae whitish.

Frons about 0.4 times as wide as head; interfrontalia twice or a little more as wide as parafrontalia; parafrontals with 2 ori and 3 ors (1 procline and 2 reclinate), the upper reclinate ors being about half as long as the lower; \(A_3\) about 2.2-2.4 times as long as wide; arista with the longest hairs about twice as long as \(A_3\)-width; cheeks with genal setae strong and arranged in a row.

Mesonotum with 3 pairs of pre acr, the rows being closer together than to dc; \(ph\) not duplicated; \(pra\) more or less longer than posterior ntpl; \(stpl\) 1:2. Abdomen short and stout, more or less shorter than twice the width, with marginal setae very strong; prebasal sclerite usually not setose.

Fore tibia with 1 ad and 1 pv, and with 3 strong apical setae \((d, pd\) and \(pv)\), apical \(p\) being rather strong though about half as long as apical \(pv\); \(f_2\) with 1 av near base and 1-2 av at or in apical third, and with 3 \(pv\) on basal half and a few \(pv\) near apex; \(t_2\) with 1 av, 1 ad, 1 pd, 1 \(p\) and 1 \(pv\), ad being very robust; \(t_3\) with 1 av, 2-3 \(pd\) and no \(pv\), apical \(pd\) being very weak. Wings with costal thorns strong; \(m-m\) oblique and sinuate.

♀. Body-length 5.4-7.8 mm. Similar to the male except for sexual differences: — Abdomen ovoid when viewed from above; 5th tergite with marginal setae short and fine, only a little stronger than accessory setulae.

Distribution. Japan; Europe.

2. **Eutrichota praepotens** (Wiedemann) comb. nov.

(Figs. 646-649)


Material examined. **HOKKAIDO** — Sapporo, 1 5, 10-vii-31 (S. Kato); Shimamatsu, 2, 12-14-vi-67 (K. Kusigemati), & 1 5, 1 4, 15-ix-67 (K. Kusigemati).

♀. Body-length 9-11 mm. \(A_2\) reddish brown or brownish yellow on apical margin. Thorax and abdomen black in ground colour and whitish grey in pollinosity; processes of 5th sternite and hypopygium excluding prebasal sclerite yellow, slightly whitish-pollinose. Femora and tibiae yellow; tarsi blackish.

Frons about 1.5 times as wide as anterior ocellus; parafrontals broadly contiguous to each other; \(A_3\) long, about 2.6-2.9 times as long as wide; arista longly plumose, the longest hairs being much longer than \(A_3\)-width. Mesonotum with 2nd \(ph\) rather distinct although at most about half as long as the 1st one; \(pra\) longer than anterior ntpl; scutellum setulose on whole dorsal surface. Abdomen conical, about 1.7-2 times as long as wide; prebasal sclerite with no setae. Hind tibia with 1 av, 2 ad and 2 pd. Wings with \(m-m\) oblique and strongly sinuate.

♀. Frons about 0.37 times as wide as head. Fore tarsus with 2nd to 4th segments rather distinctly broadened. Wings with costal thorns very strong.

Distribution. Japan; Europe.

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Figs. 646-649. *Eutrichota praepotens* (Wiedemann). ♂: 646, hypopygium, dorsal view; 647, ditto, lateral view; 648, aedeagus; 649, 5th sternite, ventral view.

*3. Eutrichota longimana* (Pokorny) comb. nov. (Figs. 650–653)

*Chortophila longimana* Pokorny, 1887:405. *Pegomyia longimana*: Huc...

♀. Body-length 6.8–8.7 mm. Antennae blackish, at most sometimes faintly brownish on apical margin of A₃ and at base of A₄. Thorax and abdomen including 5th sternite and hypopygium blackish in ground colour and whitish grey in pollinosity. Femora yellow, f₁ being darkened on dorsal and posterior surfaces; tibiae yellow; tarsi blackish.

Frons about twice as wide as anterior ocellus; parafrontals contiguous to each other; A₃ 2–2.2 times as long as wide; arista minutely pubescent. Mesonotum with rows of pre acr separated from each other by a distance nearly equal to that between dc and acr; 2nd ph often rather distinct; scutellum setulose on dorsal surface except on centre. Abdomen conical, usually a little longer than twice the width; prebasal sclerite on hind margin with some to about 10 (rarely 1 or a few) setae, of which 1 or a few are sometimes strong.

Fore tibia with apical pd fine or sometimes well developed; f₂ often with 1 av near base, yet never on apical half, and with 2–4 pv on basal half.

♂. Unknown to me.

Distribution. Japan; Europe; North America.

So far as the European and North American forms are concerned, longimana is not setose on the prebasal sclerite of the male hypopygium. The Japanese form is different by having a setose prebasal sclerite. It is tentatively referred to the present species.

*4. Eutrichota frigida (Zetterstedt) comb. nov.
(Figs. 654–657)


Material examined. HOKKAIDO — Sapporo, 1♂, 13-viii-68 (K. Kusigemati), & 2♀♀, 6-vi-68; Mt. Muine, 1♀, 8-viii-72 (T. Kumata); Rishiri-tô, 1♂, 31-vii-69; Mt. Daisetsu, 6♀♀, 28–29-vii-59 (S. Ueda).

♂. Body-length 6.5–8.7 mm. Antennae almost blackish, at most more or less brownish on apical margin of A₃ and at base of A₄. Abdomen bluish grey pollinose, and shining black in some lights; median vitta broad; 5th tergite and hypopygium shining black though very thinly pollinose. Fore femur blackish or dark brownish; f₂ and f₃ yellowish, more or less darkened apically; t₁ blackish or dark brownish; t₂ and t₃ yellowish, darker basad; tarsi blackish. Wings distinctly tinged with yellow, strongly at base; calyptrae yellow.

Frons about 1.5–2 times as wide as anterior ocellus; parafrontals broadly contiguous to each other; A₃ longer than twice the width, usually 2.2–2.5 times as long as wide; arista minutely pubescent. Mesonotum with pre acr-rows separated from each other by a distance as long as or a little longer than that between dc and acr. Abdomen conical, with accessory setulae fine; prebasal sclerite without setae or setulae.


Fore tibia with 1 *ad* and 2 (sometimes 1) *pv*, apical *pd* being strong; *t₃* with 1 or sometimes 2 strong *av* near apical third, and sometimes with 1 strong *av* near base; *t₄* with apical *pd* not developed.
♀. Abdomen more thinly pollinose and more shining than in male. Fore femur dark brownish on dorsal half and brownish yellow on ventral half. Mid and hind femora with pv much weaker than those of male; fore tarsus with 2nd to 4th segments more or less broadened.

Distribution. Japan; Europe; North America.

*5. Eutrichota consanguinea (Tiensuu) comb. nov.
(Figs. 658-661)


Material examined. HOKKAIDO - Sapporo, 1♂, 13-viii-66 (T. Kocha); Nopporo, 2♀♀, 9-vi-73; Mt. Soranuma, 1♂, 6♀♀, 1♀, 13-viii-66, 1♀, 20-viii-64, & 2♀♀, 4 & 30-viii-67 (K. Kusigemati); Shimamatsu, 1♀, 10-vi-68 (K. Kusigemati); Nukabira, 1♂, 11-vii-61 (I. Miyagi); Toikambetsu, 1♂, 2♀♀, 31-vii-66; Mt. Daisetsu, 1♀, 4-viii-66 (S. Ueda), & 1♀, 17-vii-68. Honsu - Mt. Hakkoda, Aomori-ken, 1♂, 19-vii-66; Mt. Hayachine, Iwate-ken, 1♀, 11-vii-69; Mt. Zao, Yamagata-ken, 1♂, 1♀, 7-ix-66; Mt. Kiso-Komagatake, Nagano-ken, 2♀♀, 24-vii-70.

♂. Body-length 5.6-7 mm. Antennae blackish, at most brownish on apical margin of A2; palpi and mentum of haustellum blackish. Thorax black in ground colour and whitish grey and more or less bluish in pollinosity; mesonotum when viewed from front with broad median vitta, which is bifurcated posteriorly, and when viewed from behind with very broad lateral vittae, which are expanded to the rows of dc. Abdomen in ground colour black, and in pollinosity whitish grey and with a faint yellowish tinge, shining black in some lights; median vitta narrow or moderate on 2nd and 3rd tergites and broad on 4th and 5th tergites; hypopygium shining black though thinly pollinose; 5th sternite blackish or dark brownish on processes. Fore femur largely blackish or dark brownish, with yellow apex; f2 and f3 blackish or dark brownish, at most faintly yellowish apically; tibiae yellow; tarsi blackish. Wings rather distinctly tinged with yellow; calyptrae whitish, with a faint yellowish tinge.

Frons about as wide as distance between posterior ocelli inclusive; parafrontals contiguous to each other or nearly so, with 2-3 or; A3 2.4-2.7 times as long as wide; arista semi-plumose, the longest hairs being more or less shorter than A3-width; profrons and cheeks respectively about as wide and high as A3-width.

Mesonotum with 3-4 pairs of pre acr, and rather sparsely setulose between the rows, which are separated from each other by a distance nearly equal to that between dc and acr; ph not duplicated; pra as long as or a little longer than anterior ntpl; scutellum on dorsal surface rather sparsely setulose laterally and bare centrally. Abdomen cylindrical, about 2.5 times as long as wide; prebasal sclerite with no setae.

Fore tibia with 1 ad and 2 (sometimes 3) pv, apical pd being strong; f2 with no av, only occasionally with 1 weakly developed av near apical third, and near base with 2 pv shorter than height of the femur; t4 with 1 ad, 1 pd, 1-3 (usually 2) p and 1-3 pv; t5 with 1-2 av near basal fourth and 4-5 av on apical half, and with 1 fine pv near base and 1 strong pv at basal third, these pv displaced a little to ventral surface; t3 with 1 av, 3 ad, 2 long and 1 shorter pd, and 1 strong p at basal third, some setulae on posterior surface being more or less longer than accessory setulae, 1-2 of them are usually rather distinct; apical pd of t3 much weaker and shorter.
than other apical setae. Wings with costal thorns distinct or strong, as long as or much longer than h-vein; mm nearly erect or a little oblique, and weakly sinuate.

♀. Body-length 5.2-7.3 mm. Abdomen more thinly pollinose and more shining than in male. Frons slightly wider than one-third head-width; profrons more or less wider than A₃; cheeks as high as or slightly less high than A₃-width. Abdomen with some strong discal setae on 5th tergite. Fore tibia with 2 pv, of which distal one is often absent; t₂ with 1-2 av near base and apex respectively; t₃ with 1 ad, 1 pd, 1-2 (rarely 3) p and 1-2 pv, the proximal one of p being usually located rather on postero-dorsal surface; t₃ with p usually lacking; fore tarsus with segments not broadened. Wings with costal thorns strong.

Distribution. Japan; Europe.

Judging from the genital structures of the North American Pegomyia connexa Stein, 1920 figured by Huckett (1924), it is very likely that consanguinea and connexa are conspecific.

*6. Eutrichota socculata (Zetterstedt) comb. nov.
(Figs. 662-665)


Material examined. HOKKAIDO — Sapporo, 1Δ, 12-vi-68 (H. Takizawa), & 2Δ, 20-vi-69; Jozankei, 1♀, 8-viii-68 (T. Kocha); Nopporo, 1♀, 30-vi-66; Zenibako, 1♀, 20-vii-65 (T. Kocha); Mt. Daisetsu, 3Δ, 1♀, 23-vii-68.

Δ. Body-length 5.4-8.1 mm; wing-length 5-7.2 mm. Antennae blackish, with A₂ more or less yellowish or brownish on apical margin. Mesonotum when viewed from behind broadly blackish outside rows of de; scutellum tinged with brown in pollinosity. Abdomen in pollinosity whitish grey and with a faint brownish yellow tinge; median vitta narrow; 5th tergite and hypopygium shining black though thinly pollinose. Femora almost blackish; f₁ rather distinctly yellow at apex; f₂ and f₃ faintly yellowish or brownish at apex; tibiae yellow; tarsi blackish. Wings rather distinctly tinged with yellow, strongly at base; calyptrae yellowish.

Frons more or less narrower than anterior ocellus; parafrontals broadly contiguous to each other, with 3-4 orι; Α₃ about 2.5-2.9 times as long as wide; arista plumose, the longest hairs being about as long as Α₃-width; profrons and cheeks respectively a little narrower and less high than Α₃-width.

Mesonotum rather densely setulose between the rows of pre acr, which are separated from each other by a distance distinctly longer than that between de and acr; ph not duplicated; pra longer than anterior ntpl; stpl 1:2; scutellum on dorsal surface bare mid-basally. Abdomen cylindrical, long-ovoid when viewed from above, and as long as or a little shorter than twice the width; prebasal sclerite with no setae or setulae.

Fore tibia with 1 ad and 2 (rarely 1 or 3) pv, apical pd being strong; t₂ with no av and 1 strong pv at basal fourth, and with or without 1 fine pv at base; t₃ with 1 ad, 1 pd and 4-5 p-pv, of which proximal one is located rather on postero-dorsal

surface; \( t_3 \) with 1 \( av \) at basal third or fourth and 3–4 \( av \) on apical half, and with 1 fine \( pv \) near base and 1 strong \( pv \) near basal third; \( t_4 \) with 1 \( av \), 3 \( ad \), 2–3 \( pd \) and no \( p \), apical \( pd \) being weak. Wings with costal thorns minute (in smaller specimens) or rather distinct (in larger specimens); \( m-m \) oblique and rather distinctly sinuate.

♀. Abdomen more thinly pollinose and more shining than in male, and not vittate. Frons a little wider than one-third head-width; profrons about as wide as \( A_3 \). Abdomen with some strong discal setae on 5th tergite. Mid femur, as in male, with no \( av \). Wings with costal thorns strong.

Distribution. Japan; Europe.

*7. Eutrichota labradorensis* (Malloch) comb. nov.

(Figs. 666–669)


Material examined. HOKKAIDO — Mt. Daisetsu, 1 \( \delta \), 1 \( \varphi \), 8-vii-62 (S. Takagi), 5\( \delta \), 3\( \varphi \), 26–30-vii-67 (M. Miyazaki & K. Kusigemati), & 10\( \delta \), 3\( \varphi \), 20–21-vii-68.

\( \delta \). Body-length 5.5–8.6 mm. Interfrontalia brownish, sometimes darkened, with whitish pollen; parafacials in ground colour brownish or yellowish near lunule and blackish on the remaining part, and in pollinosity whitish and faintly tinged with yellow; cheeks blackish or dark brownish, with whitish grey pollen; occiput black in ground colour and pale brownish grey pollinose; \( A_4 \) and \( A_5 \) yellow; \( A_7 \) yellow basally and blackish on the rest; palpi yellow; haustellum with mentum yellowish to blackish and whitish grey pollinose. Thorax on pleura blackish in ground colour, at most brownish along confines of pleura and near bases of wings, and in pollinosity pale grey and faintly brownish; metanotum in ground colour reddish yellow with a broad blackish median vitta, or wholly blackish; mesonotum variously darkened in ground colour, in one extremity largely reddish yellow and only with a blackish median vitta broadening caudad, and in the other extremity largely blackish or dark brownish, and only partly brownish on humeral calli in part, near humeral calli and on lateral declivities behind the suture; mesonotum in pollinosity rather thin, and pale grey or sometimes brownish grey; scutellum in ground colour largely or narrowly darkened on dorsal surface, and on the remaining part including ventral surface reddish yellow or brown. Abdomen in ground colour largely blackish, in pollinosity grey and faintly brownish yellow, and with tessellations in some lights; 5th tergite often yellow on hind margin in ground colour; hypopygium and processes of 5th sternite wholly yellow or largely brownish; median vitta distinct, more or less broadening caudad on 3rd to 5th tergites; tergites when viewed from behind with blackish spots at bases of marginal setae. Legs yellowish except for blackish tarsi; fore coxa sometimes partly blackish; mid and hind coxae partly brownish or blackish; trochanters sometimes partly brownish; \( f_1 \) darkened dorsally. Wings tinged with yellow, strongly at base; calyptrae yellow; halteres yellow at knob and brownish yellow at base.

Frons as wide as or a little narrower than anterior ocellus; parafrontals broadly contiguous to each other, with 3–4 \( ori \); \( A_3 \) 2.2–2.5 times as long as wide; arista minutely pubescent; profrons usually somewhat narrower than \( A_5 \), at most about as wide as the latter; cheeks usually a little higher than \( A_2 \)-width.
Mesonotum with 3–4 pairs of distinct pre acr, the rows being usually closer together than to de; 2nd ph very fine and usually like accessory setulae. Abdomen conical, and more or less longer than twice the width; prebasal sclerite bare.

Fore tibia with 1 ad and usually 2 pv, apical pd being strong; f2 with 1–2 (usually 1) strong av near apical third, and with 1 rather fine pv near base and 1–4 strong pv on basal half to two-thirds, and with or without a few or some rather strong pv on apical third; t2 with 1 ad, 1 pd, 1–2 p and 2–3 pv; f3 with a row of strong av, and middle half with some strong pv; t3 with 1–2 av, 2–4 (usually 3) ad, 3–4 pd, and 1 strong pv near basal third, and sometimes in addition with 1–2 weaker pv; t4 with apical pd weak. Wings with costal thorns distinct or rather strong; m–m more or less oblique and a little or rather distinctly sinuate.

Figs. 666–669. Eutrichota labradorensis (Malloch), ♂: 666, hypopygium, dorsal view; 667, ditto, lateral view; 668, aedeagus; 669, 5th sternite, ventral view.

♀. Head in ground colour largely yellowish, only blackish on ocellar triangle, upper half of parafrontals and upper half of occiput; parafacials and cheeks whitish yellow in pollinosity; haustellum with mentum yellowish or brownish. Thorax in ground colour mostly yellowish, only blackish or darkened on basales, subalares, postpleura and sometimes metapleura, and thinly covered with whitish pollen, which is slightly tinged with yellow. Abdomen in ground colour blackish except on 5th tergite, which is yellowish or brownish on whole or posterior part, and in pollinosity whitish grey or pale yellowish grey and not vittate, only with tessellations in some lights.

Frons more or less wider than one-third head-width; interfrontalia sometimes with a pair of if although vestigial; profrons and cheeks respectively more or less wider and higher than A3-width. Abdominal 5th tergite with discal setae indistinguishable from accessory setulae or only a little stronger. Mid femur with 1–2 strong av near base and 1–2 (usually 1) strong av near apical third, and with no strong pv, only with a few fine ones on basal half; t2 with no av; t4 only with a few fine pv on basal half apart from 1 or a few rather distinct preapical ones; t3 usually with no pv; fore tarsus with segments not broadened. Wings with costal thorns strong.

Distribution. Japan; North America.

The Japanese form is slightly different from the North American one in the
much darker coloration of the male abdomen which is never largely reddish. This species is closely related to the European *Pegomyia semirufa* Ringdahl, 1932, from which it can be separated only by the absence of a strong av on t2 of the female. As pointed out by Huckett (1941) it is not unlikely that the two species are conspecific.

Species of *Eutrichota* not included in the key:

8. *Eutrichota sylvia* (Séguy) comb. nov.

*Pegomyza sylvia* Séguy, 1926:43.

This species was described on the basis of a male specimen from Japan (Chûzenji, Tochigi-ken). As no representatives have been examined by myself, it is not included in the present key. According to Hennig (1973: 473) this species should be suppressed as a synonym of *Pegomyza similis* Schnabl, 1911.

**LITERATURE**


——— 1931. The Oxford University Expedition to Greenland, 1928. — Diptera (Orthor-


1924. Ditto, XIII. Ibid. (9) 14: 257–274.


