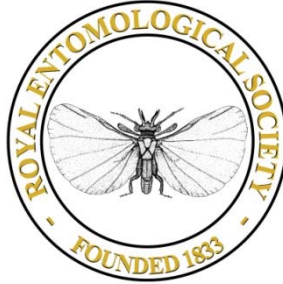


Royal Entomological Society



HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS

To purchase current handbooks and to download
out-of-print parts visit:

<http://www.royensoc.co.uk/publications/index.htm>



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 2.0 UK: England & Wales License](https://creativecommons.org/licenses/by-nc-sa/2.0/).

Copyright © Royal Entomological Society 2012

ROYAL ENTOMOLOGICAL
SOCIETY OF LONDON

Vol. X. Part 4(b).

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS



DIPTERA CYCLORRHAPHA CALYPTRATA

SECTION (b) MUSCIDAE

By

E. C. M. D'ASSIS FONSECA

LONDON

Published by the Society
and Sold at its Rooms

41, Queen's Gate, S.W. 7

31 January, 1968

Price £1 12s. 6d.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS

The aim of this series of publications is to provide illustrated keys to the whole of the British Insects (in so far as this is possible), in ten volumes, as follows :

- | | |
|------------------------------------|------------------------|
| I. Part 1. General Introduction. | Part 9. Ephemeroptera. |
| " 2. Thysanura. | " 10. Odonata. |
| " 3. Protura. | " 11. Thysanoptera. |
| " 4. Collembola. | " 12. Neuroptera. |
| " 5. Dermaptera and
Orthoptera. | " 13. Mecoptera. |
| " 6. Plecoptera. | " 14. Trichoptera. |
| " 7. Psocoptera. | " 15. Strepsiptera. |
| " 8. Anoplura. | " 16. Siphonaptera. |
- II. Hemiptera.
III. Lepidoptera.
IV. and V. Coleoptera.
VI. Hymenoptera : Symphyta and Aculeata.
VII. Hymenoptera : Ichneumonoidea.
VIII. Hymenoptera : Cynipoidea, Chalcidoidea, and Serphoidea.
IX. Diptera : Nematocera and Brachycera.
X. Diptera : Cyclorrhapha.

Volumes II to X will be divided into parts of convenient size, but it is not possible to specify in advance the taxonomic content of each part.

Conciseness and cheapness are main objectives in this series, and each part is the work of a specialist, or of a group of specialists. Although much of the work is based on existing published keys, suitably adapted, much new and original matter is also included.

Parts are issued, separately paged and priced, as they become available.

A second (revised) edition of *A Check List of British Insects*, by G. S. Kloet and W. D. Hincks, is being issued as an extra, eleventh, volume in this series.

The Society is indebted to the Royal Society for a grant towards the cost of initiating this series of *Handbooks*.

A list of parts now available appears on the back cover.

Sole Agent :— E. W. Classey,
353, Hanworth Road,
Hampton, Middlesex.

DIPTERA : CYCLORRHAPHA

CALYPTRATA

MUSCIDAE

By E. C. M. D'ASSIS FONSECA

HENNIG (1955) divides the Calyptrata into three families and one superfamily, as follows: Cordyluridae, Muscidae, Anthomyiidae and Calliphoroidea. The separation by Hennig of the Muscid subfamily Anthomyiinae (as Anthomyiidae) from the rest of the Muscidae is a useful division, firstly because the Anthomyiinae form a large, distinct and easily characterized group which may with justification be raised to family status, and secondly because there at present exist so many gaps in the knowledge of this difficult group that some considerable time must elapse before it can be dealt with satisfactorily. In the present Handbook, therefore, the family Muscidae is restricted to six subfamilies: Muscinae, Stomoxiinae, Phaoniinae, Coenosinae, Lispinae and Fanniinae.

The major group known as the Calyptrata may be recognised by the following combination of characters: a well developed cleft always present and conspicuous on the exterior (lateral) face of the second antennal segment (text-fig. 1); the transverse thoracic suture more or less continuous across dorsum (text-fig. 2); the posterior calli of thorax well differentiated (text-fig. 2).

KEY TO FAMILIES.

The five families of the Calyptrata may be separated by the following Key (based on van Emden, 1954):

- 1 (4) Hypopleuron, in front of posterior spiracle (text-fig. 2) with a curved row of bristles (concave towards front).
- 2 (3) Postscutellum, a convex cushion-like fold without hairs or bristles immediately below scutellum, well developed. If inner margin of lower (thoracic) squama diverges backwards from lateral margin of scutellum then first posterior cell not wider at apex than discal crossvein is long. TACHINIDAE.
- 3 (2) Postscutellum absent, indistinct or weakly developed; if rather well developed, the whole inner margin of lower squama diverges backwards from lateral margin of scutellum and at the same time first posterior cell is twice as wide at apex as discal crossvein is long. CALLIPHORIDAE.
- 4 (1) Hypopleuron, in front of spiracle, without a curved row of bristles, at most with some irregularly arranged short hairs.
- 5 (6) Lower squama strongly reduced, not projecting, forming only a membranous fold. Hind tibia, dorsally, with the hairs irregularly arranged on the evenly convex surface. Occiput with more or less numerous whitish hairs. Head always with equally broad frons in both sexes and without crossed bristles on frontalia. CORDYLURIDAE.
- 6 (5) Lower squama more or less conspicuous, though often much less projecting than upper one; in the latter case either hind tibia with distinct dorsal rows of decumbent hairs which lie on two slight longitudinal ridges, or occiput entirely black-haired.

- 7 (8) Wing with the anal vein extending to wing-margin, or if (rarely) stopping short before reaching the margin then frontalia (*between* the frontal orbits) with a pair of crossed bristles or setulose hairs and at the same time scutellum with fine pale hairs beneath at apex.....ANTHOMYIIDAE.
- 8 (7) Anal vein never extending to wing-margin. Frontalia never with a pair of crossed bristles or hairs at the same time as scutellum with fine hairs beneath at apex.....MUSCIDAE.

Family MUSCIDAE.

MORPHOLOGY.

The morphology of the Muscidae is in most respects similar to that of the Tachinidae and Calliphoridae, which is dealt with in Vol. X, Part 4(a) of this series of Handbooks (van Emden, 1954). The majority of the characters described in the above work as of particular importance in those two families are of equal importance in the Muscidae. Bristles, especially of the thorax and legs, are of even greater taxonomic value in both the Muscidae and the Anthomyiidae than in the other families of the Calyptrata, their length, number, position and even *direction* being often of the utmost importance.

The dusting, or pollinosity, which is usually more or less extensive on the sclerotized surfaces of the majority of species, and which, by its variable colour and density, provides a pattern of stripes, spots, tessellations etc., affords important specific characters when the specimen is in good condition. If a specimen has been allowed to become "wet" by over-long contact with killing or relaxing agents, the normal dust pattern is partly or entirely destroyed, so care should be taken to avoid this "wet" condition.¹

There is scarcely any part of the external structure of a Muscid fly that may not provide some character of taxonomic value. It is therefore important, when pinning a specimen, to ensure that every part of it will be accessible to examination when it is to be identified. I have previously (1953, *Entomologist's Rec. J. Var.* 65 : 264-6) called attention to the importance of *pinning* as against gumming to card or celluloid, and also to the desirability of some standard of setting and particularly to the need for separating the legs well apart, pulling the proboscis down from the mouth opening to disclose the palpi, and (at least in the case of *Fannia*) exposing the male genitalia by drawing the visible forceps (paralobes or claspers) downwards and rearwards, holding them in position by a suitably placed pin. The examination of the male genitalia of other groups may well be found necessary as confirmatory evidence. This particularly applies to the somewhat difficult genus *Spilogona*, for which figures of the male genitalia of 20 out of the 23 British species are given by Collin (1930, *Trans. ent. Soc. Lond.* 78 : 255-80, Plates XV-XXVII).

¹ Should a specimen become "wet" (indicated by the affected parts turning black or translucent yellow, according to their ground-colour) the condition can often be remedied by a prolonged immersion in a de-greasing agent (cigarette-lighter fluid has proved excellent for this purpose). For the most effective results the treatment should be applied as soon after death as possible, bearing in mind that if a specimen is required to be set it must be allowed to dry out entirely in the set position before it is placed in the spirit.

BIOLOGY.

The biology of the Muscidae differs widely from that of the Tachinidae. None of the species is parasitic on other insects, the larvae being either saprophagous or carnivorous. The life-history of some of the species is known and such information as is available is given in the following keys, but a very large amount of work remains still to be done in this field. Mr. P. Skidmore, who has made a special study of the biology of the Muscidae, has kindly sent me the following information for inclusion in this Handbook.

Biologically the family may be divided into three distinct groups. Firstly, those species with monomorphic larvae which leave the egg in the final (third) instar. The larvae of these species are always predacious from the moment they hatch out and include *Phaonia* and *Helina*, and parts of *Mydaea*, *Hydrotaea*, *Limnophora* and the Coenosiinae. Secondly, those with dimorphic larvae which leave the egg in the second instar, and which include *Hebecnema*, *Gymnodia* and certain species of *Hydrotaea* and *Mydaea*. In this second group the larvae are apparently saprophagous until they reach their final instar, when they become carnivorous. As far as is known, both monomorphic and dimorphic larvae require live prey in their final instar in order to survive. The third group, comprising the Muscinae, Stomoxyinae, Fanninae and certain species of the Phaoniinae, have trimorphic larvae, which leave the egg in the first instar and may reach maturity without resorting to carnivory. However, the larvae of some species of this third group (i.e. *Mesembrina*, *Poliates*, *Muscina*, *Dendrophaonia*, *Hydrotaea dentipes* and *Ophyra leucostoma*) are structurally capable of being carnivorous and may become predacious in the final instar.

PRINCIPAL EXTERNAL CHARACTERS.

In the following keys, only visible (external) characters have been used for identification, but figures of the male genitalia of the 57 species of the difficult genus *Fannia* are given at the end of the Handbook. The correct directions of view and of illumination are indicated wherever these factors are of importance. Similarly, where the dimension of any particular feature is involved (the length of a bristle or section of wing-vein, width of thoracic stripe or size of abdominal marking etc.), such a feature is compared in size to an easily recognised adjacent character in the species under examination. Thus, for instance, the length of the prelar bristle (one of the most important of all the thoracic bristles) is always compared in length to the second (hinder) notopleural bristle, which is close to it and readily identified (see text-fig. 2).

HEAD. In the majority of species the eyes of the male are more or less closely approximated on the frons (in many cases with the frontal orbits actually touching), while in the female they are widely separated. In two subfamilies, Lispinæ and Coenosiinae, and in certain species of the Phaoniinae, the male eyes are quite or almost as widely separated as in the female. In general the eyes are bare, but may also be microscopically and sparsely pubescent to densely long-haired. The width (i.e. at widest part) of the third antennal segment is very frequently used as a yard-stick by which to compare the size of other head characters. Such characters include the depth of jowl below eye, width of facial orbit, width of frons or separation

of eyes, width (including hairing) of arista or alternatively the length of its longest hairs. This last character, when the hairs are very short (*i.e.* arista pubescent), is more often compared to the basal diameter of the stem of the arista (at its point of maximum width). The eye-hairs, when present, are

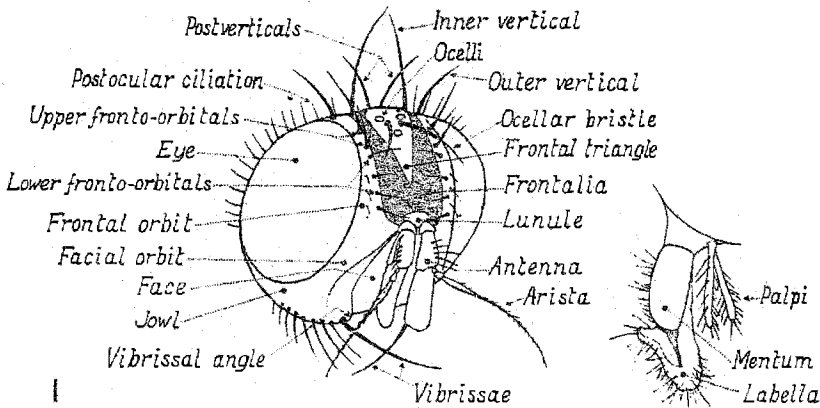


FIG. 1.—Head

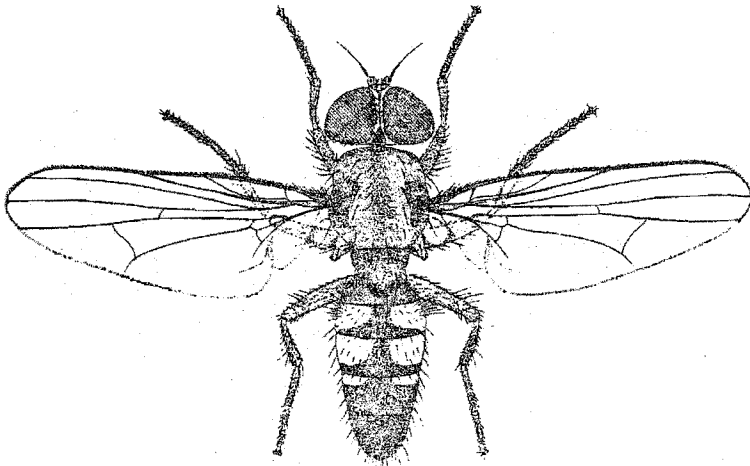


FIG. 1A. —*Fannia canicularis* Linné ♂

most easily distinguished when seen against a dull black background, but the length of the aristal hairs is best judged with a strongly illuminated white surface immediately behind them. The main characters of the head are given in text-fig. 1.

THORAX. The number, position and length of bristles on the thorax are characters constantly employed in determining the species. They, are in general, remarkably consistent, but occasionally are found to vary within a species and especially the number of postsutural dorsocentrals. If, therefore,

an attempt to name a specimen has obviously failed, it is advisable first to try the alternative section of that couplet where the choice was based on this last mentioned character. As stated above, the prealar bristle is one of the most important of the thoracic characters, and care should be exercised to ensure that at least one of the pair remains intact. In the case of the postsutural dorsocentrals, however, it is only their number (and occasionally their relative position) which has any significance; should any or all become broken off the resulting "scars" still afford an easy means of locating them. The main characters of the thorax are given in text-fig. 2.

ABDOMEN. The abdomen consists of six distinct segments before the hypopygium, the tergal plates (tergites) of the first two segments being more or less fused together and that of the sixth segment mainly or entirely hidden beneath the fifth. The basal two tergites are counted as distinct segments

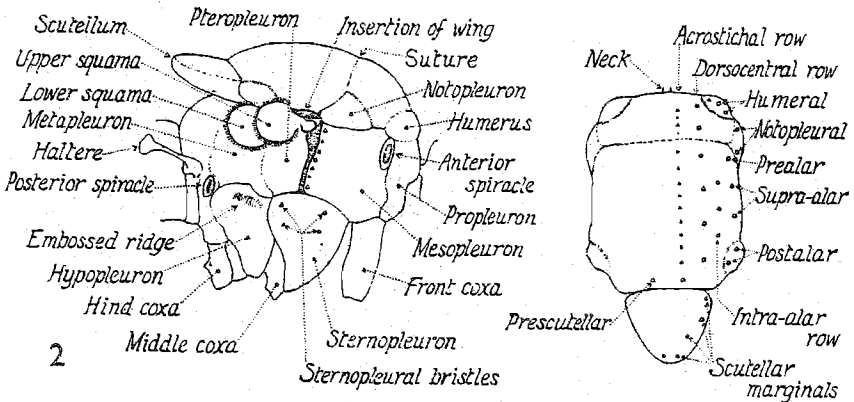


FIG. 2—Thorax.

in the following Keys; the hindmargin of the first tergite is easily traced by a suture-like transverse marking (or depression), usually with a row of somewhat more bristle-like hairs (especially laterally) immediately *behind* it. The bristling of the tergites is, with few exceptions, of comparatively slight taxonomic importance. There are five sternal plates, or sternites, all separate and distinct, the vestiture of first and fifth sternites, and the shape of the latter in the males, often affording useful specific characters.

LEGS. The chaetotaxy of the legs is of the greatest importance throughout the whole of the Muscidae and particular care should be taken to avoid the loss of any part or the destruction of any of the bristles. Whenever possible each leg of a pair should always be examined. The exact position of a bristle, or a row of bristles or hairs, must be accurately determined in accordance with the generally accepted terminology. With the knee flexed, the plane in which the centre-line of the femur and tibia lie contains the strictly *dorsal* and *ventral* bristles; the *anterior* and *posterior* bristles are perpendicular to that plane, and the terms used for the intermediate positions, namely, *anterodorsal*, *anteroventral*, *posterodorsal* and *posteroventral* are self-explanatory. The principal parts of the leg are shown in text-fig. 3.

WINGS. In the majority of the species the four principal long veins run more or less straight to the wing-margin, but in the greater part of the

subfamily Muscinae, and in a few species of Phaoniinae, the discal vein is more or less strongly bent or curved forward in its apical section. In all except one species (*Allognata agromyzina*) the costal vein extends to the tip of the discal vein. The terminology used for the venation and wing-cells follows Verrall (1901), and is given in text-fig. 4.

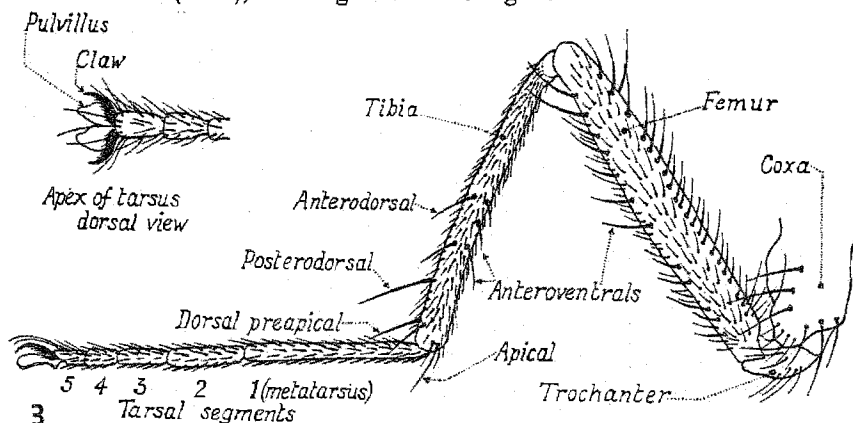


FIG. 3—Leg (rt. hind).

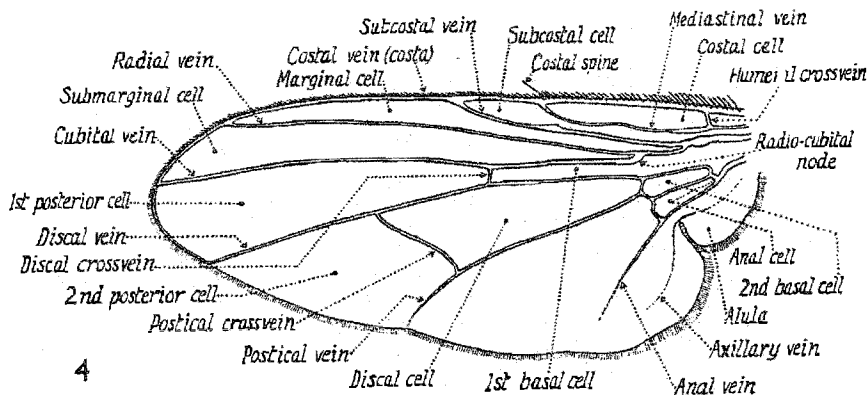


FIG. 4—Wing.

In the following keys the frequently used abbreviations have been avoided as a possible source of error or confusion, since the accidental alteration of a single letter can often result in an entirely wrong diagnosis.

ACKNOWLEDGMENTS

My thanks are due to all those who, from time to time, have sent me specimens or have allowed me to examine their collections, and especially to Mr. D. M. Ackland and Mr. A. C. Pont for their help in testing the keys, in consulting literature at the Hope Department of Entomology and the British Museum (Nat. Hist.), respectively, which was otherwise not available

to me, in resolving queries by examining material in the collections at those two establishments, and to these two friends and many others for compiling biological and distribution data; I also thank Mr. P. Skidmore for kindly supplying me with general information on the biology and on the known distribution in the north of England. My wife has been of great assistance in reading MSS and in checking proofs. I am further indebted to Dr. Walter Hackman, of the University Zoological Museum at Helsinki, to Dr. Hugo Andersson, of Lund University Zoological Institute, to Dr. Günter Morge, of the Entomological Institute at Berlin, and to Dr. H. Schumann, of the Humboldt University Zoological Museum at Berlin, for the gift or loan of valuable material. Finally I extend my most grateful thanks to Mr. J. E. Collin, who has freely given his invaluable help and advice throughout the preparation of this Handbook, and with whom I have had many profitable and enjoyable discussions on the numerous problems involved.

KEY TO SUBFAMILIES.

- 1 (4) Pteropleuron with numerous hairs on upper embossed part (text-fig. 5A). If more than 2 sternopleural bristles are present they are arranged in a shallow curve (text-fig. 5A).
- 2 (3) Proboscis of the normal type with short (shorter than head), more or less stout mentum and large soft labella (text-fig. 5B). Arista always long-plumose. Except in *Polyetes*, lower (thoracic) squama truncate at apex, its inner margin lying close to scutellum throughout almost whole length (text-fig. 5C). 1. MUSCINAE (p. 8).
- 3 (2) Proboscis of blood-sucking type, strongly sclerotised, at least as long as head, without distinct labella (text-figs. 5D, E). Lower squama broadly rounded at apex, its inner margin strongly diverging from scutellum throughout (text-fig. 5I). 2. STOMOXYINAE (p. 12)
- 4 (1) Pteropleuron bare on upper embossed part, sometimes with some hairs on lower part just above posterior sternopleural bristle. If more than 2 sternopleurals are present, they form a more pronounced triangle or quadrilateral, the lower one (or ones) being well removed from the upper (text-figs. 5F, G, J, K).
- 5 (10) Hind tibia usually with anterodorsal or posterodorsal bristles (or both), but never with a strictly dorsal bristle exactly in line with the dorsal preapical (in some *Thricops* the long posterodorsal on hind tibia appears to be almost dorsal in position, but in these the male is without dense erect pubescence beneath middle tibia, and the female has strong crossed bristles on frontalia). Except in *Azelia* (text-fig. 5H) (in which the ♂ middle tibia and ♀ frontalia are as in *Thricops* above), anal and axillary veins at most only slightly convergent towards wing-margin, never by an imagined further extension meeting before reaching the margin (text-fig. 6K).
- 6 (9) Pteropleuron and facial orbits entirely bare. Palpi at most only gradually dilated towards apex, never spoon-shaped.
- 7 (8) If 3 more or less subequal sternopleural bristles are present, lower one is conspicuously nearer to posterior than to anterior upper (text-fig. 5F), or if lower one is more or less equidistant from the two upper ones (*Spilogona contractifrons*, text-fig. 5J) then legs entirely black and 2 reclinate orbital bristles present, rather close together, the anterior smaller and weaker. 3. PHAONINAE (p. 12)
- 8 (7) Always 3 strong sternopleurals present, arranged in an inverted isosceles triangle, the lower one practically equidistant from the two upper ones (text-fig. 5K), or (*Macrorchis meditata*) even somewhat nearer to front upper one; when rarely (*Pseudocoenosia abnormis*) a fourth weaker bristle is present below the front upper sternopleural, the 3 strong bristles still form an isosceles triangle. Frons of equal width in the 2 sexes (except

- in *P. abnormis*), always without crossed bristles on frontalia (text-figs. 12A, B), and with 1 or 2 reclinate orbitals, the anterior 1 (when 2) distinctly the stronger (only in *P. abnormis*, which has yellow tibiae, either without reclinate orbitals, or the anterior one the weaker)... 4. COENOSILINAE (p. 65)
- 9 (6) Pteropleuron with a patch of fine erect hairs on lower part, immediately above posterior sternopleural bristle (text-fig. 5N), sometimes (*Lispe pygmaea*) reduced to only 2-3 short hairs. Facial orbits hairy. Palpi strongly, and somewhat abruptly, dilated (spoon-shaped) at apex (text-fig. 5M) (less conspicuously so in *pygmaea*). Frons broad in both sexes. Arista more or less long-haired..... 5. LISPINAE (p. 76)
- 10 (5) Hind tibia with a strictly dorsal bristle below middle in addition to, and exactly in alignment with, the dorsal preapical (in ♂ of *Fannia sociella* and *F. novalis* the dorsal preapical is missing). Axillary vein strongly curved outwards (towards wing-tip) (less so in *Piezura*), so that by an imaginary further extension the anal and axillary veins would intersect before reaching wing-margin (text-fig. 5L). ♂: middle tibia with characteristic dense erect pubescence beneath (text-figs. 14I-M). ♀: frontalia without crossed bristles; frontal orbits broad, convex towards median line of frons, and with 2 pairs of strong upper orbital bristles, the anterior pair turned more or less conspicuously outwards (text-fig. 6A).
6. FANNIINAE (p. 78).

Subfamily MUSCINAE.

The flies of this group show a closer relationship to the Tachinidae and Calliphoridae than do the other subfamilies of Muscidae.

KEY TO GENERA.

- 1 (12) Discal vein conspicuously bent or curved forward (towards cubital vein) at apex. ♀: frontalia without crossed bristles.
- 2 (5) Bend of discal vein more angular, though the actual angle may be narrowly rounded (text-figs. 6B, C).

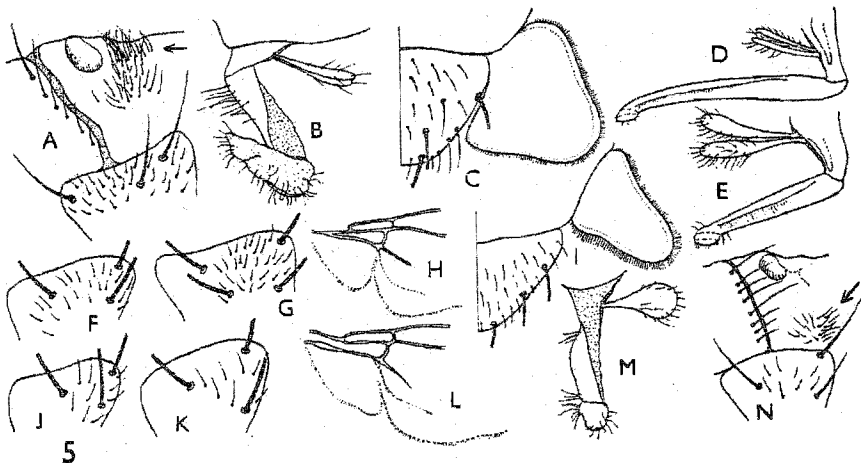


FIG. 5—A, *Dasyphora cyanella* (pteropleuron); B, C, *Musca domestica*; D, I, *Siomoxys calcitrans*; E, *Haematobia stimulans*; F, *Phaonia signata* (sternopleuron); G, *Helina duplicata* (do.); H, *Azelia macquarti*; J, *Spilogona contractifrons* (sternopleuron); K, *Caricea tigrina* (do.); L, *Fannia mutica*; M, *Lispe tentaculata*; N, *L. loewi* (pteropleuron).

- 3 (4) Thorax and abdomen metallic green without distinct markings. Rounded knob beneath base of wing distinctly hairy. 2. *Orthellia* (p. 10).
- 4 (3) Thorax and abdomen not metallic green, densely grey-dusted, former with 4 conspicuous black stripes, or latter extensively orange-yellow (except in *tempestiva*). 1. *Musca* (p. 9).
- 5 (2) Bend of discal vein broadly rounded in a smooth curve (text-fig. 6D).
- 6 (8) Species with at least the abdomen metallic green or blue.
- 7 (8) Thorax with 2 well developed postatural intra-alar bristles. Costa hairy along whole length beneath (hairs quite or almost on ventral surface, below the normal anteroventral row of setulae and well separated from them). 3. *Dasyphora* (p. 10).
- 8 (7) Only the posterior intra-alar distinctly developed. Costa bare beneath except at base. 5-5.8 mm. (= *sereva* Mg., 1826 nec Fall., 1826 = *aenea* Zett.).
Camba. (*Wicken Fen, Upware, Devil's Ditch and Kirklings*); *Essex* (*West Mersea*); *Glamorgan.* (*Porthcawl*); *Bucks.* (*Wormsley Park*); *Somerset* (*Edington and Sharpham*); *Dorset* (*Swanage*); *Hants* (*Christchurch*) and *Sussex* (*Pagham*). *Uncommon.* v-viii. 4. *Pyrellia ignita* Desvoidy.
- 9 (6) Species without metallic colouring anywhere, either undusted shining black, or somewhat bluish-black with more or less conspicuous dusting.
- 10 (11) Large shining black species without stripes on thorax and with conspicuously yellow wing-base. Facial orbits and jowls glistening orange-yellow. Only one (posterior) sternopleural bristle. (NOTE: specimens occur in which the scutellum shows a faint reddish tinge towards tip). 10-5-12 mm.
Breeds in cow-dung. Generally distributed. Very common. iv-ix.
6. *Mesembrina meridiana* Linné.
- 11 (10) Smaller, somewhat bluish-black species with (seen from behind) conspicuous white-dusted stripes on thorax and without noticeably yellow wing-base. Facial orbits and jowls dusted whitish. Sternopleurals 1:2.
5. *Morellia* (p. 11).
- 12 (1) Discal vein practically straight in apical section, or somewhat curved rearwards (text-fig. 6E). ♀: frontalia with a distinct pair of crossed bristles.
7. *Polletes* (p. 11).

Genus *Musca* Linné, 1758.

KEY TO SPECIES.

- 1 (6) Eyes bare.
- 2 (3) Propleural depression (in front of and somewhat below anterior spiracle) with some short black hairs (text-fig. 6F). ♂: eyes separated by more than twice the width of third antennal segment; abdomen pale brownish at sides towards base. ♀: frontalia at middle quite three times as wide as a frontal orbit. 5-7.5 mm.
Breeds in excrement and decaying vegetable matter, especially in refuse dumps. Generally distributed. Very common. iv-xi.
1. *domestica* Linné.
- 3 (2) Propleural depression bare. ♂: eyes separated by less than width of third antennal segment. ♀: frontalia at middle at most twice as wide as an orbit (except in *tempestiva*, in which the frons is similar to that of *domestica*).
- 4 (5) Suprasquamal ridge with a patch of coarse black hairs towards front (text-fig. 6G). ♂: intermediate abdominal tergites orange-yellow with a conspicuous black median stripe. ♀: frontalia at middle less than twice as wide as an orbit. 6.25-7.75 mm. (= *corvina* F.)
Breeds in cow- and horse-dung. Generally distributed. Very common. i-ix. 2. *autumnalis* Degger.
- 5 (4) Suprasquamal ridge bare. ♂: abdomen entirely black. ♀: frontalia much more than twice as wide as an orbit. 3.75-4.25 mm.
Only British locality: Alderney, Channel Is. vi-viii.
3. *tempestiva* Fallén.
- 6 (1) Eyes densely haired, less so in female. 5-5.8 mm.
Only British record known, 1 ♂, Seaford (Sussex), 25.viii.75 (G. H. Verrall). 4. *vitripennis* Meigen.

Genus *Orthellia* Desvoidy, 1863.(*Cryptolucilia* Brauer & Bergenstamm, 1893; *Pseudopyrellia* Girshner, 1893).

KEY TO SPECIES.

- 1 (2) A pair of well developed presutural acrostichals present. 3 postsutural dorsocentrals, the first slightly further from second than from suture. Frontal hairs all tending to be weaker, usually no bristle-like one in ♂, and only a single lower one in ♀. 6.75–7.25 mm.
Found on flowers, foliage, excrement, dead animals etc. Generally distributed. Common. iii-v, viii-x. 1. caesarion Meigen.
- 2 (1) No presutural acrostichals. 4 postsutural dorsocentrals, or if with only 3 then distance of first from second either much greater or much less than its distance from suture. Frontal hairs all tending to be stronger, usually at least 1 lower one in ♂ and 2–3 in ♀ distinctly bristle-like. 7–9 mm.
From Caernarvon to Yorks southwards. Fairly common. iii-v, viii-x. 2. cornicina Fabricius.

Genus *Dasyphora* Desvoidy, 1830.

KEY TO SPECIES.

- 1 (2) Eyes densely haired in ♂, hairs shorter and less dense in ♀. Anterior spiracle pale. Anterodorsal bristle on middle tibia only little shorter than the long ventral bristle. Species usually more greenish with dull thorax. 7–9.5 mm.
Breeds in cow-dung. Generally distributed. Very common. ii-vi. 1. cyanella Meigen.
- 2 (1) Eyes practically bare. Anterior spiracle black. Anterodorsal bristle on middle tibia not much more than half as long as the ventral bristle. Species usually entirely shining blue. 6.75–8 mm.

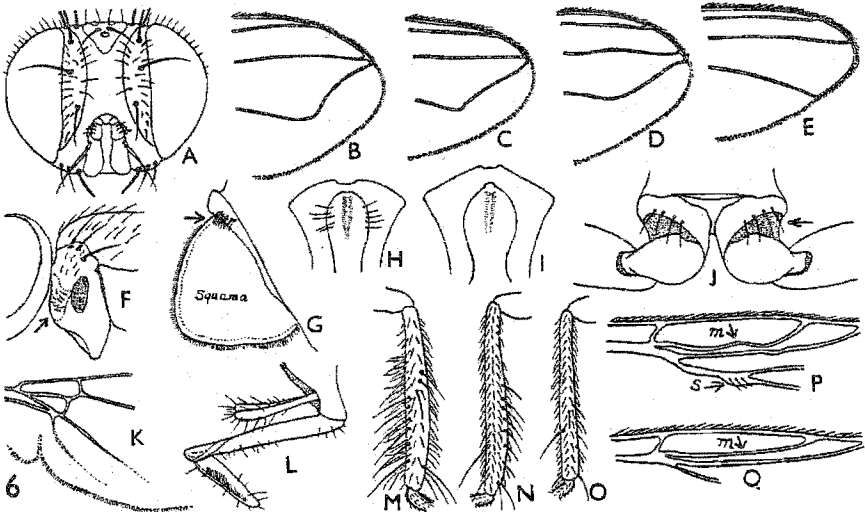


FIG. 6—A, *Fannia manicata* ♀; B, *Musca domestica*; C, *Orthellia caesarion*; D, *Dasyphora cyanella*; E, *Polietes lardarius*; F, *M. domestica* (propleuron); G, *M. autumnalis*; H, *Morellia simplex* (prothorax); I, *M. hortorum* (do.); J, *Thricops semicinereus* (hind coxae); K, *Phaonia incana*; L, *Drymeia hamata*; M, *Morellia hortorum* ♂ (rt. front tibia); N, do. ♀ (rt. hind tibia); O, *M. aeneszens* ♀ (do.); P, *Mydaea urbana* (wing-venation); Q, *Ophyra leucostoma* (do.).

Scotland: Perthshire to Sutherland. England and Wales: Cumberland, Westmorland, Lancs., Yorks., Cheshire, Lincs., Merioneths., Devon and Cornwall. Common in the north, becoming uncommon and local towards south. v-viii. 2. cyanicolor Zetterstedt.

Genus *Morellia* Desvoidy, 1830.

KEY TO SPECIES.

- 1 (2) Prosternum (between front coxae) almost parallel-sided in front, then narrowed towards behind, distinctly setulose on side-margins (text-fig. 6H). ♂: hind tibia posteroventrally with numerous erect setulose hairs, some of which are much longer than greatest diameter of tibia. ♀: hind tibia with 6-8 erect anteroventral bristles of more or less uniform length on apical half. 6-8 mm.
Breeds in cow-dung. Often a nuisance in summer by sucking sweat together with Hydrotaea. Generally distributed. Very common. iv-ix.
1. *simplex* Loew.
- 2 (1) Prosternum with strongly convex side-margins in front, these margins quite bare (text-fig. 6I). ♂: hind tibia without long posteroventral bristles or hairs except sometimes 1-2 at apex. ♀: hind tibia anteroventrally either with numerous bristles of unequal length, or with much fewer (2-4) bristles.
- 3 (4) Hind tibia with a conspicuous row of anteroventral bristles. ♂: front tibia densely long-haired beneath and with several strong posterior bristles (text-fig. 6M); middle and hind tibiae more or less straight. ♀: hind tibia with bristles of anteroventral row occupying more than apical half, 1-2 of upper ones longer than diameter of tibia (text-fig. 6N). 7.5-9 mm.
Breeds in cow-dung. Generally distributed. Common. v-viii.
2. *hortorum* Fallén.
- 4 (3) Hind tibia with only 2-4 short anteroventrals on about apical half (text-fig. 6O). Front tibia with a strong posterior bristle. ♂: middle and hind tibiae conspicuously bent about middle. 5-7.5 mm.
Westmorland, Lancs., Cheshire, Yorks., Hunts., Cambs., Suffolk, Norfolk, Merioneths., Warwickts., Gloucs., Worcs., Oxon., Somerset, Hants., and Kent. Frequent. iv-ix. 3. aenescens Desvoidy.

Genus *Polietes* Rondani, 1866.

KEY TO SPECIES.

- 1 (2) Prosternum (between front coxae) hairy. Apical section of discal vein at most as long as preceding section. Lower squama whitish. Anterior spiracle yellowish. 7.5-11 mm.
Breeds in cow-dung. Generally distributed. Very common. iv-viii.
4. *lardarius* Fabricius.
- 2 (1) Prosternum bare. Apical section of discal vein longer than preceding section.
- 3 (6) Cubital vein entirely bare. Front tibia with 1-2 posterior bristles.
- 4 (5) Eyes almost bare. Middle tibia without posteroventral bristles. Halteres entirely yellow. Lower squama whitish. ♂: hind tibia, beneath at apex, with a strong blunt spur consisting of two closely set bristles (text-fig. 7E). 5-6.5 mm.
Eggs laid in absolutely fresh horse-dung, where adults are often abundant under right conditions. Only localities at present known: Barton Mills (Suffolk) and New Forest (Hants.). v-vii. 1. steini Ringdahl.
- 5 (4) Eyes densely long-haired. Middle tibia with posteroventral bristles. Knob of halteres distinctly darkened. Lower squama conspicuously yellow. Anterior spiracle dark. ♂: hind tibia without a strong ventral spur, but with both antero- and postero-ventral apicals. 7.5-9 mm.
Merioneths. to Nottingham northwards. Common in Scotland. v-vii.
2. *hirticus* Meade.

² According to van Emden (*in litt.*) the original spelling, *hirticuru*, is an incorrect adjective derived from *-crus, -curis*. He also calls attention to the fact that *Polietes* is masculine, not feminine as generally assumed.

- 6 (3) Cubital vein setulose at base. Front tibia without posterior bristles. Eyes densely long-haired. Thorax, seen from behind, with a conspicuous broad white-dusted median stripe. 6-8 mm.
Generally distributed. Common. v-vi. 3. *albolineatus* Fallén.

Subfamily STOMOXYINAE.

KEY TO GENERA AND SPECIES.

- 1 (2) Palpi hardly one-third the length of mentum (text-fig. 5D). Hypopleuron distinctly setulose on upper part. 5.5-7.5 mm.
Breeds in cow-dung. Inhabits farms, stables etc. Generally distributed. Very common. "Biting Housefly". vi-x. 3. *Stomoxys calcitrans* Linné.
- 2 (1) Palpi much more than half as long as mentum (text-fig. 5E). Hypopleuron bare.
- 3 (4) Subcostal vein setulose. Notopleuron hairy. 5-6.5 mm.
Eggs laid in almost fresh cow-dung. Generally distributed. Common. iv-x. 1. *Haematobia stimulans* Meigen.
- 4 (3) Subcostal vein and notopleuron bare. 3.5-4.5 mm.
Breeds in cow-dung. Adults remain clustered round the bases of the horns of cattle, leaving them only to oviposit, consequently rarely obtained except by breeding. Cheshire, Suffolk, Merioneths., Glamorgan, Gloucs., Herts., Essex, Kent, Dorset, Devon and Cornwall. v-ix. 2. *Lyperosia irritans* Linné.

Subfamily PHAONIINAE.

This subfamily may be divided into three moderately well defined tribes, namely: PHAONIINI including the genera *Muscina*, *Phaonia*, *Dendrophaonia*, *Wahlgrenia*, *Dialytina*, *Lophosceles*, *Pogonomyia*, *Achanthiptera*, *Drymera*, *Ophyra*, *Hydrotaea*, *Thricops*, *Alloeostylus* and *Azelia*; MYDAEINI including the genera *Myospila*, *Mydaea*, *Helina* and *Hebecnema*; LIMNOPHORINI including the genera *Graphomya*, *Limnophora*, *Neolimnophora*, *Spilogona*, and *Gymnodia*. Owing, however, to the difficulty of establishing satisfactory characters by which to separate the three tribes in both sexes, the following key divides the subfamily direct into genera without the intermediate subdivision.

KEY TO GENERA.

- 1 (2) Discal vein conspicuously curved forward at apex, so that width of first posterior cell at wing-margin is not more than three-fourths of its greatest width (text-figs. 7I, J, N). Scutellum more or less broadly translucent reddish-yellow at apex. Eyes entirely bare. 1. *Muscina* (p. 16).
- 2 (1) Discal vein practically straight in apical section, or if strongly curved forward at apex (*Myospila*, *Graphomya*) then scutellum entirely black in ground colour.
- 3 (4) Subcostal vein setulose on apical third of dorsal surface. Mainly (including palpi and legs) yellow species. 6-9 mm. (= *inanis* Fall., 1825 nec L., 1758).
Breeds in the nests of *Vespula vulgaris*. Scotland: Morays (Elgin). England and Wales: Cumberland, Durham, Lancs., Yorks., Cheshire, Shrops., Herefords., Glamorgan, Worcs., Leics., Cambs., Suffolk, Somerset, Hants., Middx., and Kent. Uncommon. vi-viii. 8. *Achanthiptera rorelliformis* Desvoidy.
- 4 (3) Subcostal vein entirely bare.
- 5 (10) Hind coxa with some setulose hairs on posterior apical margin (text-fig. 6J). ♀: frontalia with a pair of crossed bristles (absent in some *Alloeostylus* species).

- 6 (7) Hind tibia without a posterodorsal bristle. Anal vein much abbreviated, extending less than half-way from anal cell to wing-margin, of practically uniform thickness to the somewhat blunt apex (text-fig. 5a).
 14. *Azella* (p. 38).
- 7 (6) Hind tibia with at least one posterodorsal (appearing practically dorsal in some *Thricops*). Anal vein long and tapering, extending much further than half-way from anal cell to wing-margin.
- 8 (9) Legs entirely black. Middle tibia without posteroventral bristles. Rather slender flies. 12. *Thricops* (p. 36).
- 9 (8) At least the tibiae yellow. Middle tibia with 1 or more posteroventrals. Flies of stouter build. 13. *Allocostylus* (p. 38).
- 10 (5) Hind coxa bare on posterior apical margin.
- 11 (12) Labella of proboscis rather long and slender, strongly sclerotised and normally doubled back (text-fig. 6L). Mouthedge strongly protruding, more prominent than frons. Eyes almost bare. Hind tibia with several strong posterodorsal bristles. ♀: frontalia with a pair of crossed bristles. 5.75-8 mm.

Found on flowers, especially Senecio jacobaea. Generally distributed. Common. vi-ix. 9. Drymeia hamata Fallén.

- 12 (11) Proboscis normal, labella stout and cushion-like, not sclerotised (text-fig. 5b).
- 13 (28) Hind tibia with one or more strong posterodorsal bristles, at least 1 of these much longer than greatest depth of tibia (text-fig. 7o), or if without posterodorsals (*Ophyra* and some *Hydrotaea*) then mediastinal vein not at all sinuous in the section between first bend after humeral crossvein and the bend towards costa (text-fig. 6q).
- 14 (25) Sternopleural bristles 1 : 2 (text-fig. 5f or with several bristles below hinder one), seldom with the lower one (or ones) absent or very weak, but then either arista plumose or hind tibia with several strong posterodorsals. Discal vein straight in apical section, or if very slightly curved forward then legs (except tarsi) entirely yellow. Mediastinal vein distinctly sinuous about middle and with the bend towards costa very pronounced (text-fig. 6p).
- 15 (16) Hind tibia with several strong posterodorsals of almost equal length, all or most of them longer than greatest depth of tibia. Arista with the longest hairs at most hardly longer than its basal diameter. ♀: frontalia with well developed crossed bristles. 7. *Pogonomyia* (p. 28).
- 16 (15) Hind tibia posterodorsally with only the single strong bristle on apical half (text-fig. 7o), or if with more than one then longest arisal hairs half to two-thirds as long as width of third antennal segment.
- 17 (20) Longest hairs of arista not longer than its basal diameter. Underside of scutellum entirely bare. Prealar bristle very small or indistinct, always shorter than second notopleural. ♀: frontalia without crossed bristles.
- 18 (19) 3 postsutural dorsocentrals. Halteres blackish. Middle tibia with 3 strong bristles behind. Entirely shining black species. 4.75-5.75 mm.

Has been reared from pupae found under the leaf-sheaths of Typha latifolia (A. C. Pont). Cheshire (Delamere), Suffolk (Barton Mills), Herefords. (Moccas Park), Herts. (Felden and Elstree Reservoir), Middx. (Edgware), Somerset (E. Clevedon), Kent (Thames Marshes) and Sussex (Hassocks). Frequent but very local. iv-v, viii-ix. . . 5. Diallytina atriceps Loew.

- 19 (18) 4 postsutural dorsocentrals. Halteres yellow. Middle tibia with only 1-2 strong bristles behind. More or less extensively dusted species.
 6. *Lophosceles* (p. 27).
- 20 (17) Longest hairs of arista distinctly (usually considerably) longer than its basal diameter, but if hardly longer than either underside of scutellum distinctly hairy, or prealar much longer than second notopleural.
- 21 (22) Scutellum with some short fine hairs beneath. Arista with hairs hardly longer than its basal diameter. ♂: eyes well separated, frons equal to half eye-width or more. 4.75-7 mm.

Scotland: Inverness (Arisaig and Loch Eil), Argylls. (Ballachulish). England: Lancs. (Freshfield), Norfolk (Horning, Fowlmere and Ringmere), Suffolk (Barton Mills and Tuddenham), Herefords. (Munsley and Trumpet

Wood), Oxon. (Wychood Forest), Berks. (Wytham Wood), Somerset (Sharp-ham), and Devon (Walreddon). Uncommon. v-viii.

4. *Wahlgrenia magnicornis* Zetterstedt.

22 (21) Scutellum entirely bare beneath. Arista usually longer-haired. ♂: frons never half as broad as an eye.

23 (24) ♂: frontal bristles stopping well short of ocellar triangle, uppermost pair weak and not reclinate. ♀: the strong anterior pair of fronto-orbitals more or less reclinate like the rest.....2. *Phaonia* (p. 16).

24 (23) ♂: frontal bristles extending almost up to ocellar triangle, uppermost pair strong and reclinate. ♀: the strong anterior pair of fronto-orbitals (not to be confused with frontals) proclinate in contrast with the rest.

3. *Dendrophaonia* (p. 27).

25 (14) Sternopleurals I : 1, lower one absent or inconspicuous, or if a lower hind one is more or less developed then discal vein distinctly (even though only slightly) curved forward at apex (text-fig. 9a). Legs, and ground-colour of scutellum, always black. Arista short-pubescent or bare. Hind tibia posterodorsally with no more than the single strong bristle below middle, sometimes without. Mediastinal vein almost straight from near humeral crossvein to the bend towards costa (text-fig. 6q).

26 (27) Shining blue-black species without dusting. ♂: front femur simple. ♀: frons with the shining ocellar triangle extending more than halfway from front ocellus to lunule.....10. *Ophyra* (p. 28).

27 (26) Grey or blackish-grey, more or less densely dusted species, or if shining black or blue-black then either with some whitish dusting, or (♀) ocellar triangle extending less than half-way from front ocellus to lunule. ♂: front femur notched and toothed at apex beneath (text-figs. 8c-L, 9a-D).

11. *Hydrotaea* (p. 29).

28 (13) Hind tibia without dorsal and usually without posterodorsal bristles, but when one or more posterodorsals are present they are not, or hardly, as

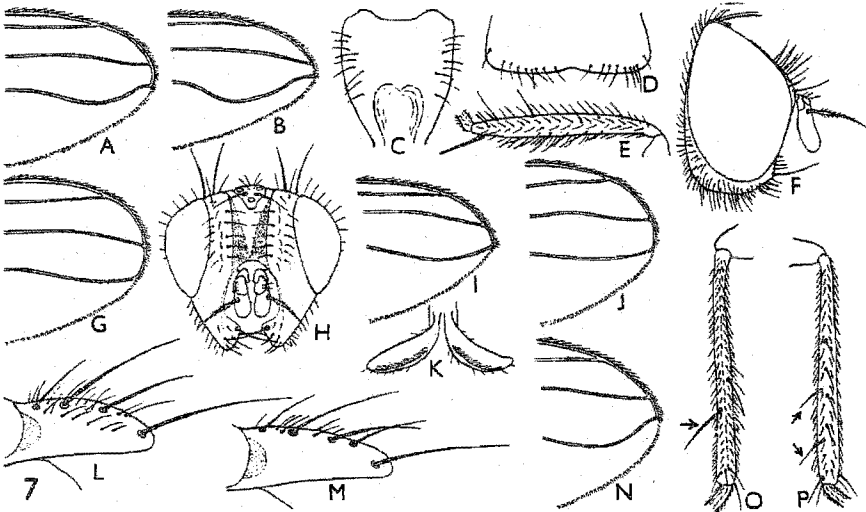


FIG. 7—A, *Myospila mediatubunda*; B, *Graphomya maculata*; C, *Limnophora maculosa* (prosternum); D, *Gymnodia humilis* (first sternite); E, *Polietes steini* (rt. hind tibia); F, *Gymnodia humilis*; G, H, *Neolimnophora maritima* ♀; I, *Muscina stabulans*; J, *M. assimilis*; K, *Phaonia palpata* ♀ (palpi); L, *P. cincta* (scutellum); M, *P. trigonalis* (do.); N, *Muscina pabulorum*; O, *Phaonia fuscata* ♂ (rt. hind tibia); P, *P. incana* (rt. middle tibia).

long as greatest depth of tibia. Mediastinal vein distinctly sinuous between humeral crossvein and the bend towards costa (text-fig. 6F).

- 29 (30) Discal vein conspicuously curved forward at apex, so that first posterior cell is only half as wide at wing-margin as its greatest width (text-fig. 7A). Front sternopleural bristle well developed. ♀: frontalia with a pair of crossed bristles. 6-7.5 mm.

Generally distributed. Common. iv-ix.

15. *Myospila meditabunda* Fabricius.

- 30 (29) Discal vein usually straight, at most only very slightly curved forward at apex, or if strongly curved then anterior sternopleural absent.

- 31 (36) Middle femur with a well developed anterior preapical bristle. Thorax, seen from behind, with the presutural central stripe (when present) always paler than the paramedian pair.

- 32 (33) Radio-cubital node (junction of radial and cubital veins) with some small setulae on both dorsal and ventral surfaces³ (text-fig. 6F, s→). British species with 4 postsutural dorsocentrals.....16. *Mydaea* (p. 40).

- 33 (32) Radio-cubital node bare at least on dorsal surface, rarely (some *Helina vicina*) with 1-2 minute hairs, but then only 3 postsutural dorsocentrals present.

- 34 (35) Prealar bristle usually well developed, but when absent or inconspicuous the thorax is entirely dull and more or less densely dusted greyish with 4 conspicuous dark stripes.....17. *Helina* (p. 43).

- 35 (34) Prealar absent or inconspicuous. Thorax blackish with little or no dusting, usually without stripes, but when very thinly dusted and faintly 4-striped then distinctly shining. Hind femur without posteroventral bristles. (If a ♀ with 1-2 long posteroventrals, see *Spilogona denigrata*, which sometimes has an anterior preapical to middle femur).....18. *Hebecnema* (p. 54).

- 36 (31) Middle femur without a distinct anterior preapical bristle (except in *Spilogona contractifrons*, in which the thorax, seen from behind, has a central presutural dark stripe flanked by paler dusting).

- 37 (38) Anterior sternopleural bristle absent. Discal vein strongly curved forward in apical section so that greatest width of first posterior cell is about 3 times its width at wing-margin (text-fig. 7B). Arista, including hairing, 2½-3 times as wide as third antennal segment...19. *Graphomya* (p. 54).

- 38 (37) Anterior sternopleural always present. Discal vein at most only very slightly curved forward in apical section. Arista not wider than third antennal segment, usually much narrower.

- 39 (40) Radio-cubital node with 1 or more small setulae on both dorsal and ventral surfaces.⁴ Prosternum (between front coxae) with numerous hairs on side-margins (text-fig. 7C).....20. *Linnophora* (p. 55).

- 40 (39) Radio-cubital node entirely bare on both surfaces.

- 41 (42) First abdominal sternite with a complex hindmarginal fringe of short bristles, bare on disc (text-fig. 7D). Head, in profile, with the facial orbits quite or almost invisible about middle, frontal orbits at most only very narrowly visible (text-fig. 7F). 4 postsutural dorsocentrals. Prosternum bare. 3-4 mm. (= *septemnotata* auct. nec Zett.).

Generally distributed. Frequent. ii-x.

23. *Gymnodia humilis* Zetterstedt.

- 42 (41) First abdominal sternite either bare, or with only a few bristles near hindmarginal corners, or (*Spilogona compuncta*) hairy on disc (text-fig. 10H). Head, in profile, with the frontal and facial orbits conspicuous.

- 43 (44) Prosternum with a few small setulae on side-margins. Facial orbits, at middle, each about twice as wide as third antennal segment. Face strongly narrowing from about middle to mouthedge (text-fig. 7H). Discal vein slightly but distinctly curved forward in apical section (text-fig. 7G). Hind tibia with the anterodorsal preapical very weak. ♂: frons almost as wide as an eye. ♀: frontal triangle large, pale-dusted, reducing

³ These setulae, especially on dorsal surface, are easily broken off, in which case high magnification is needed to distinguish the "scars".

⁴ It is important to examine both surfaces of the wing as the setulae are easily broken off.

the dark frontalia to a pair of narrow wedge-shaped strips (text-fig. 7H).

- 44 (43) Prothorax bare. Facial orbits not, or only little, wider than third antennal segment. Face not strikingly narrowed at mouthedge (except in *aestuum*, text-fig. 11A). Discal vein not curved forward in apical section. Hind tibia with the anterodorsal preapical almost as long as the dorsal one. ♂: frons much less than an eye-width. ♀: frontalia conspicuous.
21. *Neolimnophora* (p. 57).
22. *Spilogona* (p. 58).

Genus *Muscina* Desvoidy, 1830.

(*Cyrtoneura* Meigen, 1838).

All three species have been bred from the nests of *Vespula vulgaris*.

KEY TO SPECIES.

- 1 (2) Tibiae and apices of femora yellowish. Discal vein moderately curved forward at apex, first posterior cell about half as wide at wing-margin as at widest part (text-fig. 7I). 6.75-9.5 mm.
Generally distributed. Common. ii-ix. 1. stabulans Fallén.
- 2 (1) Legs entirely black.
- 3 (4) Palpi and antennae entirely black. Discal vein only slightly curved forward at apex, first posterior cell about three-fourths as wide at wing-margin as at widest part (text-fig. 7J). 6-8.5 mm.
Generally distributed. Common. iii-ix. 2. assimilis Fallén.
- 4 (3) Palpi and base of third antennal segment orange-yellow. Discal vein more strongly curved forward, first posterior cell at wing-margin only about two-fifths of its width at widest part (text-fig. 7N). 7-9.5 mm.
Generally distributed. Common. iii-viii. 3. pabulorum Fallén.

Genus *Phaonia* Desvoidy, 1830.

(*Hyetodesia* auctt. nec *Ytodesia* Rond., 1861).

KEY TO SPECIES.

MALES.

- 1 (50) Presutural acrostichal bristles absent, only fine hairs present (*palpata*, in which stronger hairs are often present among the weaker ones, is included in both sections). Prealar bristle much longer than second notopleural. Humeri entirely black in ground-colour.
- 2 (11) Mouthedge (*between* vibrissal angles) protruding conspicuously in front of frons (text-fig. 8A). Middle tibia with one or more posteroventrals in addition to the posterior bristles (text-fig. 7P) (usually not so in *subfuscinerervis*). 4 postsutural dorsocentrals.
- 3 (6) Arista very long-plumose, some hairs decidedly longer than width of third antennal segment. Abdomen, seen from behind, without a distinct shifting pattern.
- 4 (5) Legs entirely brownish-black. Hind tibia posterodorsally with only the single strong bristle on apical half (text-fig. 7O). 7.5-8.5 mm.
Generally distributed. Common. v-viii. 1. incana Wiedemann.
- 5 (4) Legs, apart from tarsi, yellow. Hind tibia with an additional posterodorsal near base. 7.5-9 mm.
Generally distributed. Common. vi-ix. 2. basalis Zetterstedt.
- 6 (3) Arista shorter-plumose, longest hairs at most as long as width of third antennal segment. Abdomen with a conspicuous shifting pattern.
- 7 (8) Longest arisal hairs quite as long as width of third antennal segment. Hind tibia with an additional posterodorsal near base and with 3-4 anterodorsals. 7.5-9 mm. (= *hybrida* auctt. nec Schnabl).
Scotland: Perth. northwards. Commonest in Perth. and Inverness. v-vii. 3. morio Zetterstedt.

- 8 (7) Arista hairs at most little more than half as long as width of third antennal segment. Hind tibia with only 2 anterodorsals and without an additional posterodorsal near base (though 1 may be present near middle).
- 9 (10) Eyes separated by at least the width of third antennal segment. Arista with the longest hairs hardly longer than its basal diameter. Greyer-dusted species. About 8 mm.
Scotland: 1 ♂, *Beinn Heasgarnich*, nr. *Killin* (*Perths.*), between 2900 and 3500 ft., 11. vi. 32 (*F. W. Edwards*). 1 ♂, 1 ♀, *Geal Charn* (*Inverness*), 3000 feet, 17. vi. 67 (*E. A. Fonseca*)..... 5. *subfuscinervis* Zetterstedt.
- 10 (9) Eyes separated by about half the width of third antennal segment. Arista more strongly pubescent. Darker species. 8-9 mm.
Scotland: *Ross*. (*Loch Maree*), *Nairns*. (*Nairn*), *Morays*. (*Grantown*), *Aberdeens*. (*Inverey*), *Inverness*. (*Spey Bridge*, *Boat-o-Garten* and *Aviemore*), *Perths*. (*Loch Katrine*). *England and Wales*: *Cumberland* (*Ullswater*), *Merioneths*. (*Cader Idris*). *Uncommon*. v-vi.
4. *consobrina* Zetterstedt.
- 11 (2) Mouthedge less prominent than frons (text-fig. 8b).
- 12 (29) 4 postsutural dorsocentrals.
- 13 (22) Scutellum more or less broadly translucent reddish-yellow at apex.
- 14 (17) Front tibia with 1-2 strong posterior bristles. Basal antennal segments reddish-yellow. Frontal orbits only slightly separated. Only 1 pair of prescutellar acrostichals present. Crossveins conspicuously infuscated.
- 15 (16) Eyes with the facets on upper two-thirds conspicuously larger than those on lower third, the demarkation line between the 2 sizes rather well defined. Facial orbits, at level of insertion of arista, distinctly narrower than third antennal segment. Jowl below eye (in profile) less than one-fourth as deep as long diameter of eye. About 7.5 mm.
Suffolk: *Newmarket*, 20. vii. 90 and 20. viii. 98 (2 ♂) (*G. H. Verrall*).
Cornwall: *Lizard*, 10. viii. 96 (♀) (*J. W. Yerbury*).
- 5a. *scutellata* Zetterstedt.
- 16 (15) Upper facets of eye only slightly larger than those below, no distinct demarkation line between them. Facial orbits, at level of insertion of arista, much wider than third antennal segment. Jowl below eye only little less than one-third as deep as long diameter of eye. 6.75-7.5 mm.
Generally distributed. *Very common*. iv-ix..... 6. *signata* Meigen.
- 17 (14) Front tibia without posterior bristles, or if a short one is present then either frontal orbits well separated, or antennae entirely black. Usually 2 pairs of prescutellar acrostichals. Crossveins at most only slightly infuscated.
- 18 (19) Eyes separated by more than the width of third antennal segment. Hind femur normally entirely or mainly black. 8-9.25 mm.
Scotland: *Inverness*. and *Dunbartons*. *England and Wales*: *Lancs.*, *Merioneths.*, *Glamorgan*, *Norfolk*, *Gloucs.*, *Oxon.*, *Worcs.*, *Bucks.*, *Somerset*, *Hants.*, *Dorset*, *Devon* and *Kent*. *Fairly common*. iv-viii.
7. *perdita* Meigen.
- 19 (18) Eyes much more approximated, frontal orbits usually touching. Hind femur entirely yellow.
- 20 (21) Antennae entirely black. Front femur largely darkened. 7-9 mm. (= *tinctipennis* Rond. = *zetterstedti* Bonsd.).
Generally distributed. *Common*. iv-ix..... 8. *errans* Meigen.
- 21 (20) Basal antennal segments reddish-yellow. All femora entirely reddish-yellow. 9.5-11 mm. (= *erratica* Fall., 1825 nec L., 1758).
Generally distributed. *Frequent*. vii-x..... 9. *viarum* Desvoidy.
- 22 (13) Scutellum entirely black in ground-colour.
- 23 (28) Hind tibia without a posteroventral apical bristle, and posterodorsally with only the single strong bristle on apical half.
- 24 (25) Front tibia without a posterior bristle. Hind femur conspicuously long-haired beneath (text-fig. 8d). 8.5-10 mm. (= *longitarsis* Mde. = *angelicae* Scop. of Rond. nec Scop.).
Scotland: *Sutherland.*, *Ross.*, *Inverness*. and *Perths*. *England and Wales*: *Westmorland*, *Yorks.*, *Cheshire*, *Caernarvons.*, *Derbys.*, *Radnors.*, *Cambs.*, *Pembs.*, *Somerset*, *Wills.*, *Hants*. and *Devon*. *Uncommon*. vi-ix.
10. *erronea* Schnabl.

- 25 (24) Front tibia with 1-2 posterior bristles. Hind femur not strikingly hairy beneath.
- 26 (27) Eyes separated by about 3 times the width of third antennal segment. Femora at least partly yellow. (See below).....12. *fuscata* Fallén.
- 27 (26) Eyes with the frontal orbits touching. All femora black. (See below).
11. *palpata* Stein.
- 28 (23) Hind tibia with a strong posteroventral apical bristle, and with one or more additional posterodorsals, at least one of these near base. 7.5-9.5 mm.
Scotland: Inverness. (*Aviemore*). *England and Wales*: Cheshire, Staffs., Norfolk, Warwickss., Cambs., Suffolk, Glamorgan., Berks., Hants., Dorset and Devon. Uncommon. v-ix.....17. *vagus* Fallén.
- 29 (12) 3 postsutural dorsocentrals.
- 30 (47) Hind tibia posterodorsally with only the single strong bristle on apical half, not conspicuously haired on posterior face.
- 31 (44) Scutellum entirely black in ground-colour.
- 32 (33) All femora black. Postical crossvein conspicuously sinuous or convex outwardly. Crossveins only slightly infuscated. 5.75-7.25 mm. (= *trigonalis* Mg. of Mde. nec Mg.).
Generally distributed. Fairly common. iv-x.....11. palpata Stein.
- 33 (32) At least middle and hind femora largely reddish-yellow, or if mainly dark then crossveins very strongly and broadly infuscated. Postical crossvein not or only slightly convex outwardly.
- 34 (35) Crossveins very strongly infuscated. Eyes separated by almost 3 times the width of third antennal segment. 6-8.5 mm.
Cheshire, Notts., Norfolk, Worcs., Gloucs., Herts., Wilts., Middx., Somerset, Devon, Dorset, Hants., Surrey, Sussex and Kent. Frequent. iv-vii.
12. *fuscata* Fallén.
- 35 (34) Crossveins at most only slightly infuscated. Eyes separated by not more than twice the width of third antennal segment.
- 36 (37) Thorax, seen from behind, with the median pair of dark stripes confluent, forming a single broad stripe. Third antennal segment more or less reddish-yellow at base. About 6 mm.
Scotland: Argylls. (*Ardrie*), 18.vii.34 (*H. Britten Snr.*). *England*:

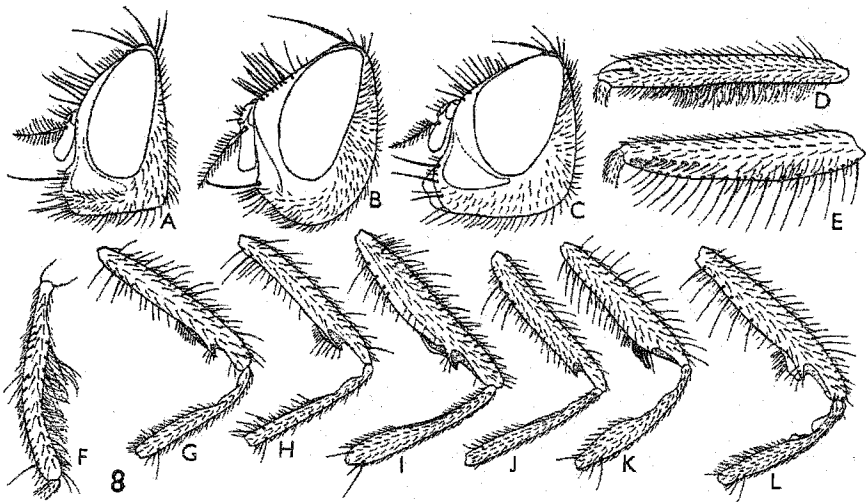


FIG. 8—A, *Phaonia incana* ♂; B, *P. errans* ♂; C, *P. lugubris* ♂; D, *P. erronea* ♂ (rt. hind femur); E, *Dendrophaonia setifemur* ♂ (rt. front femur); F, *Ophyra leucostoma* ♂ (rt. hind tibia); G-L, rt. front legs of *Hydrotæa* ♂; G, *borussica*; H, *meridionalis*; I, *bimaculata*; J, *albipuncta*; K, *cinerea*; L, *irritans*.

- Cumbs.* (Woodditton Wood), 25.v.51 (*J. E. Collin*); *E. Kent* (Woolwich Wood), 1 and 3.viii.57 (*E. A. Fonseca*). Rare...13. *rufiset* Zetterstedt.
- 37 (36) Thorax, seen from behind, distinctly 4-striped, median pair narrow and separated by pale dusting. Third antennal segment entirely dark.
- 38 (39) Lobes of fifth sternite bearing numerous long fine bristles. Hind femur without distinct posteroventrals. 5.75-8 mm. (= *trigonoepila* Cz.).
Scotland: Inverness. (*Kinrara*). *England*: Westmorland, Gloucs. (*Blaise Woods and Coombe Dingle*), Herts. (*Aldenham*), Wilts. (*Blackmoor Copse*), Berks. (*Wytham Wood and Bagley Wood*), Somerset (*Leigh Woods, Lowley Wood, West Town and Cheddar*), Hants. (*New Forest*) and Kent (*Ham Street*). Uncommon. viii-ix.....14. *vittifera* Zetterstedt.
- 39 (38) Lobes of fifth sternite not strikingly bristled or haired. Hind femur with strong posteroventrals (weak or absent in *mystica*).
- 40 (41) Front tibia without a posterior bristle. Hind femur conspicuously long-haired beneath (text-fig. 8b). (See above).....10. *erronea* Schnabl.
- 41 (40) Front tibia with 1-2 posterior bristles. Hind femur without especially long hairs beneath.
- 42 (43) Eyes separated by about twice the width of third antennal segment. Notopleuron bare apart from the 2 strong bristles. Hind femur with strong posteroventrals. About 7.25 mm.
Only known record, 1 ♂, *Choir Odhur* (Inverness.), 30.vi.42 (*C. J. Wainwright*).....15. *colbrani* Collin.
- 43 (42) Eyes separated by about the width of third antennal segment. Notopleuron with numerous hairs about the bases of the 2 strong bristles. Hind femur with at most rather weak posteroventrals. 6.75-7 mm.
Bred from pupae found beneath moss and under bark. Scotland: Inverness. (*Bothiemurchus*), Aberdeens. (*Cambus-a-May*). *England and Wales*: Cumberland (*Borrowdale*), Lancs. (*Downham*), Yorks. (*Holwick*), Merioneths. (*Clegwyn Melyn*), Herefords. (*Cusop Dingle*), Gloucs. (*Forest of Dean, Stroud*), Somerset (*Bourton Coombe, Holford and Horner*), Wilts. (*Ebbsborne Wake and Savernake Forest*), Devon (*Tytracombe and Heddon's Mouth*) and Kent (*Ham Street*). Uncommon. v-vi, viii-ix.....16. *mystica* Meigen.
- 44 (31) Scutellum at least partly translucent reddish-yellow.
- 45 (46) All legs, except tarsi and base of coxae, entirely reddish-yellow. Scutellum entirely translucent reddish-yellow, without trace of darkening at base. (See below).....24. *umbraticola* Fonseca.
- 46 (45) At least front femur more or less extensively darkened. Scutellum more or less broadly darkened at base. Humeri always entirely black in ground-colour. 6-7 mm.
Only known British record, 1 ♂, *Blean Wood* (*E. Kent*), 23.vii.64 (*L. Parmenter*).....25a. *apicalis* Stein.
- 47 (30) Hind tibia posterodorsally with 1 or more additional bristles, at least 1 of these near base, and with long erect hairs on posterior face.
- 48 (49) All femora mainly or entirely black. Middle tibia with an anterodorsal bristle on apical half. 5.5-7.5 mm. (= *confuens* Stein).
Notts. (*Widmerpool*), *Lincs.* (*Market Rasen*), *Worcs.* (*Aberley Hill, Wyre Forest and Austey*), *Cumbs.* (*Chippenham Fen and Woodditton Wood*), *Gloucs.* (*Coombe Dingle*), *Oxon.* (*Waterperry Wood*), *Herts.* (*Aldenham*), *Wilts.* (*Farley*), *Berks.* (*Wytham Wood and Bagley Wood*), *Middx.* (*Edgware*), *Hants.* (*New Forest*) and Kent (*Ham Street*). Uncommon. v-vi.
18. *siebecki* Schnabl.
- 49 (48) Middle and hind femora largely or entirely reddish-yellow. Middle tibia without an anterodorsal. 6-8 mm.
Bred from pupa found in Sphagnum Moss at Skipwirth Common (Yorks.) (*C. Johnson*). *Whixall Moss* (Flints), 3.vii.38 and *New Forest* (Hants.), 11.vii.37 (*C. J. Wainwright*). Rare.....19. *crinipes* Stein.
- 50 (1) One or more pairs of well developed presutural acrostichals present, or if weak or indistinct then either prealar shorter than second notopleural (or absent), or humeri entirely translucent reddish-yellow.
- 51 (58) Abdomen, apart from any darkening which may occur after death, entirely translucent reddish-yellow. Side-margins of scutellum entirely bare below level of strong bristles (text-fig. 7m). 4 postsutural dorsocentrals.

- 52 (53) Head and thorax (including scutellum) entirely reddish-yellow in ground-colour, except sometimes a dark patch on occiput and between lines of bristles on dorsum. Arista with longest hairs longer than width of third antennal segment. Radio-cubital node (junction of radial and cubital veins) with some small setulae on ventral surface. 5.5-6.75 mm.
Generally distributed. Common. v-ix. 20. pallida Fabricius.
- 53 (52) Head and thorax largely black in ground-colour. Longest aristal hairs shorter than width of third antennal segment. Radio-cubital node bare on both surfaces.
- 54 (57) Thorax with 2-3 pairs of presutural acrostichal bristles. Scutellum more or less broadly darkened at base.
- 55 (56) Arista, including hairing, hardly as wide as third antennal segment. Middle tibia posteriorly with only 2 bristles. Seen from behind, median pair of presutural dark thoracic stripes (at level of first dorsocentral) quite two-thirds the width of the grey-dusted stripe separating them. 6.5-8 mm. (= *populi* Mg. of Walk. nec Mg.).
Generally distributed. Very common. Often emerges during winter months in doors. iii-x. 21. variegata Meigen.
- 56 (55) Arista distinctly wider than third antennal segment. Middle tibia with 3 bristles behind. Seen from behind, median pair of presutural dark thoracic stripes (at level of first dorsocentral) not more than one-third the width of the grey-dusted stripe separating them. 7-7.5 mm.
Glaucs.: Minchinhampton, viii.16 (♀) (W. R. F. Woolcombe-Boyer); Cambus.: Cambridge, 21.vii.03 (♀) (F. Jenkinson); Somerset: Weston-s.-Mare, 5.viii.62 (♀) (D. M. Ackland); Surrey: Bookham Common, 13.v and 3.vi.62 (2 ♂) (L. Parmenter)⁵. 22. bitincta Rondani.
- 57 (54) Usually only 1 pair of presutural acrostichals. Scutellum entirely translucent reddish-yellow, or at most only darkened at extreme base. Median pair of presutural dark thoracic stripes, seen from behind, about two-fifths the width of the grey-dusted stripe separating them. 6.5-7.5 mm. (= *scutellaris* Fall., 1825 nec F., 1805).
Generally distributed. Common. iv-x. 23. populi Meigen.
- 58 (51) Abdomen black in ground-colour though often entirely pale-dusted, or if partly translucent reddish-yellow (*cineta*) then scutellum black in ground-colour and with setulae on lateral margins below level of strong bristles (text-fig. 7L).
- 59 (62) Scutellum mainly or entirely translucent reddish-yellow. At least middle and hind femora mainly or entirely reddish-yellow. Prealar bristle as long as second notopleural. Usually 3 postsutural dorsocentrals, but occasionally with 4.
- 60 (61) All legs, except tarsi and base of coxae, reddish-yellow. Scutellum entirely translucent reddish-yellow, without trace of darkening at base. Humeri mainly or entirely dark in ground-colour. Abdomen very thinly dusted and with a distinct blackish shine from some points of view. Eyes rather sparsely short-haired. About 8.5 mm.
Hants.: Farley Down, 11.vi.33 (♂) (J. E. Collin); E. Kent: Woolwich Wood, 1 and 14.viii.55 (♂ ♀), 31.vii and 5.viii.56 (2 ♀) (E. A. Fonseca); Oxon.: Wychwood Forest, 13.vi.65 (♂) (A. C. Pont). 24. umbraticola Fonseca.
- 61 (60) At least front femur broadly darkened at base. Scutellum more or less dark at base. Humeri entirely translucent reddish-yellow. Abdomen densely dusted yellowish-grey with an indistinct narrow median dark line. Eyes densely haired. Upper embossed ridge (berst) of hypopleuron with some longish setulose hairs. 7-8.5 mm. (= *humerella* Stein).
Scotland: Loch Tay (Perths.), 2.vii.04 (J. Waterston); Lundin Links (Fifes.), 15.vi.29 (H. A. Latham). England: Bolton (Yorks.), 5.vii.26 (C. A. Cheatham); Barnsley (Yorks.), vi.66 (M. T. Broole). Numbers

⁵ The two males taken by Mr. L. Parmenter at Bookham Common key out to *bitincta* Rond. in Hennig (1963) and, although they differ very slightly in one or two respects from Hennig's description of the type, there can be little doubt that they have been correctly identified.

have been bred from larvae and pupae found beneath moss in beds of Butterbur (Tussilago petasites) in Cheshire and Derbyshire (P. Skidmore).

25. *zugmayeriae* Schnabl.
- 62 (59) Scutellum entirely or mainly black in ground-colour, at most the tip paler.
 63 (66) Middle and hind femora entirely or mainly reddish-yellow.
 64 (65) Prealar absent. Palpi entirely, and third antennal segment partly, reddish-yellow. Scutellum black in ground-colour. 5.75-7 mm.
Scotland: Morays, and Inverness. England and Wales: Lanes., Cheshire, Shrops., Cambs., Suffolk, Norfolk, Glamorgan., Gloucs., Berks., Oxon., Somerset, Dorset, Hants., Devon and Kent. Frequent. vi-x.
36. *rufipalpis* Macquart.
- 65 (64) Prealar well developed, longer than second notopleural. Palpi and antennae entirely black. Scutellum usually reddish at extreme tip. 7-8 mm.
Only British record known, Kent: Eynsford, 27. vi. 43 (♀) (H. W. Andrews).
- 36a. *gracilis* Stein.
- 66 (63) All femora entirely or mainly black.
 67 (88) Prealar about as long as, or longer than, second notopleural, or if shorter (*cincta*) then scutellum with hairs on lateral margins below level of strong bristles (text-fig. 7L).
 68 (69) Wings strongly infuscated about base and on anterior half. Thorax, seen from behind, brownish-black with only indistinct stripes. 7-8 mm.
Only British record known, Morays: Logie, 20. ix. 05 (P. Jenkinson).
26. *pullata* Czerny.
- 69 (68) Wings with at most a faint brownish tinge and sometimes with infuscated crossveins. Thorax, seen from behind, with pale dusting and distinct stripes.
 70 (75) Notopleuron with numerous hairs in addition to the 2 strong bristles.
 71 (72) 4 postsutural dorsocentrals. Notopleural hairs almost confined to area about base of second (hinder) bristle. Vibrissae at level of mouthedge. (A dark form, var. *servaeformis* Ringd., occurs with legs and scutellum entirely black). 5-7.5 mm.
Bred from larvae found in cabbage-root preying on larvae of Erioischia brassicae Bché. (J. T. Wadsworth), and from a pupa found in thistle-stem at Kew Gardens. Lanes., Yorks., Cheshire, Notts., Lincs., Cambs., Suffolk, Glos., Oxon., Herts., Wilts., Berks., Somerset, Hants., Surrey, Devon, Sussex and Kent. Frequent. iv-ix. 27. trimaculata Bouché.
- 72 (71) 3 postsutural dorsocentrals. Notopleural hairs more numerous and surrounding both bristles. Vibrissae well above mouthedge.
 73 (74) Mouthedge only slightly more prominent than frons, horizontal part (in front view) quite twice as wide as third antennal segment. Hind femur with posteroventral bristles on basal half, and with strong anteroventrals along almost whole length. 6.75-8 mm.
Bred from larvae found beneath poplar bark (H. Britten Snr.). Scotland: Inverness, and Dumfries. England and Wales: Widely distributed from Northumberland to south coast. Common. iv-vii. 28. serva Meigen.
- 74 (73) Mouthedge very strongly protruding, much more prominent than frons, horizontal part hardly wider than third antennal segment (text-fig. 8c). Hind femur without posteroventrals and with strong anteroventrals on apical half only. 7-7.5 mm.
Scotland: Braemar (Aberdeens.), vi. 09 (D. Sharp) and 7. vi. 64 (E. C. Pelham-Clinton); Dalnaspidal (Perths.), 24. v. 59 (E. A. Fonseca); Ballochbuie (Aberdeens.), 14. vi. 66 (P. Skidmore). 29. lugubris Meigen.
- 75 (70) Notopleuron bare apart from the 2 strong bristles, rarely with an isolated hair or two.
 76 (77) Frontalia with a vertical row of inclinate hairs on each side. Acrostichal rows very close together, separated by only about one-third of their distance from dorsocentrals. Front femur, anteroventrally on apical half, with a row of 7-9 short stout sharp spines. About 10.5 mm. (= *mirabilis* Ringd. = *keilini* Coll.).
Bred from rotting elm. Notts. (Mapperley Plains), Cambs. (Chippenham Fen), Cardigans. (Aberystwyth), Essex (Epping Forest), Hants. (New Forest), and Kent (Seal). Rare. v-vii. 30. exoleta Meigen.

- 77 (76) Frontalia bare. Acrostichal rows more widely separated. Front femur without an anteroventral row of stout spines.
- 78 (83) Crossveins conspicuously infuscated. Eyes separated by $1\frac{1}{2}$ times to twice the width of third antennal segment.
- 79 (80) Scutellum with some hairs on lateral margins *below* level of strong bristles (text-fig. 7I). Abdomen usually extensively translucent reddish-yellow about base. Prealar shorter than second notopleural. 5.75-7.5 mm.
Bred from larvae found in sap exuding from elm and horse-chestnut. Lancs., Yorks., Cheshire, Lincs., Cambs., Suffolk, Glamorgan., Gloucs., Herts., Somerset, Hants., Surrey, Sussex and Kent. Locally frequent. v-viii. 35. cincta Zetterstedt.
- 80 (79) Scutellum bare on lateral margins (text-fig. 7M). Abdomen entirely black in ground-colour. Prealar distinctly longer than second notopleural.
- 81 (82) Postvertical bristles distinctly in front of a line joining inner verticals. Frontalia, seen from directly above and illuminated from in front, appearing dark greyish due to dusting. Front tibia without a posterior bristle. 5.25-7.5 mm. (= *laetabilis* Coll.).
Bred from pupa found in birch rot-hole (B. R. Laurence). Yorks., Herts., Oxon., Hants. and Kent. The flies may be found visiting oak trees in the New Forest (Hants.) infested by Cossus. Uncommon. v-viii.
- 82 (81) Postverticals not in front of inner verticals. Frontalia, seen as above, deep black in contrast to orbits. Front tibia with a posterior bristle (rarely without). 7-9 mm. (= *laeta* Fall., 1823 nec Turton, 1802).
Bred from larvae found in sap exuding from birch tree. Lancs., Cheshire, Glamorgan., Wilts., Somerset, Hants. and Kent. Attracted to Cossus-infested oaks as previous species. Uncommon. v-ix. 34. pratensis Desvoidy.
- 83 (78) Crossveins at most indistinctly infuscated. Eyes more approximated.
- 84 (85) All tibiae clear reddish-yellow. Arista, including hairing, more than twice as wide as third antennal segment. Front tibia with a posterior bristle. Abdomen, seen from behind, densely grey-dusted with a dark median stripe widening out towards hindmargins of tergites 2-4, most conspicuously on tergite 3. (See above) 11. palpata Stein.
- 85 (84) At most the 4 posterior tibiae somewhat obscurely brownish, legs usually entirely black. Arista, including hairing, at most twice as wide as third antennal segment. Front tibia without a posterior bristle.
- 86 (87) Arista with longest hairs about as long as width of third antennal segment. Eyes rather sparsely haired. Abdomen, seen from behind, densely grey-dusted with a narrow dark median line of more or less uniform width, and with hardly discernible shifting dark patches. 7-8 mm.
Bred from pupa found under bark at Toft Hall (Cheshire), em. 27. iv. 63 (P. Skidmore); Gloucs.: Coombe Dingle, 7. vi. 48 and 24. v. 52 (E. A. Fonseca); Hants.: Woodwalton Fen, 9. v. 63 and Berks.: Bagley Wood, 23. vi. 63 (D. M. Ackland). Scarce. 31. canescens Stein.
- 87 (86) Longest arisal hairs not more than half as long as width of third antennal segment. Eyes very densely long-haired. Abdomen, seen from behind, more thinly grey-dusted with an indistinct, rather broad dark median stripe and conspicuous shifting dark patches. 6.5-8.5 mm.
Bred from larvae found in Cossus borings at Ainsdale (Lancs.) and under leaves in Delamere Forest (Cheshire), and from pupae found under bark at Enfield (Middx). Scotland: Inverness. England and Wales: Lancs., Cheshire, Yorks., Cambs., Suffolk, Norfolk, Herts., Middx., Glamorgan., Gloucs., Wilts., Berks., Somerset, Hants., Devon and Sussex. Fairly common. iv-ix. 32. goberti Mik.
- 88 (67) Prealar very short or inconspicuous. Scutellum entirely bare on lateral margins.
- 89 (90) Front tibia without a posterior bristle. No distinct stronger bristles among the presutural acrostichal hairs. Prealar hardly distinguishable from rest of thoracic hairs. Arista with longest hairs about as long as width of third antennal segment. Halteres with yellow knob. 5.75-6.5 mm.
An estuarine species. Lancs. (Silverdale), Lincs. (Gibraltar Pt.), Essex (Thames Marshes, Benfleet, Colchester, Wrabness and Walton-on-Naze),

- Kent (Lower Halston and Pegwell Bay), I. of Wight (Yarmouth). Scarce.*
vii-viii. 37. *fusca* Meade.
- 90 (89) Front tibia with a posterior bristle. 1 or more pairs of moderately well developed presutural acrostichal bristles present. Longest aristal hairs at most half as long as width of third antennal segment. Knob of halteres dark.
- 91 (92) Wing with costal spine twice as long as discal crossvein. Eyes separated by almost twice the width of third antennal segment. Arista with longest hairs about half as long as width of third antennal segment. 5.5-7.5 mm. *Norfolk (Horsing Ferry), Cambs. (Chippenham Fen) and Berks. (Wytham Wood). Scarce.* vii-viii. 38. *nitida* Macquart.
- 92 (91) Costal spine only about as long as discal crossvein. Eyes separated by about the width of third antennal segment. Longest aristal hairs hardly longer than basal diameter of arista. 4.75-6 mm. *Scotland: Inverness. England: Cheshire, Cambs., Suffolk, Norfolk, Gloucs., Somerset, Hants., Sussex and Kent. Frequent.* v-ix. 39. *halterata* Stein.

FEMALES

(For synonymy, distribution etc., see key for males)

- 1 (46) Presutural acrostichals represented by fine hairs only (*palpata*, in which stronger setulose hairs are present among the weak ones, has the palpi conspicuously dilated and flattened (text-fig. 7k), notopleuron without hairs, scutellum entirely black and tibiae clear yellow). Prealar bristle much longer than second notopleural. Abdomen entirely, and humeri at least mainly, black in ground-colour.
- 2 (11) Head in profile with mouthedge (*between* vibrissal angles) conspicuously more prominent than frons. Middle tibia with 1 or more posteroventrals among the bristles behind (text-fig. 7p). 4 postsutural dorsocentrals.
- 3 (6) Arista with longest hairs decidedly longer than width of third antennal segment. Abdomen, seen from in front, without a distinct shifting pattern.
- 4 (5) Legs entirely black. Hind tibia posterodorsally with only the single strong bristle on apical half. 8-9 mm. 1. *incana* Wiedemann.
- 5 (4) Legs, apart from tarsi, reddish-yellow. Hind tibia with an additional posterodorsal bristle near base. 7.5-10 mm. 2. *basalis* Zetterstedt.
- 6 (3) Longest aristal hairs at most as long as width of third antennal segment.
- 7 (8) Arista with some hairs quite as long as width of third antennal segment. Hind tibia with an additional short posterodorsal near base and with 3-4 anterodorsals. 7-7.5 mm. 3. *morio* Zetterstedt.
- 8 (7) Longest aristal hairs at most about half as long as width of third antennal segment. Hind tibia posterodorsally with only the single strong bristle on apical half (occasionally with a second short one near middle) and with only 2 anterodorsals.
- 9 (10) Hind femur with posteroventral bristles twice as long as greatest depth of femur. Longest aristal hairs about half as long as width of third antennal segment. 8-8.5 mm. 4. *consobrina* Zetterstedt.
- 10 (9) Posteroventrals on hind femur hardly longer than its greatest depth. Arista with longest hairs barely longer than its basal diameter. Hind tibia with an additional posterodorsal near middle. About 8 mm. 5. *subfuscinervis* Zetterstedt.
- 11 (2) Mouthedge distinctly less prominent than frons (text-fig. 8a).
- 12 (13) Palpi conspicuously dilated and flattened from basal third towards tip, at widest part equal to width of third antennal segment (text-fig. 7k). Body entirely black in ground-colour. Tibiae, and extreme apices of femora, clear yellow. Front tibia with a strong posterior bristle. 6.25-7 mm. 11. *palpata* Stein.
- 13 (12) Palpi normal, only slightly increasing in width towards apex, or if distinctly dilated then either scutellum entirely translucent reddish-yellow, or tibiae dark brown to black.
- 14 (29) 4 postsutural dorsocentrals.

- 15 (24) Scutellum more or less translucent reddish-yellow at apex (sometimes rather obscurely in *perdita* and *errans*). Abdomen with a conspicuous shifting pattern.
- 16 (19) Front tibia with 1-2 posterior bristles. Hind femur with distinct postero-ventrals on basal half. Both crossveins conspicuously infuscated.
- 17 (18) Frons at vertex more than two-fifths head-width. Jowl below eye about half eye-height. Palpi reddish-yellow on basal third. 6-7.5-8 mm.
- 18 (17) Frons at vertex only one-third head-width. Jowl below eye not more than one-third eye-height. Palpi usually almost entirely black. 7-5 mm.
- 5a. *scutellata* Zetterstedt.
- 19 (16) Front tibia without a median posterior bristle. Hind femur without distinct posteroventrals. Crossveins at most indistinctly infuscated.
- 20 (21) Eyes at most microscopically pubescent. Basal segments of antennae, and base of third segment, reddish-yellow. Discal vein with a slight but distinct curve forward shortly after middle of apical section. Palpi more or less broadly reddish-yellow at base. 9-5-12 mm.
9. *viarum* Desvoidy.
- 21 (20) Eyes quite long-haired. At least third antennal segment entirely black. Discal vein practically straight in apical section.
- 22 (23) Front femur mainly (and often middle femur at base) black. Antennae and palpi always entirely black. 8-5-10 mm. 7. *perdita* Meigen.
- 23 (22) All femora reddish-yellow, at most front one darkened at extreme base. Basal antennal segments sometimes obscurely reddish. Palpi occasionally brownish at base. 8-9-7.5 mm. 8. *errans* Meigen.
- 24 (15) Scutellum entirely black in ground-colour, without trace of reddish even under strong light.
- 25 (28) Middle tibia without anterodorsal bristles. Hind tibia posterodorsally with only the single strong bristle on apical half, and without a postero-ventral apical bristle.
- 26 (27) Front tibia without a posterior bristle. Hind femur with a complete row of strong anteroventrals. Crossveins of wing without trace of infuscation. Abdomen, seen from behind, densely grey-dusted with a rather broad dark median stripe of more or less uniform width, but without shifting dark patches from any point of view. 9-10 mm. 10. *erronea* Schnabl.
- 27 (26) Front tibia with 1-2 posterior bristles. Hind femur with only 2-3 strong anteroventrals at apex. Crossveins very strongly infuscated. Abdomen, in addition to triangular brownish median spots on intermediate tergites, with distinct shifting tessellations from some points of view. 6-8 mm.
12. *fuscata* Fallén.
- 28 (25) Middle tibia with 1-2 anterodorsals on apical half. Hind tibia with an additional posterodorsal on basal half, and with a strong posteroventral apical bristle. 8-5-10-5 mm. 17. *vagans* Fallén.
- 29 (14) ♂ postsutural dorsocentrals.
- 30 (43) Hind tibia posterodorsally with only the single strong bristle on apical half, and without a posteroventral apical. Middle tibia without anterodorsal bristles.
- 31 (34) Scutellum at least partly translucent reddish-yellow.
- 32 (33) Scutellum entirely translucent reddish-yellow, no trace of darkening at base. Abdomen uniformly very thinly dusted, without shifting pattern but with strong black reflections from some angles. Humeri sometimes narrowly reddish behind. 7-2.5-7-5 mm. 24. *umbraticola* Fonseca.
- 33 (32) Scutellum more or less broadly darkened at base. Abdomen more densely dusted with a distinct shifting pattern. Humeri always entirely black in ground-colour. About 8 mm. 25a. *apicalis* Stein.
- 34 (31) Scutellum entirely black in ground-colour.
- 35 (36) Thorax, seen from behind, with the median pair of dark stripes fused into a broad central stripe. Third antennal segment somewhat reddish-yellow at base. 6-6-5 mm. 13. *rufiseta* Zetterstedt.
- 36 (35) Thorax, seen from behind, distinctly 4-striped. Third antennal segment entirely dark.
- 37 (38) Front tibia without a posterior bristle. Hind femur with a complete row

- of strong anteroventrals. Abdomen, seen from behind, grey-dusted with a broad dark median stripe, but without shifting dark patches. 9-10 mm.
10. *erronea* Schnabl.
- 38 (37) Front tibia with 1-2 posterior bristles. Hind femur with strong anteroventrals on apical half only. Abdomen with shifting dark patches.
- 39 (40) Crossveins of wing very strongly infuscated. Scutellum, seen at a low angle from behind, with a broad brown-dusted median basal spot extending half-way or more to apex. 6-8 mm. 12. *fuscata* Fallén.
- 40 (39) Crossveins not, or only faintly infuscated. Scutellum without a brown-dusted basal spot.
- 41 (42) Notopleuron bare apart from the 2 strong bristles. Hind femur with only 2-3 strong anteroventrals at apex. Wings almost clear. Front femur entirely darkened on posterior face. 6.75-7.5 mm.
14. *vittifera* Zetterstedt.
- 42 (41) Notopleuron with some hairs in addition to the 2 bristles. Hind femur usually with strong anteroventrals from near middle to apex. Wings conspicuously yellowish about base. Front femur with a dark spot at apex only. 7.5-8 mm. 16. *mystica* Meigen.
- 43 (30) Hind tibia with 1 or more additional posterodorsals on basal half, and with a strong posteroventral apical.
- 44 (45) Middle tibia with a strong anterodorsal on apical half. Legs mainly blackish-brown, becoming more blackish towards base of femora. Eyes rather densely haired. 6-7 mm. 18. *siebecki* Schnabl.
- 45 (44) Middle tibia without an anterodorsal. Legs mainly reddish-yellow, at most front femur broadly, and middle femur at extreme base, darkened. Eyes somewhat sparsely haired. 7-8 mm. 19. *crinipes* Stein.
- 46 (1) 1 or more pairs of well developed presutural acrostichals present, or if weak or indistinct then either prealar not longer than second notopleural, or abdomen or humeri entirely translucent reddish-yellow. Palpi not especially dilated, or if they are then either notopleuron with distinct hairs, or tibiae strongly darkened, or scutellum entirely reddish-yellow.
- 47 (54) Abdomen entirely translucent reddish-yellow. 4 postsutural dorsocentrals.
- 48 (49) Head and thorax, including scutellum, entirely reddish-yellow in ground-colour. Longest arisal hairs distinctly longer than width of third antennal segment. Antennae mainly reddish-yellow. Wing with some small setulae on ventral surface of radio-cubital node. 6-7.5 mm.
20. *pallida* Fabricius.
- 49 (48) Head and thorax mainly or largely black in ground-colour. Longest arisal hairs shorter than width of third antennal segment. Radio-cubital node bare on both surfaces.
- 50 (53) 2-3 pairs of presutural acrostichals present. Scutellum broadly darkened at base.
- 51 (52) Arista, including hairing, not quite as wide as third antennal segment. Middle tibia with only 2 bristles behind. Median pair of presutural dark thoracic stripes, seen from behind, more than two-thirds the width of the grey-dusted stripe separating them. 7-8.5 mm.
21. *variegata* Meigen.
- 52 (51) Arista distinctly wider than third antennal segment. Middle tibia with 3 bristles behind. Median pair of dark thoracic stripes very narrow, only one-third the width of the grey stripe separating them. 7-8 mm.
22. *bitincta* Rondani.
- 53 (50) Usually only 1 pair of presutural acrostichals present (occasionally none). Scutellum entirely translucent reddish-yellow, or at most only extreme base slightly darkened. Humeri, sides of dorsum (including postalar calli) and pleural areas extensively reddish-yellow. 6-8 mm.
23. *populi* Meigen.
- 54 (47) Abdomen entirely black in ground-colour.
- 55 (58) Scutellum, entirely, or almost entirely, translucent reddish-yellow. At least middle and hind femora entirely or mainly reddish-yellow. Prealar bristle as long as, or longer than, second notopleural. Usually 3 postsutural dorsocentrals.
- 56 (37) Coxae mainly, and femora entirely, reddish-yellow. Humeri entirely or

mainly dark in ground-colour. Abdomen very thinly dusted, with distinct blackish reflections from some points of view. 7.25-7.5 mm.

24. *umbraticola* Fonseca.
- 57 (56) Front coxa almost entirely, and front femur at least dorsally, darkened. Humeri entirely translucent reddish-yellow. Abdomen more or less densely dusted greyish, without distinct blackish reflections from any point of view. 7-9 mm. 25. *zugmayeriae* Schnabl.
- 58 (55) Scutellum entirely or mainly black in ground-colour.
- 59 (60) Middle and hind femora entirely or mainly reddish-yellow. Prealar much longer than second notopleural. Scutellum usually reddish-yellow at extreme tip. 36a. *gracilis* Stein.
- 60 (50) All femora mainly or entirely black, or if yellow then prealar absent or extremely short.
- 61 (80) Prealar as long as, or longer than, second notopleural; when rather shorter (*cincta* and some *goberti*) scutellum with hairs on lateral margins below level of strong bristles (text-fig. 7L).
- 62 (63) Wings strongly infuscated at base and on anterior half. Thorax brownish-black with only indistinct stripes. Hind tibia with an additional postero-dorsal on basal half. Mouthedge not conspicuously protruding. 7.5-8 mm. 26. *pullata* Czerny.
- 63 (62) Wings with at most the crossveins infuscated. Thorax, seen from behind, with pale dusting and conspicuous dark stripes. Hind tibia posterodorsally with only the single strong bristle on apical half, or if a weak one is present on basal half then mouthedge very strongly protruding.
- 64 (69) Notopleuron bearing hairs in addition to the 2 strong bristles. Eyes distinctly hairy (occasionally bare in *serva*).
- 65 (66) 4 postsutural dorsocentrals. Notopleural hairs almost confined to area around base of second (hinder) bristle. Tibiae, apices of femora, and tip of scutellum, normally reddish-yellow (a dark form, var. *servaeformis* Ringd., occurs with legs and scutellum black). Palpi somewhat dilated. At least discal crossvein infuscated. 5.5-8 mm. 27. *trimaculata* Bouché.
- 66 (65) 3 postsutural dorsocentrals. Notopleural hairs more numerous and usually surrounding both bristles. Vibrissae well above mouthedge. Legs always black.
- 67 (68) Mouthedge at most only slightly more prominent than frons. Front tibia without a posterior bristle. Middle femur with strong posteroventral bristles on basal half. 6.5-8.5 mm. 28. *serva* Meigen.
- 68 (67) Mouthedge strongly protruding, much more prominent than frons (text-fig. 8c). Front tibia often with 1-2 posterior bristles. Middle femur posteroventrally with only long fine hairs on basal half. 7-7.5 mm. 29. *lugubris* Meigen.
- 69 (64) Notopleuron bare apart from the two bristles, rarely with an isolated hair or two.
- 70 (71) Hind tibia with more than one posterodorsal. Frontalia with a vertical row of inclinate hairs on each side. Presutural acrostichal rows separated by only about one-third of their distance from dorsocentrals. 8-9 mm. 30. *exoleta* Meigen.
- 71 (70) Hind tibia posterodorsally with only the single strong bristle on apical half. Frontalia bare. Presutural acrostichal rows more widely separated.
- 72 (75) Crossveins of wing not infuscated, at most appearing slightly more darkly pigmented.
- 73 (74) Eyes very sparsely short-haired. Longest arisal hairs as long as width of third antennal segment. Middle femur posteroventrally with a complete rather loose row of moderately strong bristles of different lengths. About 8 mm. 31. *canescens* Stein.
- 74 (73) Eyes densely and longer-haired. Longest arisal hairs not more than half as long as width of third antennal segment. Middle femur posteroventrally with a regular row of 5-6 strong bristles of uniform length on basal half. 6.25-8 mm. 32. *goberti* Mik.
- 75 (72) Crossveins conspicuously infuscated.
- 76 (77) Prealar distinctly shorter than second notopleural. Scutellum with hairs

- on lateral margins *below* level of strong bristles (text-fig. 7L). Abdomen, seen from in front, with a brown-dusted roundish spot on each hind outer corner of tergites 3 and 4. 6.5-7 mm. 35. *cincta* Zetterstedt.
- 77 (76) Prealar decidedly longer than second notopleural. Scutellum bare on lateral margins (text-fig. 7M). Abdomen without the above brown-dusted spots.
- 78 (79) Tibiae dark brown to blackish. Palpi conspicuously dilated and flattened, at widest part three-fourths to almost as wide as third antennal segment. Frontalia, seen from directly above and illuminated from in front, distinctly grey-dusted, not or hardly contrasting with orbits. Front tibia without a posterior bristle. 6-8 mm. 33. *trigonalis* Meigen.
- 79 (78) Tibiae brownish-yellow to light brown. Palpi normal. Frontalia, seen as above, deep black and contrasting strongly with orbits. Front tibia with a posterior bristle. 6.5-8 mm. 34. *pratensis* Desvoidy.
- 80 (61) Prealar shorter than second notopleural, often very short or absent. Scutellum bare on lateral margins.
- 81 (82) Legs (except tarsi) and palpi entirely reddish-yellow. Longest aristal hairs longer than width of third antennal segment. 4 postsutural dorsocentrals. 5.5-7 mm. 36. *rufipalpis* Macquart.
- 82 (81) At least femora and palpi entirely black. Longest aristal hairs at most three-fourths as long as width of third antennal segment. 3 postsutural dorsocentrals, or if (rarely) 4 then arista with hairs hardly longer than its basal diameter.
- 83 (84) Front tibia without a posterior bristle. All tibiae brownish-yellow. Presutural acrostichals hardly distinguishable from rest of thoracic hairs. Halteres yellow. 5.75-7 mm. 37. *fusca* Meade.
- 84 (83) Front tibia with a posterior bristle. Legs entirely brownish-black to black. At least 1 pair of well developed presutural acrostichals. Halteres with darkened knobs.
- 85 (86) Longest aristal hairs about half as long as width of third antennal segment. Costal spine more than twice as long as discal crossvein. Usually only 1 pair of strong presutural acrostichals. About 6 mm. 38. *nitida* Macquart.
- 86 (85) Longest aristal hairs only $1\frac{1}{2}$ times to twice as long as basal diameter of arista. Costal spine about equal in length to discal crossvein. Presutural acrostichals tri- to quadri-serial, outer rows consisting of 3-4 pairs of stronger bristles. 5.25-6.5 mm. 39. *halterata* Stein.

Genus *Dendrophaonia* Malloch, 1922.

KEY TO SPECIES.

- 1 (2) Prealar bristle shorter than second notopleural, sometimes absent. Front femur, anteroventrally on apical half, with only decumbent hairs. Longest aristal hairs distinctly shorter than width of third antennal segment. 5.5-8 mm.
Has been reared from nests of birds and hornets, also from rabbit-dung. Generally distributed. Fairly frequent. v-viii. 1. *querceti* Bouché.
- 2 (1) Prealar longer than second notopleural. Front femur, anteroventrally on apical third, with a regular row of short coarse spines (σ^3) (text-fig. 8a), or strong bristles (σ^2). Longest aristal hairs as long as width of third antennal segment, latter twice the length of second segment. 7.5-9 mm.
Bred from detritus collected in beech rot-hole. Only recorded localities, Lyndhurst and Mark Ash, New Forest (Hants.); Windsor Forest (Berks.). Scarce. vi-viii. 2. *setifemur* Stein.

Genus *Lophosceles* Ringdahl, 1922.

KEY TO SPECIES.

- 1 (2) Abdomen (in ground-colour), and legs, entirely black in both sexes. Presutural acrostichal rows separated from one another by about their

distance from dorsocentrals. ♂: Middle tibia with a posterior bristle at about apical fifth. 3.75-5 mm. (= *cristatus* Zett. = *pulcher* Meade).

- 2 (1) At least tibiae sometimes (♂), or femora and tibiae always (♀), yellowish to reddish-brown. Presutural acrostichal rows distinctly more widely separated from one another than from dorsocentrals. ♂: middle tibia with a posterior bristle at middle; abdomen often translucent brownish red at base, especially after death. ♀: abdomen entirely or mainly reddish-yellow. 4.5-6 mm. (= *semipellucidus* Zett.).
Generally distributed. Common. v-ix. 1. cinereiventris Zetterstedt.
Scotland: Inverness. and Perth. England: Yorks., Shrops., Suffolk, Berks., Somerset, Hants., Devon and Kent. Males may sometimes hover in small swarms 15-20 feet above ground. Frequent but local. v-vi., viii-ix. 2. mutatus Fallén

Genus *Pogonomyia* Rondani, 1870.

KEY TO SPECIES.

- 1 (2) 3 postsutural dorsocentrals. Prealar much longer than second notopleural. Middle tibia with several long anterodorsals. Proboscis long and slender with small labella. 6-7 mm.
Scotland: Inverness. (Aviemore), Perth. (Loch Voil) and Lanarks. (Bowling). England and Wales: Cumberland (Alston), Durham (Low Fell), Yorks. (Bradford, Austwick and Holwick) and Merioneths. (Llwyn-guril and Cader Idris). Uncommon. vi-vii. 1. brumalis Rondani.
- 2 (1) 4 postsutural dorsocentrals. Prealar about as long as second notopleural. Middle tibia with only 1 anterodorsal. Proboscis normal, shorter and stouter with large labella. 6-7.5 mm. (s.g. *Trichopticooides* Ringdahl, 1932).
Bred from pupa found in old cow-pa'. Scotland: Inverness, and I. of Arran. England: Durham, Westmorland, Lancs., Yorks., Cheshire, Derbys., Notts., Linces., Cambs., Suffolk, Gloucs., Berks., Oxon., Herts., Somerset, Hants. and Sussex. Females occasionally a slight nuisance in summer by sucking sweat together with Hydrotæa, males much less in evidence. Frequent. v-ix. 2. decolor Fallén.

Genus *Ophyra* Desvoidy, 1830.

KEY TO SPECIES.

- 1 (2) Lower squama strongly darkened, with dark brown border and fringe. Presutural dorsocentrals well, acrostichals moderately, developed. ♂: hind tibia conspicuously curved and densely long-haired on apical three-fifths of ventral surface (text-fig. 8r). ♀: Frontal triangle not reaching lunule. 5.5-7.25 mm.
Generally distributed. Common. v-x. 1. leucostoma Wiedemann.
- 2 (1) Squamæ white with whitish border and fringe. Presutural dorsocentrals and acrostichals hardly distinguishable from thoracic hairs. ♂: hind tibia with apical two-thirds quite straight, the long ventral hairs sparser and more erect. ♀: frontal triangle extending to lunule. 4.5-5.5 mm. (= *anthrax* Mg.).
Bred in hundreds (under laboratory conditions) from the rotting head of a Rorqual Whale (Balænoptera physalis) from the Hebrides, Oct., 1924, first emergencies about l. xii. 24 (E. E. Austen); swarming on hedge near bone factory at Tingewick (Bucks.), 1882 (R. H. Meade). Notts. (Mapperley), Suffolk (Newmarket), Kent (Thames Marshes). Normally rare. v-vi, ix. 2. capensis Wiedemann.

Genus *Hydrotaea* Desvoidy, 1830.

KEY TO SPECIES.

MALES.

- 1 (6) Abdomen largely translucent reddish-yellow on basal half or more. Pre-sutural acrostichals all fine and hair-like. Halteres with yellow knobs.
- 2 (3) Hind tibia with a row of very long setulose hairs on basal half of anterodorsal surface, and with a dense tuft of long erect bristles at middle of ventral surface (text-fig. 9c). (Front leg, text-fig. 8g). 5-7.5 mm.
Scotland: Inverness. (Aviemore and Granish), Aberdeens. (Cambus-o-May), Perth. (Rannoch and Loch Tummel). England: Herefords. (Tarrington, Haugh Wood and Ledbury), Worcs. (Wyre Forest), Oxon. (Wychwood Forest), Wilts. (Barnridge Copse), Hants., New Forest (Alaridge Hill and Mark Ash). At the last 2 localities females were in the ratio of about 1:3 with irritans. Uncommon. vii-ix. 22. borussica Stein.
- 3 (2) Anterodorsal bristles on basal half of hind tibia not, or only slightly, longer than greatest depth of tibia, the ventral tuft situated below middle and occupying a longer space (text-fig. 9h).
- 4 (5) Hind tibia with a strong posterodorsal bristle. Middle femur, ventrally on more than basal half, with a single rather loose row of 4-5 strong blunt bristles. (Front leg, text-fig. 8u). 6-7 mm. (= *curvipes* Fall., 1825 nec Lat., 1809).
Stoke Wood (Herefords.), 24.vii.99; Wychwood Forest (Oxon.), 2.ix.62. At the latter locality females were in the ratio of about 1:10 with irritans. Very few males recorded. Scarce. 20. meridionalis Portschinsky.
- 5 (4) Hind tibia without a posterodorsal. Middle femur ventrally with several rows of long erect bristles. 6-7 mm.
Reputedly British, but no record of the capture of males in Britain can be traced. (See footnote in Key to ♀). 21. pellucens Portschinsky.
- 6 (1) Abdomen entirely black in ground-colour, more or less grey-dusted.
- 7 (16) Knob of halteres yellow or brownish-yellow, never brownish-black to black.
- 8 (9) Middle femur, above at apex, with 2 close-set long curved flattened bristles. Shining blue-black species, thinly white-dusted on humeri and along foremargins of abdominal tergites. (Front leg, text-fig. 8i). 6.75-8 mm. (= *ciliata* F., 1794 nec Muell., 1776 = *spinipes* Fall.).
From Westmorland and Yorks. southwards. Common. iv-ix.
5. *bimaculata* Meigen.
- 9 (8) Middle femur without these flattened bristles at tip. More blackish, grey-dusted species.
- 10 (11) Middle tibia with 1-2 anterodorsal bristles. Hind femur with an erect spur beneath near base, consisting of 2 coalescent bristles with the tips bent over. Hind tibia with long setulose hairs along almost whole length of antero- and postero-dorsal surfaces. Shining black, rather thinly dusted species. 5.25-6.5 mm. (= *ringdahli* Stein of Karl nec Stein = *midicola* Karl).
Gatley (Cheshire), 1♂, 3♀, 19.iv.34, bred from pupae found in rook's nest (C. R. Brown); Temple (Berks.), 1♂, 23.iv.32 and 1♀, 2.v.32, reared from rook's nest (E. B. Basden). Barnridge Copse (Wilts.), 1♀, 3.vii.65 and Wilton (Wilts.), 1♀, 10.vii.65 (C. H. Andrewes). 6. midicola Malloch.
- 11 (10) Middle tibia without anterodorsals. When a spur is present beneath hind femur it is near the middle.
- 12 (13) Hind femur, ventrally near middle, with 2 narrowly separated erect straight blunt bristles (text-fig. 9r). Hind tibia without the normal posterodorsal bristle on apical half, but ventrally near middle with 3-4 closely adjacent pointed bristles which converge together at their tips (text-fig. 9r). (Front leg, text-fig. 8j). 4.5-5.5 mm.
Generally distributed. Common. iv-ix. 10. albipuncta Zetterstedt.
- 13 (12) Hind femur ventrally without a pair of erect blunt bristles near middle. Hind tibia not ventrally armed as above, but with the normal postero-dorsal bristle well developed.

- 14 (15) Front femur at apex beneath, instead of the normal pair of rigid teeth, with 2 short stout articulating spines, the proximal one strongly dilated in basal half (text-fig. 8x). Middle femur, posteroventrally from base to about middle, with a uniform row of about 12 blunt spine-like bristles, longest towards base. Middle metatarsus normal. 5-6.5 mm.
Scotland: Inverness. (Kinraig). England and Wales: Norfolk, Suffolk, Glamorgan., Herts., Wilts., Berks., Somerset, Hants., and Kent. Uncommon. v-ix. 17. cinerea Desvoidy.
- 15 (14) Front femur with the normal pair of rigid teeth beneath at apex (text-fig. 8L). Middle femur with a rather loose row of 4-5 blunt bristles on basal half. Middle metatarsus densely fringed beneath with setulae which are longer than its diameter (text-fig. 9F). (Hind leg, text-fig. 9J). 5.75-6.75 mm.
Generally distributed. Very common. Females causing severe discomfort in late summer by sucking sweat. vi-ix. 18. irritans Fallén.
- 16 (7) Knob of halteres brownish-black to black.
- 17 (18) Wing with a peculiar, more or less long-oval cloud in-board of, and close to, postical crossvein, consisting of a patch of microtrichia on ventral surface (text-fig. 9E). Middle tibia with a short posteroventral bristle at about apical fifth to seventh. (Front leg, text-fig. 9A). 5.25-7 mm.
Scotland: Inverness and Perth. England and Wales: From Westmorland and Yorks., southwards. Both sexes frequently attracted to freshly trampled grass. Common. v-x. 12. militaris Meigen.
- 18 (17) Wing without such a cloud. Middle tibia without a posteroventral bristle, but sometimes with numerous long hairs on both antero- and posteroventral surfaces.
- 19 (24) Hind femur ventrally with a stout erect spine or compound bristle either at about basal sixth or near middle, otherwise almost without bristles ventrally (text-figs. 9K, L).
- 20 (21) Hind femur with a long erect straight blunt ventral bristle slightly beyond middle (text-fig. 9K). Hind tibia with at most a short hair-like postero-dorsal, but with some conspicuously long anteroventrals on apical half,

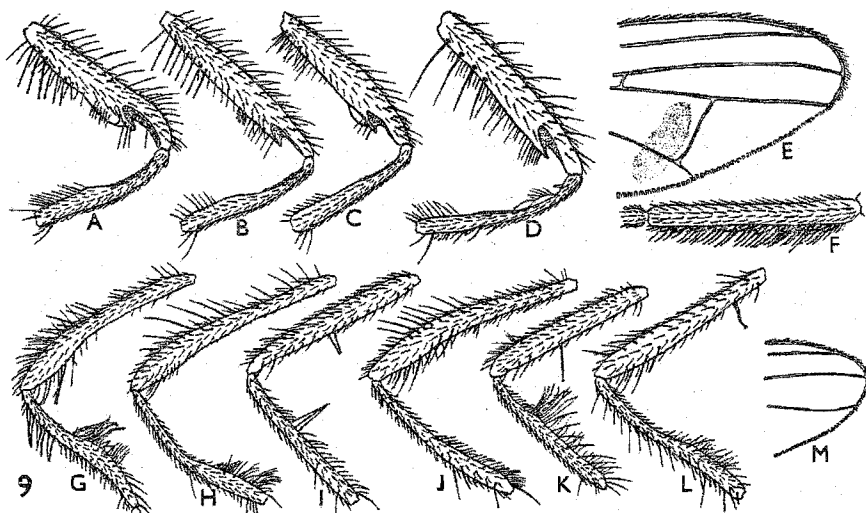


FIG. 9—A-D, rt. front legs of *Hydrotaea* ♂: A, *militaris*; B, *armipes*; C, *occulsa*; D, *dentipes*; E, *H. irritans*; F, *H. irritans* (mid. metatarsus); G-L, rt. hind legs of *Hydrotaea* ♂: G, *borussica*; H, *meridionalis*; I, *albipuncta*; J, *irritans*; K, *armipes*; L, *occulsa*; M, *H. dentipes*.

some of which are about as long as hind metatarsus (text-fig. 9x). (Front leg, text-fig. 9b). 4.25-5.5 mm.

Scotland: Dunbartons. and Midlothian. England and Wales: from Lancs. to Yorks. southwards. Fairly common. iv-ix. 11. armipes Fallén.

- 21 (20) Hind femur ventrally with a shorter erect spine at about basal sixth, consisting of 2 coalescent bristles with the tips bent over (text-fig. 9l). Hind tibia with the normal posterodorsal well developed, and with a row of rather fine anteroventrals on apical half which are hardly longer than tibial diameter.

- 22 (23) Eyes densely long-haired. Middle tibia long-haired on apical half of both antero- and postero-ventral surfaces. Thorax entirely and uniformly dulled by brownish dust. (Front leg, text-fig. 9c). 4.5-5.5 mm.

Generally distributed. Common. iv-x. 7. occulta Meigen.

- 23 (22) Eyes bare or microscopically pubescent. Middle tibia with only short decumbent hairs on antero- and postero-ventral surfaces. Thorax more thinly dusted greyish and with a distinct blackish shine. 4.5-5 mm.

Only British records known, Bix (Oxon.), bred from owl's nest, v-vi. 35 (E. B. Basden); Woodstock (Oxon.), bred from unidentified bird's nest, ix. 53 (B. M. Hobby). 8. basdeni Collin.

- 24 (19) Hind femur ventrally without an isolated stout erect spine or compound bristle.

- 25 (26) Upper half of facial orbits shining black without dusting of any sort. Thorax strongly shining black almost without dusting. Hind tibia fine-haired on middle third of posteroventral surface and with 6-8 anteroventral bristles. 6-7 mm.

Scotland: Inverness. (Aviemore), and Perth. (Rannoch). England and Wales: Yorks., Norfolk, Worcs., Cambs., Glamorgan., Gloucs., Bucks., Herts., Essex, Wilts., Devon and Kent. Uncommon. v-x.

9. pilipes Stein.

- 26 (25) Facial orbits more or less densely dusted except sometimes at a spot level with base of antennae. Thorax usually extensively grey-dusted, but when almost entirely black then not particularly shining.

- 27 (30) Front femur at apex beneath without the normal pair of rigid processes, but instead with 2 short stout articulating spines, the proximal one strongly dilated in basal half (text-fig. 8x). Middle femur, postero-ventrally on about basal half, with a uniform row of 10-12 spine-like bristles.

- 28 (29) Thorax, seen from behind, rather densely and uniformly whitish-grey dusted, especially about humeri. Hind femur anteroventrally with a complete row of setulose hairs which are decidedly longer than greatest depth of femur, 3-4 at apex being conspicuously more bristle-like. Dusting of abdomen, seen from behind, almost white. (See above.)

17. cinerea Desvoidy.

- 29 (28) Thorax, seen from behind, deep brownish-black with some brownish-grey dusting on humeri and about postalar calli. Hind femur with long anteroventrals at apex only, with only short hairs on rest of antero-ventral surface. Dusting of abdomen brownish-grey. 4-5.5 mm.

Generally distributed. Common. iv-ix. 16. meteorica Linné.

- 30 (27) Front femur with the normal pair of rigid processes at apex beneath. Middle femur posteroventrally without the above row of 10-12 spine-like bristles on basal half, but sometimes with 2-6 strong bristles near base, or with a double row of blunt bristles on basal half.

- 31 (32) Middle tarsus conspicuously fine-haired along whole length beneath. Hind femur strikingly long and curved. Hind tibia, ventrally at about apical third, with a small tuft of close-set bristles. About 6.5 mm.

Only British record known 1 ♂, Spey Bridge (Inverness.), 26. vi. 42 (C. J. Wainwright). 19. pandellei Stein.

- 32 (31) Middle tarsus normal. Hind femur not strikingly long or curved. Hind tibia without the above tuft of bristles.

- 33 (34) Middle tibia with 1-2 anterodorsal bristles on apical half. Middle coxa, on hind margin, with a close-set cluster of 3-4 long coarse blunt bristles. 6.75-7.5 mm.

Scotland : Inverness. (Spey Bridge, Bridge of Brown, Glen Urquhart and Aviemore). England and Wales : Cumberland, Westmorland, Lancs., Yorks., Caernarvon., Cheshire, Notts., Shrops., Norfolk, Worcs., Suffolk, Glamorgan., Hants., Surrey, Devon and Kent. Uncommon. v-ix.

3. *palaestrica* Meigen.

- 34 (33) Middle tibia without anterodorsals towards apex, but sometimes with a short bristle about middle. Middle coxa with only short pointed bristles on hindmargin.

- 35 (36) Eyes separated by the width of third antennal segment, densely long-haired. 6-7.5 mm.

Scotland : Nairns, Dunbartons and Dumfries. England : Yorks., Shrops., Worcs., Gloucs., Herts., Wilts., Berks., Somerset, Hants., Cornwall, Devon, Dorset and Kent. Frequent. iv-ix. 4. *cyrtoneurina* Zetterstedt.

- 36 (35) Eyes much more closely approximated, bare or microscopically pubescent.

- 37 (38) Middle tibia, on apical three-fourths of posterior surface, with numerous semi-erect setulose hairs which are quite twice as long as width of tibia. Middle femur, on basal third of ventral and posteroventral surfaces, with only fine hairs hardly longer than depth of femur. 4.5-5.5 mm.

Scotland : Midlothian (Miltonbridge), bred from cow-dung. England : Notts., Cambs., Suffolk, Oxon., Herts., Essex, Wilts., Berks., Middx., London, Somerset, Hants., Surrey, Dorset and Kent. Frequent. v-vii, ix-x. 15. *tuberculata* Rondani.

- 38 (37) Middle tibia posteriorly, apart from 2-3 strong bristles, with only short decumbent hairs. Middle femur on basal third of ventral or posteroventral surface, with either strong bristles or conspicuously long setulose hairs.

- 39 (48) Middle tibia without an anterodorsal bristle. Middle femur, ventrally on basal half, either with 4 or more strong bristles, or with numerous very long setulose hairs.

- 40 (43) Thorax, seen from behind, with conspicuous whitish dusting at least in front of suture. Middle tibia, anteriorly along almost whole length, with dense fine pubescence which is shorter than width of tibia. Discal vein of wing with a slight though distinct curve forward just before apex (text-fig. 9M).

- 41 (42) Hind tibia with only 2-3 rather short anteroventrals. Middle femur, at base beneath, with numerous setulose hairs, many of which are more than twice as long as depth of femur. (Front leg, text-fig. 9D). 6.5-7.75 mm.

Generally distributed. Very common. v-x. 1. *dentipes* Fabricius.

- 42 (41) Hind tibia with about 7 long strong anteroventrals on apical two-thirds. Middle femur, at base beneath, with 4 or more strong bristles which are less than twice as long as depth of femur. 8-9 mm.

Scotland : Sutherland., Ross., and Inverness. England and Wales : Widely distributed from Northumberland to south coast. Frequent. v-ix.

2. *similis* Meade.

- 43 (40) Thorax, seen from behind, almost uniformly dull black, even in front of suture. Middle tibia anteriorly with only the normal vestiture of decumbent hairs. Discal vein practically straight in apical section.

- 44 (47) Abdomen, seen from behind, densely dusted whitish-grey with a more or less narrow black median stripe. Middle femur, on basal fourth to half beneath, with 5-10 erect, somewhat blunt bristles.

- 45 (46) Hind tibia short-haired on both antero- and postero-ventral surfaces. Blunt bristles beneath middle femur occupying not more than basal third. Wings almost clear. Lower squama pale brownish-yellow with whitish fringe. 5.5-7 mm.

Silverdale (Lancs.), and Nicholaston Wood, Orwich (Glamorgan.), usually abundant at latter locality. vi-vii. 13. *velutina* Desvoidy.

- 46 (45) Hind tibia, anteroventrally on apical two-thirds and posteroventrally on about middle third, with conspicuously long setulose hairs. Blunt bristles beneath middle femur occupying basal half or more, about 8 in number. Wings and lower squama rather strongly brownish, latter with fringe at least partly brownish. 4-5.5 mm.

Scotland : Sutherland. (Lochinver and Loch Hope), Ross. (Gairloch),

- Inverness. (Glen Feshie), Perth. (Loch Tummel, Tummel Bridge and Kinloch Rannoch). Scarce. vi-vii. 14. pilitibia Stein.*
- 47 (44) Abdomen, seen from behind, mainly shining black with some brown dusting on foremargins of intermediate tergites. Middle femur with only 2 distinct bristles beneath at base. About 3 mm.
Merioneths. (Barmouth), Suffolk (Newmarket and Barton Mills), Herefords. (Cusop Dingle), Bucks. (Buckingham), Oxon. (Wychood Forest). Uncommon. vi-viii. 24. glabricula Fallén.
- 48 (39) Middle tibia with a short strong anterodorsal just below middle. Middle femur ventrally with only 2 coarse blunt bristles close to base, with sometimes a weaker one at extreme base. About 3.5 mm.
Cheshire (Flockburgh), Notts. (Southwell), Norfolk (Upton Broad and Fowlmere), Suffolk (Barton Mills), Cambs. (Wicken and Chippenham Fens), Essex (Walton-on-Naze), Herefords. (Monnow Pandy and Moccas Park), Warwick. (Stutton Coldfield and Wilmcote), Wores. (Wyre Forest and Bewdley), Glamorgan. (Byers Down), Gloucs. (Filton), Oxon. (Aston Rowant), Somerset (Failand and Sharpham), Dorset (Arne). Uncommon. vi-ix. 23. parva Meade.

FEMALES.

(For synonymy, distribution etc., see key for males).

- 1 (6) Abdomen partly translucent reddish-yellow at base, in some cases almost hidden by dense dusting but always visible by transmitted light.
- 2 (3) Tergite-3 with a pair of large round polished black spots, rarely small or absent. Middle femur with the hairs immediately below the 2 strong posterior preapical bristles hardly shorter than these bristles. 6-7 mm.
 22. *borussica* Stein.
- 3 (2) Abdomen dusted yellowish-grey, without this pair of polished black spots (but see footnote to *irritans* below). Presutural acrostichals with the outermost row on each side only slightly stronger than the hairs between them, these outer rows more widely separated from one another than from dorsocentrals.
- 4 (5) Middle femur with the hairs immediately below the 2 strong posterior preapical bristles little more than half as long as these bristles, the strictly ventral surface of femur almost bare at base. 4.5-6 mm.
 20. *meridionalis* Portschinsky.
- 5 (4) The above hairs on middle femur hardly shorter than the posterior preapical bristles, femur with hairs on all parts of ventral surface. 6-7 mm.
 21. *pellucens* Portschinsky.
- 6 (1) Abdomen entirely black in ground-colour.
- 7 (16) Knob of halteres yellow or brownish-yellow, never brownish-black to black.
- 8 (11) Frontal triangle entirely, and frontal orbits largely or entirely, glossy black without trace of dusting.
- 9 (10) Front tibia with a posterior bristle on apical half. Body entirely shining bluish-black with white dusting only on humeri and greater part of fifth tergite, sometimes thorax with a median presutural pale-dusted stripe. Middle tibia without an anterodorsal. Frontalia at narrowest part more than twice as wide as an orbit. 6-7 mm. 5. *bimaculata* Meigen.
- 10 (9) Front tibia without a posterior bristle. Body shining black without blue reflections and with only little dusting. Middle tibia with 1-2 antero-

⁶ Females with the base of abdomen translucent reddish-yellow, without a pair of polished black spots on tergite 3, and differing from females of *meridionalis* in the greater length of hairs below the posterior preapicals to middle femur, have hitherto been assumed to belong to *pellucens*. The capture of a very large number of *Hydrotaea* females, together with males of *borussica*, revealed that there occur females with pale base to abdomen and with the pair of polished spots on tergite 3 varying considerably in size and in some cases disappearing altogether. These latter, which must be assumed to be an extreme form of *borussica*, are identical in every way with the females previously thought to be *pellucens*. It appears probable, therefore, that the latter species has not yet been found in Britain.

- dorsals. Frontalia at narrowest part narrower than an orbit. About 6 mm. 6. *nidicola* Malloch.
- 11 (8) Frontal triangle more or less dulled by dust, falling well short of middle of frons, frontal orbits densely grey-dusted throughout. Presutural acrostichals in two well developed rows, strongly contrasting with the hairs between them and not more widely separated from one another than from dorsocentrals.
- 12 (13) Arista with longest hairs quite twice as long as its basal diameter. Hairs on lateral margins of scutellum, below strong bristles, usually more than uni-serial. Body dusting more yellowish-grey. 5-6.5 mm. 718. *irritans* Fallén.
- 13 (12) Longest hairs of arista at most only slightly longer than its basal diameter. Hairs on lateral margins of scutellum in a single row. Dusting more cinereous-grey.
- 14 (15) Arista practically bare, longest hairs much shorter than its basal diameter. Frontal triangle less densely dusted, with a distinct blackish shine around front ocellus when seen from some angles. Middle tibia usually with a short anterodorsal on apical half. Hind tibia often without a distinct posterodorsal. 3.75-4.5 mm. 10. *albipuncta* Zetterstedt.
- 15 (14) Longest hairs of arista slightly longer than its basal diameter. Frontal triangle densely grey-dusted all over, except sometimes on a very small spot in front of front ocellus. Middle tibia without an anterodorsal. Hind tibia always with the normal posterodorsal below middle. 4.5-5.25 mm. 17. *cinerea* Desvoidy.
- 16 (7) Knob of halteres brownish-black to black.
- 17 (18) Middle tibia with a posteroventral bristle towards apex. Hind tibia with an additional small posterodorsal on basal half. Thorax somewhat shining black, un-striped, thinly brown-dusted on dorsum and with denser greyish dusting on humeri. 4-6 mm. 12. *militaris* Meigen.
- 18 (17) Middle tibia without any bristles beneath.
- 19 (30) Middle tibia with 1-2 anterodorsals on apical half.
- 20 (21) Middle tibia usually with 2 anterodorsals. Thorax, seen from behind, rather densely grey-dusted with 3 distinct rather broad dark stripes, median one usually visible only behind suture. Abdomen, seen from behind, uniformly somewhat densely dusted, without a shifting pattern though sometimes with a median dark line. 5.75-7.5 mm. 3. *palaestrica* Meigen.
- 21 (20) Middle tibia with only 1 anterodorsal (usually rather short in *pilipes*) on apical half. Thorax, seen from behind, either unstriped, or rather conspicuously grey-dusted with 4 distinct dark stripes at least in front of suture.
- 22 (25) Facial orbits with a shining undusted patch level with base of antennae. Prealar bristle decidedly shorter than second notopleural, or absent.
- 23 (24) Thorax and abdomen shining black with only extremely thin brownish dusting, humeri not more conspicuously dusted. Frons at vertex distinctly wider than an eye. Middle femur, ventrally at base, with 4-5 fine bristles which are about two-thirds as long as depth of femur. 6-6.5 mm. 9. *pilipes* Stein.
- 24 (23) Thorax and abdomen almost entirely dulled by brownish-grey dust, especially about humeri and notopleural area. Frons at vertex narrower than an eye. Middle femur ventrally with 2 bristles at base which are about as long as depth of femur. About 3 mm. 23. *parva* Meade.
- 25 (22) Facial orbits uniformly densely dusted throughout their length.
- 26 (27) Acrostichals hardly distinguishable from rest of thoracic hairs, only the outside rows consisting of slightly stronger hairs. Thorax, seen from behind, uniformly blackish-grey without distinct stripes. Prealar bristle absent or inconspicuous. 4.5-5 mm. 14. *pilithibia* Stein.
- 27 (26) Acrostichals strongly developed in 2 complete rows. Thorax, seen from

♀ Females occur in late summer in the New Forest (Hants.), often in considerable numbers, which have a pair of small, rather ill-defined, undusted spots on third tergite, but which are otherwise indistinguishable from *irritans*. These may possibly represent natural hybrids between *irritans* and *borussica*.

- behind, with conspicuous whitish dusting right in front and distinct presutural dark stripes. Prealar only little shorter than 2nd notopleural.
- 28 (29) Hind tibia with 1-3 anteroventral bristles. Ocellar triangle shining black about, and in front of, front ocellus, the pointed tip dusted in contrast. Notopleuron with any hairs present confined to area above and about anterior strong bristle. 5.75-7.5 mm.....1. *dentipes* Fabricius.
- 29 (28) Hind tibia with 4-6 anteroventrals. Ocellar triangle uniformly dulled by dust. Notopleural hairs mainly above and around hinder bristle. 8.75-9 mm. 2. *similis* Meade.
- 30 (19) Middle tibia without anterodorsals.
- 31 (40) Facial orbits with an almost, or entirely, undusted shining patch on upper part. Frontal triangle often mainly or entirely shining.
- 32 (33) Frontal triangle very large, glossy black, extending forward to lunule, leaving only a pair of narrow strips of dull frontalia between it and the glossy black frontal orbits. About 3 mm.....24. *glabricula* Fallén.
- 33 (32) Frontal triangle comparatively small, not extending half-way from front ocellus to lunule, or if sometimes larger then entirely dulled by dust.
- 34 (35) Prealar bristle quite two-thirds the length of second notopleural. Hind tibia with the submedian anterodorsal and posterodorsal bristles usually almost at the same level. Frontal triangle large and entirely dulled by dust. 4.75-6.25 mm.....13. *velutina* Desvoidy.
- 35 (34) Prealar much shorter than second notopleural, or absent. Hind tibia with the posterodorsal bristle below the anterodorsal by at least half the width of tibia. Frontal triangle small and mainly shining.
- 36 (37) Notopleuron with numerous hairs close to base of at least the anterior strong bristle. Hind tibia usually with only one anteroventral. Body strongly shining black with little or no dusting. 3.75-4.75 mm.
15. *tuberculata* Rondani.
- 37 (36) Both notopleural bristles well separated from nearest hairs on slope above them. Hind tibia with 2-3 anteroventrals. Somewhat uniformly thinly grey-dusted species with only a faint shine.
- 38 (39) Eyes densely short-pubescent. Thorax, seen from behind, with a broad median dark stripe contrasting with the brownish-gray dusting. 3.75-4.75 mm. 7. *occulta* Meigen.
- 39 (38) Eyes practically bare. Thorax, seen from behind, much more thinly dusted and with the median dark stripe indistinct. About 4.5 mm.
8. *basdeni* Collin.
- 40 (31) Facial orbits uniformly rather densely dusted, without trace of bare shining patch. Frontal triangle entirely dull.
- 41 (42) Front of jowl with 1-2 strong upcurved bristles, at least one of these almost as long and as strong as a vibrissa. Prealar usually almost as long as second notopleural. Presutural acrostichals strongly developed, one or more about three-fourths the length of first dorsocentral. 5-7 mm.
4. *cyrtoneurina* Zetterstedt.
- 42 (41) Front of jowl with at most some short weaker bristles. Prealar distinctly (usually much) shorter than second notopleural. Presutural acrostichals only about half as long as first dorsocentral, or all hair-like without stronger ones among them.
- 43 (44) Presutural acrostichals dense and all hair-like. Arista with the longest hairs about twice as long as its basal diameter. Eyes distinctly, even though sparsely, pubescent. 5.5-6.5 mm.....19. *pandellei* Stein.
- 44 (43) Presutural acrostichals well developed, though sometimes short. Longest hairs of arista at most only slightly longer than its basal diameter. Eyes virtually bare.
- 45 (46) Hind tibia without a distinct posterodorsal bristle, though a short half-erect hair may be present. Frontal triangle rather thinly dusted, distinctly shining about front ocellus when seen from slightly behind. Longest hairs of arista shorter than its basal diameter. 3.75-4.75 mm.
11. *armipes* Fallén.
- 46 (45) Hind tibia with a distinct posterodorsal. Frontal triangle more densely dusted, entirely dull. Longest hairs of arista distinctly longer than its basal diameter. 3.25-4.75 mm.....16. *meteorica* Linné.

Genus *Thricops* Rondani, 1856.(⁸ *Lasiops* Mg., Auctt.).

KEY TO SPECIES.

- 1 (6) Upper mouthedge protruding well in front of vibrissal angles, latter well in front of frons (text-fig. 10B) (s.g. *Rhynchotrichops* Schnabl, 1889).
- 2 (3) Prealar bristle much shorter than second notopleural. ♂: hind tibia, ventrally near apex, with an erect blunt "spur". ♀: hind femur with only 3-4 anteroventral bristles near apex. 5.75-6.75 mm.
Scotland: Ross., Inverness., Aberdeens., Banffs., and Dumfries. England and Wales: Cumberland, Westmorland, Yorks., Caernarvans., Merioneths. and Devon (Doone Valley). Common in Scotland, becoming less frequent southwards. vi-ix.....1. *rostratus* Meade.
- 3 (2) Prealar as long as or longer than second notopleural. ♂: hind tibia without an erect ventral "spur". ♀: hind femur with anteroventrals along whole length.
- 4 (5) Arista with longest hairs almost twice as long as its basal diameter. ♂: hind tibia ventrally with a remarkable shining black cylindrical process just above middle, bearing at apex a dense tuft of long setulose hairs curled over at tips (text-fig. 10A). ♀: hind femur posteroventrally without distinct bristles or hairs. 6.75-7.5 mm.

Scotland: Morays. (Upper Findhorn), Perth. (Lochan na Lairige), where both sexes were abundant in June, 1963, resting on ferns growing on the banks of mountain streamlets. England: Westmorland, Yorks. (Wharfedale) and Notts. Usually scarce. vi-vii.....3. *aculeipes* Zetterstedt.

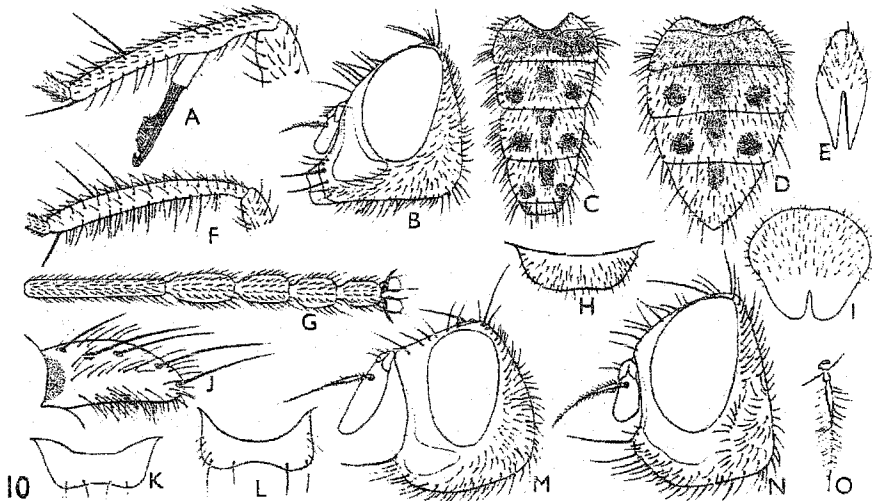


FIG. 10—A, *Thricops aculeipes* ♂ (rt. hind tibia); B, *T. rostratus* ♂; C, *Azelia zetterstedti* ♂; D, *A. macquarti* ♀; E, *Mydaea electa* ♂ (genital mesolobe); F, *Thricops hirsutululus* ♂ (rt. hind tibia); G, *Helina latitarsis* ♀ (front tarsus); H, *Spilogona compuncta* (first sternite); I, *Mydaea discimana* ♂ (genital mesolobe); J, *Helina laetifica* (scutellum); K, *Limnophora scrupulosa* (first sternite); L, *L. olympiae* (do.); M, *L. riparia* ♂; N, *L. maculosa* ♂; O, *Thricops nigritellus* (arista).

⁸ According to Hennig (1962), Meigen erected the genus *Lasiops* in 1838 with *apicalis* (= *semicinereus* Wied.) as one of the five included species, but did not designate a type. The first valid designation of a type-species of *Lasiops*, *Musca hirticeps* Fallén, was by Coquillett in 1901, and *Lasiops* thereby became a synonym of *Hydrotaea* Desvoidy, 1830.

- 5 (4) Longest hairs of arista at most as long as its basal diameter. ♂: hind tibia without the above cylindrical process beneath. ♀: hind femur with a row of longish posteroventral setulose hairs. 6.5-7.5 mm. (= *subrostratus* Zett.).
Scotland: Ross. (Ullapool), Inverness. (Loch Einich and Aviemore), Aberdeens. (Braemar), and Perth. (Ben Lawers, Killin and Ben Lyon). England: Cumberland (Ullswater) and Westmorland. Fairly frequent. vi-vii. 2. hirtulus Zetterstedt.
- 6 (1) Upper mouthedge only rarely protruding in front of vibrissal angles, latter never more prominent than frons.
- 7 (10) Arista long-plumose, longest hairs at least as long as width of third antennal segment (s.g. *Hera* Schnabl, 1888).
- 8 (9) Longest arisal hairs decidedly longer than width of third antennal segment. ♂: posteroventral setulose hairs on basal half of hind femur hardly longer than depth of femur. ♀: thorax, seen from behind, with conspicuous broad dark stripes; abdomen with a broad dark median stripe. 6-8 mm. (= *variabilis* Fall., 1823 *nec* Gmel., 1790).
Widespread throughout British Isles, abundant in the Scottish highlands. v-viii. 4. nigrifrons Desvoidy.
- 9 (8) Longest arisal hairs about as long as width of third antennal segment. ♂: posteroventral setulose hairs on basal half of hind femur quite twice as long as depth of femur. ♀: thorax, seen from behind, with rather indistinct narrow stripes; abdominal stripe very narrow and faint, often absent. 6.5-8.5 mm.
Distribution and flight-period as for nigrifrons. . . 5. longipes Zetterstedt.
- 10 (7) Longest arisal hairs at most not much more than half as long as width of third antennal segment, more often much shorter. (s.g. *Thriceps* s.str.).
- 11 (18) Prealar bristle almost or quite as long as second notopleural.
- 12 (15) Hind tibia with only a single strong posterodorsal bristle (often appearing practically dorsal).
- 13 (14) Arista, including hairing, almost as wide as third antennal segment (text-fig. 10c). Eyes only sparsely haired. Usually only 3 postsutural dorso-centrals. ♂: hind tibia with a long erect ventral "spur" at apex. ♀: abdomen very thinly dusted, with strong shining black reflections from some points of view. 4-5.75 mm.
Abundant in Scottish highlands; frequent on high ground in Wales and north England. v-vii. 6. nigritellus Zetterstedt.
- 14 (13) Arista not more than half as wide as third antennal segment. Eyes densely haired (hairs much shorter in ♀). 4 postsutural dorso-centrals. ♂: hind tibia without an erect ventral "spur". ♀: abdomen more densely dusted, without black reflections. 5.25-6.75 mm.
Common in Scottish highlands. England: Yorks. (Pateley Bridge), Suffolk (Newmarket). v-vii. 7. innocuus Zetterstedt.
- 15 (12) Hind tibia with 2 or more strong, about equally long posterodorsals. 4 postsutural dorso-centrals.
- 16 (17) Upper mouthedge protruding conspicuously in front of vibrissal angles. Hind tibia usually with more than 2 strong posterodorsals. ♂: front tibia with a row of strong posteroventral bristles on apical half; hind tibia without an erect ventral "spur". About 6.5 mm.
*Aberdeens.: Braemar, 1 ♂, 25.vii.73 (G. H. Verrall) and 1 ♂, 9.viii.43 (C. J. Wainwright); Inverness.: Glen Feshie, 1 ♂, 13.vii.36 (J. E. Collin); Glen Affric, 1 ♂, 29.viii.54, at m.v. lamp (E. C. Pelham-Clinton).
 8. separ Zetterstedt.*
- 17 (16) Upper mouthedge not more prominent than vibrissal angles. Hind tibia usually with only 2 strong posterodorsals. ♂: front tibia without a row of posteroventral bristles; hind tibia with an erect ventral "spur" at apex (text-fig. 10f). 4.75-6.25 mm.
Very common in Scottish highlands. England and Wales: Northumberland, Durham, Westmorland, Yorks., Derbys., Notts., and Montgomerys. Frequent on high ground. v-viii. 9. hirsutulus Zetterstedt.
- 18 (11) Prealar much shorter than second notopleural, or absent.

- 19 (20) Abdomen largely (♂), or entirely (♀), reddish-yellow. Hind tibia with 3 or more anteroventral bristles. Longest hairs of arista more than twice as long as its basal diameter. Eyes densely short-haired (♂), pubescent to bare (♀). Halteres yellow. 4.75-6.5 mm.
Generally distributed. Very common. iv-viii.
10. *semicinereus* Wiedemann.
- 20 (19) Abdomen entirely black in ground-colour. Hind tibia with only 1 anteroventral. Longest hairs of arista hardly longer than its basal diameter. Eyes sparsely short-haired. Halteres brownish-black. 3.75-5.5 mm. (= *perpendicularis* Zett.).
Scotland: *Aberdeens.* (Ballater). England: *Norfolk, Suffolk, Gloucs., Herts., Berks., Middx. and Hants.* Uncommon. v-ix.
11. *foveolatus* Zetterstedt.

Genus *Alloeostylus* Schnabl, 1888.

KEY TO SPECIES.

- 1 (2) Body entirely reddish-yellow. Basal antennal segments and palpi reddish-yellow. ♂: hind tibia beneath with a long blunt shining black apical "spur" consisting of 2 coarse coalescent bristles. 7-8.5 mm.
Generally distributed. Common. v-x. 1. *diaphanus* Wiedemann.
- 2 (1) Body mainly black in ground-colour, abdomen at most partly, and humeri, sometimes translucent reddish-yellow.
- 3 (6) 4 postsutural dorsocentrals.
- 4 (5) Mentum entirely dulled by greyish dust. Arista with longest hairs decidedly longer than its basal diameter. Palpi entirely or mainly black, at most somewhat brownish at base. ♂: hind tibia beneath with a long blunt shining black "spur". ♀: prealar bristle only slightly longer than second notopleural. 6-7 mm.
Scotland: *Ross.* (*Flowerburn and Ullapool*), *Inverness.* (*Spey Bridge, Inverdruscie and Kinrara*) and *Perths.* (*Loch Tummel and Glen Lyon*).
England: *Lancs., Yorks., Cheshire, Derbys.* (*Bastow*), *Notts. and Somerset* (*Hinton Charterhouse*). Uncommon. vi-ix. 2. *sudeticus* Schnabl.
- 5 (4) Mentum shining black without distinct dusting. Longest hairs of arista hardly as long as its basal diameter. Palpi reddish- or brownish-yellow on at least basal half. ♂: hind tibia without a ventral apical "spur". ♀: prealar about 1½ times as long as second notopleural. 6-7 mm.
Ross.: *Ullapool*, 27. vii. 56 (*C. H. Andrewes*); *Inverness*: *Craigellachie*, 7. ix. 66, *Kinrara*, 1. ix. 66 and *Rothiemurchus*, 11. ix. 66 (*D. M. Ackland*); *Angus*: *Braedownie*, 23-26. vii. 37 (*R. L. Coe*) . . . 3. *albibasalis* Zetterstedt.
- 6 (3) 3 postsutural dorsocentrals.
- 7 (8) Abdomen partly, humeri entirely, translucent reddish-yellow. Palpi and basal antennal segments reddish-yellow. 2-3 pairs of strong presutural acrostichal bristles. ♂: eyes with the narrow orbits touching. ♀: frontalia with a well developed pair of crossed bristles. 6.75-8 mm.
Widely distributed from *Durham* to south coast. Fairly common. vii-xi.
4. *simplex* Wiedemann.
- 8 (7) Abdomen, thorax, palpi and antennae, entirely black in ground-colour. ♂: eyes separated by about the width of third antennal segment. ♀: frontalia without crossed bristles. 6-7.5 mm.
Reputedly British, but no authentic records can be traced.
5. *sundewalli* Zetterstedt.

Genus *Azelia* Desvoidy, 1830.

KEY TO SPECIES.

MALES.

- 1 (4) Hind tibia with long setulose hairs along almost whole length of dorsal surface, these hairs becoming rather more anterodorsal towards base of tibia.

- 2 (3) Middle tibia with a well developed dorsal preapical, but without a postero-dorsal at middle. Hind tibia with a posteroventral row of 10-12 erect fine hairs on apical two-thirds. 4-5 mm.
Breeds in cow-dung. Generally distributed. Very common. iii-ix.
1. *macquarti* Staeger.
- 3 (2) Middle tibia without a distinct dorsal preapical, but with a short postero-dorsal at about middle. Hind tibia posteroventrally with only a few rather short semi-erect hairs at apex. 3.5-4.75 mm.
Generally distributed. Common. iv-ix. 2. *cilipes* Haliday.
- 4 (1) Hind tibia dorsally, apart from the preapical bristle, with only short decumbent hairs.
- 5 (8) Middle tibia without a posterior bristle at middle.
- 6 (7) Hind tibia posteroventrally with a complete row of long setulose hairs, anteroventrally with a row of 4-6 even longer strong curved bristles on more than apical half. 3-3.75 mm.
Generally distributed. Common. v-x. 3. *zetterstedti* Rondani.
- 7 (6) Hind tibia posteroventrally with at most short setulose hairs which are hardly as long as depth of tibia, anteroventrally with only 1-2 slightly longer bristles at apex. 3-3.75 mm.
Scotland: Inverness and Angus. England and Wales: Yorks., Combs., Suffolk, Radnors., Glamorgan., Gloucs., Berks., Oxon., Middx., Herts., Somerset, Hants. and Kent. Frequent. v-ix. 4. *triquetra* Wiedemann.
- 8 (5) Middle tibia with a posterior bristle at about middle.
- 9 (12) Abdomen densely dusted brownish-grey, tergites 3-5 each with the normal *Azela*-type of dark markings consisting of a median elongate spot with a smaller roundish spot on each side (text-fig. 10c).
- 10 (11) Hind tibia, apart from short semi-erect hairs on anterior face and 1-2 short anteroventral bristles at apex, with only decumbent hairs on all surfaces. Middle femur practically bare posteroventrally except for an isolated spine-like bristle at about basal two-fifths. 2.75-3.5 mm.
Scotland: Sutherland (Lairg), Inverness. (Loch Alvie and Loch Garten), Perth. (Glen Dochart). England: Norfolk (Fowmere), Berks. (Wytham Wood), Oxon. (Nuneham Courtenay), Herts. (Kneaworth), Hants. (New Forest). Uncommon. iv-ix. 5. *trigonica* Hennig.
- 11 (10) Hind tibia with long fine setulose hairs on posterior face and longer stronger ones on anterior face. Middle femur posteroventrally, in addition to 2 rather strong bristles about middle, with 5-7 rather fine hairs from base to middle. 2.75-3.5 mm.
Scotland: Sutherland, Morays., Inverness., Angus, Perth. and I. of Arran. England and Wales: Westmorland, Norfolk, Combs., Warwicks., Herefords., Brecknocks., Glamorgan., Worcs., Bucks., Hants. and Cornwall. Common in Scotland, rather uncommon in England and Wales. v-ix.
6. *gibbera* Meigen.
- 12 (9) Abdomen entirely dull brownish-black with narrow pale-dusted hindmargins to tergites 2-5. Hind tibia posteroventrally with 2 rather long setulose hairs at apex, anteroventrally with 2 somewhat shorter bristles at apex. 2.5-3.5 mm.
Scotland: Sutherland, Inverness., Aberdeens., Perth. and Dumfries. England: Cumberland, Lancs., Herefords., Hants. and Cornwall. Uncommon. v-ix. 7. *aterrima* Meigen.

FEMALES.

The species of this genus are separated in the females only with difficulty. The following key is based on present knowledge, either from pairs taken *in copula* or from association with males taken at the same time. The extent to which the characters used may vary within a species is not yet known, and it is therefore important, whenever possible, to take careful note of any males that may occur at the same locality and time. (Typical abdomen, text-fig. 10D).

(For synonymy, distribution etc., see key for males).

- 1 (4) 4 anterior tibiae reddish-yellow to more or less dark brownish. Presutural acrostichal rows distinctly (even though only slightly) more widely separated from one another than from dorsocentrals, with fairly numerous smaller setulae between them both before and behind suture. Hind tibia usually with 3 strong anteroventrals. Larger species with a wing-length of 4 mm or more.
- 2 (3) 4 anterior tibiae uniformly clear reddish-yellow. Dorsal preapical on middle tibia usually shorter, hardly as long as diameter of tibia. 3-4 mm.
2. *cilipes* Haliday.
- 3 (2) 4 anterior tibiae reddish-brown to brown. Dorsal preapical on middle tibia distinctly longer than diameter of tibia. 3-4 mm.
1. *macquarti* Staeger.
- 4 (1) Legs brownish-black to black (except in immature specimens). at most anterior tibiae narrowly and obscurely reddish at base. Presutural acrostichal rows not more widely separated from one another than from dorsocentrals, more often conspicuously nearer to one another. Smaller species with a wing-length of less than 4 mm.
- 5 (10) Lower squama with a distinctly brownish border, disc of squama occasionally also dusky.
- 6 (7) Hind tibia with only 1 anteroventral. Knob of halteres entirely yellow. Abdomen, seen from behind, with the dark spots (text-fig. 10D) clearly marked. 2-2.5 mm. 5. *trigonica* Hennig.
- 7 (6) Hind tibia with 3-4 anteroventrals. Knob of halteres distinctly, though often quite narrowly, darkened at tip. Abdomen, seen from behind, without or with hardly discernible spots.
- 8 (9) Acrostichals with a tendency to become tri- to quadri-serial behind suture. 2.25-2.75 mm. 6. *gibbera* Meigen.
- 9 (8) Acrostichals bi-serial almost throughout, with only an occasional small setula between the rows behind suture. 2-2.5 mm. 7. *aterrima* Meigen.
- 10 (5) Lower squama whitish with pale yellow border.
- 11 (12) Acrostichals tending to be more than bi-serial in front of suture, and especially numerous and widely spread behind. Hind tibia usually with 3 anteroventrals. 2.75-3 mm. 3. *zetterstedti* Rondani.
- 12 (11) Acrostichals almost always strictly bi-serial in front of suture and with only a few small setulae between the rows behind. Hind tibia with only 1-2 anteroventrals. 2.5-3.25 mm. 4. *triquetra* Wiedemann.

Genus *Mydaea* Desvoidy, 1830.

KEY TO SPECIES.

MALES.

- 1 (3) Scutellum partly or entirely translucent reddish-yellow in ground-colour.
- 2 (3) Abdomen entirely reddish-yellow in ground-colour. Palpi reddish-yellow. 6-7 mm.
Has been bred from Polyporous squamosus. Suffolk (Newmarket), Cambs. (Cambridge), Berks. (Tubney Wood and Wytham Wood), Oxon. (Wychwood Forest), Bucks. (Gerrards Cross), Somerset (Yeo Reservoir). Uncommon. vi-viii. 1. *spinipes* Karl.
- 3 (2) Abdomen black in ground-colour. Palpi darkened.
- 4 (5) Scutellum entirely translucent reddish-yellow, without trace of darkening at base. Front femur entirely reddish-yellow. 2 pairs of prescutellar bristles. Fifth sternite with only weak hair-like bristles. 7.5-8.5 mm. (= *pagana* F., 1794 nec Harris, 1776).
Generally distributed. Common. v-x. 2. scutellaris Desvoidy.
- 5 (4) Scutellum more or less darkened at base. Front femur more or less black at base. Only 1 pair of prescutellar bristles. Fifth sternite with strong bristles on each side.

- 6 (7) Middle femur with only 2-3 strong posteroventrals on basal third. Hind femur without posteroventrals except sometimes at extreme base and a few at apex. Lobes and hindmargin of fifth sternite reddish-yellow. 6-7.25 mm.
Has been bred from numerous fungi, including species of Russula, Pleurotus, Lactarius and Amanitopsis. Scotland: Morays., Inverness, and Aberdeens. England and Wales: generally distributed from Westmorland to south coast. Fairly common. v-x. 3. tincta Zetterstedt.
- 7 (6) Middle femur with 4 or more strong posteroventrals on more than basal half. Hind femur with almost a complete row of posteroventrals, those about middle third of femur particularly strong. Fifth sternite entirely black in ground-colour. 7.5-8 mm.
Westmorland, Yorks., Flints., Cheshire, Merioneths., Herefords., Worcs., Gloucs., Somerset, Hants., Devon, Surrey and Kent. Frequent. vi-ix. 4. setifemur Ringdahl.
- 8 (1) Scutellum entirely black in ground-colour.
- 9 (18) Legs, including femora, largely reddish-yellow.
- 10 (11) Longest arisal hairs not more than half as long as width of third antennal segment. Hind femur with several strong posteroventral bristles on basal half. 6-7 mm.
Scotland: Sutherland (Lochinver), Ross. (Loch Maree and Glen Shiel), Inverness. (Spey Bridge, Loch Garten, Glen Tromie and Aviemore), Aberdeens. (Ballater), Perth. (Killin and Loch Tummel). Wales: Montgomerys. (Lake Vyrnwy). Uncommon. v-vii. 12. deserta Zetterstedt.
- 11 (10) Longest arisal hairs decidedly more than half as long as width of third antennal segment. Hind femur without distinct posteroventrals.
- 12 (15) Prealar bristle much longer than second notopleural.
- 13 (14) Fifth sternite with only 2 strong bristles on each lobe. Abdomen densely dusted yellowish-grey without blackish reflections from any angle from behind. 7.75-9.5 mm.
Has been bred from Polyporus squamosus. Generally distributed. Very common. v-x. 5. urbana Meigen.
- 14 (13) Fifth sternite with 3 or more strong bristles on each lobe. Abdomen rather thinly dusted, with strong blackish reflections when seen from behind at some angles. 6.5-7.5 mm.
Scotland: Morays., Inverness., Aberdeens. and Perth. England: Cumberland, Lancs., Cheshire, Worcs., Herefords., Herts., Wilts., Somerset, Hants., Surrey, Cornwall, Sussex and Kent. Fairly frequent. vi-x. 6. detrita Zetterstedt.
- 15 (12) Prealar at most as long as second notopleural.
- 16 (17) Front tibia, on apical half of posterior and posteroventral surfaces, with somewhat erect hairs which are as long as diameter of tibia. Eyes virtually bare. The 2 prongs of the genital mesolobe quite blunt (text-fig. 10r). 7-8.75 mm.
Has been bred from a Boletus fungus. Scotland: Morays., Inverness., and Aberdeens. England: Lancs., Cheshire, Norfolk, Herefords., Worcs., Herts., Somerset, Hants., Surrey, Sussex and Kent. Uncommon. vi-x. 7. discrimana Malloch.
- 17 (16) Front tibia, on posterior and posteroventral surfaces, with only the normal decumbent hairs. Eyes sparsely, though distinctly, short-pubescent. Prongs of genital mesolobe ending in sharp points (text-fig. 10r). 6.5-7.5 mm.
Scotland: Morays., Inverness. and Aberdeens. England and Wales: Westmorland, Yorks., Lancs., Shrops., Norfolk, Suffolk, Herefords., Worcs., Herts., Wilts., Glamorgan., Somerset, Hants., Dorset, Sussex and Kent. Frequent. vi-x. 8. electa Zetterstedt.
- 18 (9) Legs entirely black, or at most tibiae somewhat obscurely reddish.
- 19 (22) Prealar longer than second notopleural. Front tibia with posteroventral hairs on apical half which are semi-erect and as long as diameter of tibia.
- 20 (21) Hind femur anteroventrally with some strong bristles towards apex, but with only fine hair-like ones on more than basal half. Eyes separated by much less than basal width of front tibia, orbits actually touching. 6-6.5 mm.

- Scotland : Morays and Perth.* *England : Westmorland, Lancs., Cheshire, Shrops., Norfolk, Worcs., Herefords., Gloucs., Ozon., Berks., Middx., Hants., Devon and Kent.* Fairly frequent. v-viii. 9. *nebulosa* Stein.
- 21 (20) Hind femur anteroventrally with strong bristles on apical half, those on basal half shorter but still strong. Eyes separated by quite the basal width of front tibia, a distinct frontalia present. 6.75-8 mm.
Scotland : Inverness. (Kinnara and Gramish). *England : Cheshire (Delamere Forest), Cambs. (Chippenham Fen), Suffolk (Barton Mills), Merioneths. (Coed Tremadoc), Gloucs. (Blaise Woods), Berks. (Cothill and Wytham Wood), Middx. (Edgware), Somerset (Walton Moor), Wilts. (Salisbury) and Hants. (Linwood).* Uncommon. v-ix. 11. *anicula* Zetterstedt.
- 22 (19) Prealar shorter than second notopleural.
- 23 (24) Arista, including hairing, at least as wide as third antennal segment. Frontal orbits quite or almost touching. Wings almost clear. 6-8 mm.
Lancs., Yorks., Cheshire, Norfolk, Suffolk, Gloucs., Herts., Berks., Worcs., Somerset, Wilts., Hants., Cornwall and Kent. Uncommon. v-ix.
- 24 (23) Arista not much more than half as wide as third antennal segment. Frontal orbits very distinctly separated. Wings strongly infuscated anteriorly. 6.5-8 mm.
Inverness. : Loch Garten, 19. vi. 37 (J. E. Collin), 27. vi. 37 (C. J. Wainwright); Aviemore, vii. 37 (C. J. Wainwright). . . . 13. *bengtssoni* Ringdahl.

FEMALES.

(For synonymy, distribution etc., see key for males).

- 1 (18) Legs, including at least some femora, largely reddish-yellow.
- 2 (9) Scutellum partly or entirely reddish-yellow in ground-colour.
- 3 (4) Abdomen entirely reddish-yellow in ground-colour. Palpi reddish-yellow. 6-6.5 mm. 1. *spinipes* Karl.
- 4 (3) Abdomen entirely black in ground-colour. Palpi darkened.
- 5 (6) Prealar bristle shorter than second notopleural. Humeri at most indistinctly yellowish. Abdomen, seen from behind, rather densely dusted yellowish-grey with a distinct darker shifting pattern. 7-9 mm.
2. *scutellaris* Desvoidy.
- 6 (5) Prealar much longer than second notopleural. Humeri entirely and obviously reddish-yellow. Abdomen, seen from behind, much more thinly dusted bluish-grey with a strong blackish shine.
- 7 (8) Hind femur with distinct though short posteroventral bristles on at least basal half. 7.5-8.75 mm. 4. *setifemur* Ringdahl.
- 8 (7) Hind femur without posteroventrals except a few at extreme apex. 6.5-8.25 mm. 3. *tincta* Zetterstedt.
- 9 (2) Scutellum entirely black in ground-colour.
- 10 (11) Arista, including hairing, hardly half as wide as third antennal segment. Notopleuron with some hairs about base of second (hinder) bristle. 6-7 mm. 12. *deserta* Zetterstedt.
- 11 (10) Arista at least as wide as third antennal segment.
- 12 (15) Prealar distinctly longer than second notopleural.
- 13 (14) Basicosta and trochanters mainly or entirely reddish-yellow. Longest arista hairs rather shorter than width of third antennal segment. Abdomen very thinly dusted, with distinct blackish reflections. Dusting of body more whitish- to bluish-grey. Notopleuron without hairs, or with only very few about base of second bristle. 6.5-8 mm.
6. *detrita* Zetterstedt.
- 14 (13) Basicosta and trochanters brownish-black. Longest arista hairs at least as long as width of third antennal segment. Abdomen densely dusted yellowish-grey with distinct shifting dark patches. Second notopleural with numerous hairs about its base. 8-9.5 mm. 5. *urbana* Meigen.
- 15 (12) Prealar shorter than second notopleural, or at least not longer.
- 16 (17) Apical segment of front tarsus conspicuously dilated. Prealar only little shorter than second notopleural. Abdomen rather uniformly grey-dusted without distinct shifting pattern. 7-9 mm. 7. *discimana* Malloch.

- 17 (16) Front tarsus normal. Prealar decidedly shorter than second notopleural. Abdomen with conspicuous shifting dark patches. 6.25-8 mm.
8. *electa* Zetterstedt.
- 18 (1) Legs entirely black, or (*nebulosa*) with at most some tibiae somewhat obscurely reddish.
- 19 (20) Metanotum (below scutellum) glossy black, without dusting except at extreme sides. Prealar at most as long as second notopleural, usually shorter. Abdomen, seen from behind, with conspicuous shifting dark patches. Front tibia without a posterior bristle. 7-8.75 mm.
10. *ancilla* Meigen.
- 20 (19) Metanotum entirely dulled by greyish dust.
- 21 (24) Prealar distinctly longer than second notopleural. Arista, including hairing, quite as wide as third antennal segment. Abdomen usually with at most only indistinct shifting dark patches.
- 22 (23) Front tibia without a posterior bristle. Thorax, seen from behind, with the median pair of presutural dark stripes broader, separated by 2-2½ times their own width. Tibiae entirely black. 7.5-8 mm.
11. *anicula* Zetterstedt.
- 23 (22) Front tibia with a well developed posterior bristle. Thorax, seen from behind, with the median pair of presutural dark stripes much narrower, separated by quite 4 times their own width. 5.25-7 mm.
9. *nebulosa* Stein.
- 24 (21) Prealar distinctly shorter than second notopleural. Arista hardly more than half as wide as third antennal segment. Abdomen with a strongly marked shifting pattern. 6.5-8 mm. 13. *bengtssoni* Ringdahl.

Genus *Helina* Desvoidy, 1830.

The following keys deal with the British species so far as known. From a careful examination of a large number of specimens belonging to the *duplicata-communis* complex, in which the separation of the eyes in the males, and the vestiture and markings of the abdomen, exhibit considerable variation, one is led to suppose either that there are other distinct species involved, or that hybridisation occurs freely between closely related species. Hennig (1958) includes the whole complex under the name of *duplicata* Meigen. Much work remains still to be done before the true facts can be known.

KEY TO SPECIES.

MALES.

- 1 (6) Hypopleuron with a cluster of hairs below spiracle. Prealar bristle shorter than second notopleural. 4 postsutural dorsocentrals. Legs entirely black.
- 2 (5) Scutellum with numerous longish black hairs on lateral margins *below* level of strong bristles, but without *pale* hairs beneath (text-fig. 10j). Eyes densely long-haired. Radio-cubital node (junction of radial and cubital veins) bare on underside.
- 3 (4) Scutellum with short fine *black* hairs all round lower margin and extending on to ventral surface (text-fig. 10j). Wing with crossveins very distinctly infuscated. Darker species. 6-8 mm. (= *lucorum* Fall., 1823 *nec* L., 1758).
Generally distributed. Very common. ii-vi, viii-x. . . 1. laetifica Desvoidy.
- 4 (3) Scutellum with at most only few hairs on lower margin, entirely bare beneath. Crossveins only slightly infuscated. Hind femur with anteroventral bristles on apical half only. 8-9.25 mm.
Only British records known, Inverness.: Nethybridge and Abernethy Forest, 2 ♂, 29.vi.60 (P. Skidmore). 2. annosa Zetterstedt.
- 5 (2) Scutellum without black hairs on lateral margins below level of strong

bristles, but with numerous *pale* hairs beneath towards tip. Eyes at most microscopically pubescent. Radio-cubital node normally with some small setulae on underside. Fifth sternite prominent and densely long-haired. 7-8-25 mm.

Scotland: Morays., East Lothian and I. of Arran. England: Kent to Norfolk to Yorks. to Lancs. to Gloucs. to Hants. Fairly common. vi-viii.

5. *atripes* Meade.

- 6 (1) Hypopleuron entirely bare below spiracle, though a few hairs may be present on upper embossed ridge (beret); if (rarely) with some hairs below spiracle then legs partly reddish-yellow.
- 7 (20) Radio-cubital node (junction of radial and cubital veins) with some small setulae on underside.
- 8 (9) Scutellum with some short erect pale hairs on underside towards tip. Eyes separated by at least the width of third antennal segment. Front tibia with a strong median posterior bristle. 6-7 mm.
Only British records known, Dorset: Studland, 5.viii.30 (C. J. Wainwright), 7.viii.31 and 17.vii.35 (J. E. Collin). Rare... 6. *cilipes* Schnabl.
- 9 (8) Scutellum quite bare on underside.
- 10 (11) Frons at vertex only little less than an eye-width. Scutellum with hairs on lateral margins below level of strong bristles. Prealar shorter than second notopleural. 4.75-6 mm. (= s.g. *Enoplopteryx* Hendel, 1902).
Scotland: Morays., Inverness. and Aberdeens. England: Durham, Yorks., Notts., Worcs., Herefords., Oxon., Hants., Surrey, Devon, Dorset and Kent. Heath, frequent. vi-ix.... 13. *ciliatocosta* Zetterstedt.
- 11 (10) Scutellum without hairs on lateral margins below the strong bristles, or when a few such hairs are present (some *obscurata* and *rotti*) then prealar decidedly longer than second notopleural, and frons quite narrow.
- 12 (17) 3 postsutural dorsocentrals. Sternopleurals 1:2. Hind femur without posteroventral bristles except for 2-3 weak ones at apex. Front tibia without a posterior bristle.
- 13 (14) Hind tibia with numerous long bristles and setulose hairs along whole length of anterodorsal surface, posterodorsally with 4-5 longish fine bristles on basal half. Hind femur with 10-14 long strong anteroventrals on apical half. 6-6.75 mm.
Scotland: Sutherland, Ross., Morays., Inverness. and Perth. England and Wales: Westmorland, Yorks., Anglesey, Caernarvons., Flint., Cheshire, Derbys., Merioneths., Shrops. and Brecs. Frequent but rather local. vi-ix.
8. *fratercula* Zetterstedt.
- 14 (13) Hind tibia with only 2 anterodorsals which are on apical half, without distinct posterodorsals (though a few short *posterior* bristles may be present). Hind femur with only 3-6 strongish anteroventrals on apical half.
- 15 (16) Frontal orbits separated by a frontalia of about twice their width. Wing with crossveins conspicuously infuscated. 5-5-6.5 mm.
Scotland: Shetland, Ross., Inverness., Aberdeens. and I. of Arran. England and Wales: Westmorland, Yorks., Caernarvons., Cheshire, Derbys., Merioneths., Brecs., Wilts., Somerset, Cornwall and Devon. Uncommon. vi-viii.
7. *consimilis* Fallén.
- 16 (15) Frontal orbits touching for some distance. Crossveins almost without infuscation. About 6 mm. (= *suecica* Ringdahl).
Devon (Doone Valley, Ivybridge, Lynton, Ilfracombe, bred from larva found in moss on bank of stream); Hants. (Mark Ash, Denny Wood); Caernarvons. (Betty-y-Coed); Merioneths. (Talybont); Westmorland (Ambleside); Gloucs. (Forest of Dean); Somerset (Leigh Woods). Scarce. v-vi. 9. *vicina* Czerny.
- 17 (12) 4 postsutural dorsocentrals. Sternopleurals 2:2. Hind femur with distinct posteroventrals, at least on basal half. Front tibia with a distinct posterior bristle.
- 18 (19) 4 posterior femora almost entirely reddish-yellow. Hind femur with a complete row of posteroventrals of which 4-5 on basal half are distinctly longer than greatest depth of femur. Middle femur with a complete row of bristles beneath, 6-8 on basal half very long and strong. 6-7 mm.

- Suffolk (Barton Mills); Berks. (Tubney Wood); Surrey (Oxshott). Scarce.*
 vi-vii. 11. *crinita* Collin.
- 19 (18) All femora black except at extreme tip. The posteroventrals on hind femur all much shorter than greatest depth of femur. Middle femur beneath with only 3-5 strongish bristles on basal half, apical half without distinct bristles. 5.75-7.5 mm.
Scotland: Inverness. and Aberdeens. Wales: Anglesey to Glamorgan. England: Kent to Norfolk to Lancs. to Gloucs. to Cornwall to Surrey. Fairly common. vi-viii. 10. *anceps* Zetterstedt.
- 20 (7) Radio-cubital node bare. Scutellum without trace of pale hairs beneath. Fifth sternite not strikingly haired.
- 21 (24) Eyes separated by at least $2\frac{1}{2}$ times the width of third antennal segment. Body entirely black in ground-colour. 3 postsutural dorsocentrals.
- 22 (23) Eyes separated by 4-5 times the width of third antennal segment. Prealar virtually absent. Abdomen with conspicuous paired roundish brown spots. Arista, including hairing, hardly half as wide as third antennal segment. 5.75-7 mm.
Scotland: Sutherland (Brora), Morays. (Culbin Sands) and Inverness. (Aviamore). England and Wales: Lancs., Yorks., Anglesey, Lincs., Merioneths., Norfolk, Glamorgan., Somerset, Hants., Cornwall, Devon and Dorset. Favours sand-dunes, fairly common but local. vi-viii.
- 23 (22) Eyes separated by less than 3 times the width of third antennal segment. Prealar distinct, about two-thirds the length of second notopleural. Abdomen with at most indistinct narrow paired spots. Arista wider than third antennal segment. 6-8 mm.
Scotland: Inverness. and Morays. England and Wales: Cumberland, Yorks., Anglesey, Caernarvons., Cheshire, Norfolk, Herefords., Herts., Glamorgan, Devon., Dorset, Hants. and Surrey. Frequent but local. vi-viii.
- 24 (21) Eyes separated by less than $2\frac{1}{2}$ times the width of third antennal segment, or if more widely separated then scutellum and abdomen largely reddish-yellow in ground-colour. 23. *allotalla* Meigen.
- 25 (44) Hind tibia with 1 or more short but clearly differentiated posterodorsal bristles, one at least at or within basal third (not to be confused with the short posterior bristles which are often present). 4 postsutural dorsocentrals. Sternopleurals 2 : 2.
- 26 (43) Prealar not, or not much, longer than second notopleural, usually decidedly shorter.
- 27 (28) Middle and hind femora almost entirely reddish-yellow. Hind tibia with 2 anterodorsal bristles near middle which are almost half the length of tibia. 8-9.5 mm.
Yorks. (Allerthorpe and Ilkley); Notts. (Mapperley), Suffolk (Barton Mills, Mildenhall and Newmarket), Gloucs. (Bristol), Berks. (Tubney Wood and Cothill), Oxon. (Oxford) and Surrey (Banstead). vi-ix.
- 28 (27) All femora mainly or entirely dark. Any anterodorsals on hind tibia very much less than half the length of tibia. 12. *flagripes* Rondani.
- 29 (34) Middle and hind tibia clear reddish-yellow. Front tibia with 1-2 strong bristles behind. Abdominal sternites 1-4 entirely dulled by greyish dusting.
- 30 (31) Arista, including hairing, almost 3 times as wide as third antennal segment. Prealar not, or hardly distinguishable from rest of thoracic hairs. Anterior intra-alar at same level as supra-alar. Hind femur with 1-2 short posteroventrals about middle. 5-6 mm.
*Llangennydd, 1 ♀, 28. vi. 52. Kenfig, 1 ♀, 20. vii. 52, Oxwich, 3 ♂, 2 ♀, 30. v. 53 and 1 ♂, 1 ♀, 13. vi. 55 (all Glamorgan.) (E. A. Fonseca); Braunton Burrows (N. Devon), 2 ♂, 20. viii. 41 (C. J. Wainwright); Upton Towans (Cornwall), 1 ♂, 25. ix. 28 (A. Thornley). 15. *parcepilosa* Stein.*
- 31 (30) Arista at most not much more than twice as wide as third antennal segment. Prealar quite distinct, even though small. Anterior intra-alar distinctly in front of supra-alar.

- 32 (33) Hind tibia with only 1 well developed posterodorsal bristle, at or somewhat below basal fourth. Prealar usually about as long as second notopleural. Hind femur without distinct posteroventral bristles. Abdominal spots usually small, sometimes absent from tergites 3 and/or 4. 7-8.5 mm. (= *Anthomyia supera* Walk., *teste van Emden in litt.*).
Scotland: Sutherland, Inverness., Morays., Aberdeens. and Midlothian. England and Wales: generally distributed. Common. v-ix.
16. *quadrum* Fabricius.
- 33 (32) Hind tibia with several well developed posterodorsals, and with 3 or more strong anterodorsals. Prealar much shorter than second notopleural. Abdominal spots conspicuous on intermediate tergites. Hind femur with a row of well developed posteroventrals. 6.5-7.5 mm.
*Scotland: Inverness. (Aviemore). England and Wales: Lancs. (Crosby, Brook Vale and Coniston), Cheshire (Bowdon, Pettypool and Broadbottom), Yorks. (Barnby Moor and Allerthorpe), Notts. (Birklands and Bulwell Hall Park), Flints. (Whixall Moss), Herefords. (Monnow Valley), Bucks. (Burnham Beeches), Dorset (Coombe Wood). Frequent but very local, favouring sandy soil. v-x. 17. *calceata* Rondani.*
- 34 (29) Either the 4 posterior tibiae strongly infuscated and front tibia without bristles behind, or one or more of the first 4 sternites largely or entirely shining black.
- 35 (36) Middle and hind tibiae entirely or mainly reddish-yellow. Hind femur, ventrally and posteroventrally, with dense long erect setulose hairs, many of which are about twice as long as depth of femur. Sternites 3-5 largely or entirely shining black. About 7 mm.
*Scotland: Sutherland (Embo Sands), 26. vii. 36 (J. E. Collin); Inverness. (Aviemore), 8. vii. 59 (C. H. Andrewes). 18. *intermedia* Villeneuve.*
- 36 (35) All tibiae strongly infuscated, or entirely black. Hind femur without the above setulose hairs.
- 37 (40) Hind femur with 1 or more of the posteroventral bristles at extreme apex much longer than greatest depth of femur. Sternites glossy black.
- 38 (39) Sternites, especially the fourth, longer than wide. Genital and pregenital tergites grey-dusted and dull like the rest. 6.5-7.5 mm.
*Scotland: Inverness. (Aviemore). England: Norfolk (Caistor), Hunts. (Monk's Wood), Suffolk (Walsham and Barton Mills), Cambs. (Woodditton Wood), Essex (Leigh), Kent (Blackheath), Surrey (Cripplegate). Uncommon. vi-viii. 19. *arctata* Collin.*
- 39 (38) Sternites wider than long. Genital and pre-genital tergites black and shining, very thinly dusted brownish. 7-8 mm. (= *duplaris* Zett. of Stein nec Zett.).
*Scotland: Morays. England and Wales: southwards from a line joining Westmorland to Yorks. Common. iv-viii. 20. *setiventris* Ringdahl.*
- 40 (37) The posteroventral bristles at apex of hind femur not or hardly longer than depth of femur. Sternites not glossy black.
- 41 (42) Angle between inner margins of lobes of fifth sternite much less than 90°. Middle tibia usually without an anterodorsal. Species in general paler, the dark thoracic stripes narrower and the abdominal spots usually smaller and more rounded. 6-7.5 mm.
*Generally distributed. Very common. iv-x. 22. *duplicata* Meigen.*
- 42 (41) Angle between lobes of fifth sternite about 90°. Middle tibia usually with an anterodorsal below middle. Species generally darker, with broader thoracic stripes and abdominal spots usually larger and more quadrata or trapezoidal. 5.5-7.5 mm. (= *duplaris* Zett.).
*Generally distributed. Common. v-x. 21. *communis* Desvoidy.*
- 43 (26) Prealar conspicuously longer than second notopleural. Eyes separated by almost twice the width of third antennal segment, rather sparsely long-haired. Hind femur without posteroventrals except at extreme apex, but with strong anteroventrals along almost whole length. 6.75-9 mm.
*Scotland: Sutherland, Inverness., Morays., Aberdeens. and Perths. England and Wales: Lancs., Cheshire, Flints., Merioneths., Suffolk, Norfolk, Herefords., Glamorgan., Berks., Somerset, Hants., Dorset, Devon and Kent. Frequent. vi-ix. 3. *obscurata* Meigen.*

- 44 (25) Hind tibia without a clearly differentiated posterodorsal on basal third, or if (*quadrimaculella*) a row of short semi-erect bristles are present then thorax with only 3 postsutural dorsocentrals and sternopleurals 1 : 2. (Rather more decumbent posterodorsal, and erect posterior, bristles may sometimes be found about middle and on apical half).
- 45 (48) Thorax with a pair of conspicuously strong presutural acrostichal bristles, which are distinctly more than half the length of first dorsocentral, and at least as close to one another as they are to dorsocentrals. Arista, including hairing, at least as wide as third antennal segment. Second antennal segment reddish-yellow. Abdomen entirely black in ground-colour. Legs almost entirely reddish-yellow. Front tibia with 1-2 posterior bristles.
- 46 (47) Arista only about as wide as third antennal segment. Eyes very sparsely haired. Sternopleurals 1 : 2. 6.5-8.25 mm.
Bred from cow-dung. Generally distributed. Very common. v-x.
 24. *impuncta* Fallén.
- 47 (46) Arista twice as wide as third antennal segment. Eyes densely long-haired. Sternopleurals 2 : 2. 8-9 mm.
Coastal species. Scotland: East Lothian (Aberlady). England: Lancs. (Grange-over-Sands), Norfolk (Winterton and Horsey). Occasionally not infrequent, but apparently very local. vi-ix. . . . 25. *quadrinotata* Meigen.
- 48 (45) No strong presutural acrostichals present, at most 1 or more pairs of stronger hairs among the outer rows, but in this case *either* arista decidedly narrower than third antennal segment, or antennae entirely black, or abdomen largely translucent reddish-yellow, or the stronger acrostichal rows conspicuously more separated from one another than from dorsocentrals.
- 49 (68) 4 postsutural dorsocentrals (*denudata*, which comes in this section, occasionally with only 3, but then arista less than one-third the width of third antennal segment, all tibiae reddish-yellow and crossveins devoid of infuscation).
- 50 (65) Arista, including hairing, decidedly narrower than third antennal segment, usually hardly half as wide. Prosternum (between front coxae) entirely bare. Hind tibia without strikingly long anterodorsal bristles.
- 51 (52) Sternopleurals 2 : 2. Hind femur, ventrally and posteroventrally on basal half, with dense erect setulose hairs mainly about two-thirds as long as depth of femur, and posteroventrally on apical three-fourths with a row of numerous short bristles becoming denser and weaker towards apex. 6.25-9 mm.
Yorks., Cheshire, Derbys., Worcs., Cambs., Suffolk, Gloucs., Oxon., Herts., Wilts., Somerset, Hants., Surrey, Devon, Sussex and Kent. Uncommon. v-viii. 26. *pertusa* Meigen.
- 52 (51) Sternopleurals 1 : 2. Hind femur posteroventrally, apart from any bristles, with at most quite short hairs on basal half.
- 53 (58) *Either* abdomen with distinct *fixed* paired spots on intermediate tergites (these spots do not shift or disappear from any point of view), or eyes separated by at least the width of third antennal segment, or abdomen largely translucent reddish-yellow. Palpi usually reddish- or brownish-yellow on at least basal half. Front tibia without a posterior bristle (often present in *pulchella*).
- 54 (55) Eyes practically bare, separated by more than width of third antennal segment, frontalia equal in width to the rather broad orbits. Arista almost bare. The strong anteroventrals on apical half of hind femur more numerous (about 8 in number) and shorter than depth of femur. Third antennal segment more or less broadly reddish-yellow at base. 5-6.5 mm.
Berks.: Wytham Wood, 1 ♂ reared from nest of Tawny Owl (Strix aluco sylvatica) em. i. 57 (C. Elton); Gloucs.: Bristol, 1 ♀, 3. vii. 60 (D. M. Ackland) and 3 ♀, 3. v. 61, 4. vi. 61, 16. viii. 64 (E. A. Fonseca); Oxon.: Wychwood Forest, 1 ♂, 13. vi. 65 and Somerset: Portishead, 1 ♂, 14. v. 61 (D. M. Ackland). 27. *pulchella* Ringdahl.
- 55 (54) Eyes densely hairy, the narrow orbits touching. The strong anteroventrals

- on apical half of hind femur fewer in number and distinctly longer than depth of femur.
- 56 (57) *Humeri*, scutellum and abdomen largely translucent reddish-yellow. Palpi entirely, third antennal segment basally, reddish-yellow. 5-6 mm.
Westmorland (Witherslack), Lancs. (Grange-over-Sands), Yorks. (Austwick), Pems. (Milford Haven), Glamorgan. (Oxwich), Oxon. (Wychwood Forest), Hunts. (New Forest) and Kent (Seal). Scarce. v-viii.
- 57 (56) Above parts entirely black in ground-colour. Palpi darkened at least at apex. Third antennal segment at most obscurely reddish at extreme base, usually entirely black. 5-6.75 mm.
Widely distributed in England and Wales. Fairly common. v-x.
- 58 (53) Abdominal spots indistinct or absent in dorsal view, but sometimes visible when viewed from the side or from behind, usually shifting. Eyes with the narrow frontal orbits quite or almost touching. Abdomen entirely black in ground-colour.
- 59 (60) Eyes obviously, though rather sparsely, hairy. Arista, including hairing, quite half as wide as third antennal segment. Crossveins distinctly infuscated, postical one rather oblique, wing-membrane quite clear. Front femur mainly or entirely black. 6-7.5 mm.
Yorks. (Armthorpe), Cheshire (Delamere), Suffolk (Worlington and Dunwich), Glamorgan. (Oxwich and Nicholston Wood) and Kent (Deal and Eastling Wood). Uncommon. v-ix. 28. abdominalis Zetterstedt.
- 60 (59) Eyes practically bare. Arista hardly one-third the width of third antennal segment, or if half as wide then wing-membrane uniformly darkened and postical crossvein upright. Crossveins not infuscated.
- 61 (62) Arista quite half as wide as third antennal segment. Wings uniformly somewhat smoky-brown, postical crossvein upright. Front femur largely black. 5.75-6.5 mm.
Scotland: Inverness. (Aviemore and Boat-o-Garten). England: Hunts. (Monks Wood), Middx. (Edgware), Gloucs. (Blaise Woods and Chedworth), Sussex (Burgess Hill), Kent (Chattenden, Thames Marshes and Woolwich Wood). Scarce. vi-viii. 29. lasiophthalma Macquart.
- 62 (61) Arista hardly one-third the width of third antennal segment. Wings conspicuously yellowish at base, otherwise clear.
- 63 (64) Eyes with the frontal orbits narrowly separated throughout. All femora entirely reddish-yellow (except occasionally front one at extreme base). Abdomen without paired dark spots from any angle. 6.5-8.5 mm.
Scotland: Stirlings. northwards. England and Wales: on high ground in Cumberland, Durham, Yorks., Derbys., Lincs., Merioneths. and Montgomerys. Common. v-viii. 30. pubescens Stein.
- 64 (63) Frontal orbits touching. Front femur black on more than basal half, middle and hind femora more or less broadly black at base. Intermediate tergites with shifting paired dark spots when seen from the side or from behind. 5.5-7.5 mm. (= *memnonipes* Zett.).
Scotland: Perth. northwards. England and Wales, on high ground: Cumberland, Yorks., Derbys., Merioneths. and Montgomerys. Common, especially in Scotland. v-vii. 31. concolor Czerny.
- 65 (50) Arista as wide as or wider than third antennal segment.
- 66 (67) Legs almost entirely reddish-yellow. Hind tibia with 1-2 strikingly long anterodorsal bristles which are almost as long as hind metatarsus. Prealar shorter than second notopleural. 8-9.5 mm. (See above).
Scotland: Perth. northwards. England and Wales, on high ground: Cumberland, Yorks., Derbys., Merioneths. and Montgomerys. Common, especially in Scotland. v-vii. 32. pubiseta Zetterstedt.
- 67 (66) Legs entirely black. Hind tibia without especially long anterodorsals. Prealar longer than second notopleural. Prosternum setulose on side-margins. 6.25-8 mm. (= *marmorata* Zett. of Stein nec Zett.).
Bred from larvae found beneath poplar bark at Ainsdale (Lancs). Scotland: Sutherland, Morays., Inverness., Aberdeens., Perth., and Dumfriess. England and Wales: Northumberland, Cumberland, Durham, Westmorland, Lancs., Yorks., Caernarvons., Cheshire, Montgomerys., and Dorset. Frequent. vi-ix. 12. flagripes Rondani.
- 67 (66) Legs entirely black. Hind tibia without especially long anterodorsals. Prealar longer than second notopleural. Prosternum setulose on side-margins. 6.25-8 mm. (= *marmorata* Zett. of Stein nec Zett.).
Bred from larvae found beneath poplar bark at Ainsdale (Lancs). Scotland: Sutherland, Morays., Inverness., Aberdeens., Perth., and Dumfriess. England and Wales: Northumberland, Cumberland, Durham, Westmorland, Lancs., Yorks., Caernarvons., Cheshire, Montgomerys., and Dorset. Frequent. vi-ix. 4. rothi Ringdahl.

- 68 (49) 3 postsutural dorsocentrals.
- 69 (74) Arista, including hairing, as wide as or wider than third antennal segment. Prealar as long as second notopleural, or if much shorter then antennae partly, and palpi entirely, reddish-yellow.
- 70 (73) Eyes distinctly hairy, even though only sparsely short-haired. Sternopleurals 2 : 2. Arista less than twice the width of third antennal segment.
- 71 (72) Scutellum and abdomen largely translucent reddish-yellow. Thorax and scutellum each with a pair of dark brown elongate spots. Eyes sparsely short-haired, separated by more than twice the width of third antennal segment. 5.5-6.75 mm. (= *uliginosa* Fall., 1825 nec L., 1767).
According to Chevallier (1934) the larvae prey on the larvae of household pests such as the Bacon Beetle (*Dermestes lardarius* L.), hence the frequent occurrence of adults on windows. Cumberland, Lancs., Yorks., Cheshire, Notts., Suffolk, Herefords., Gloucs., Herts., Wilts., Middx., Somerset, Hants., Cornwall and Devon. Fairly frequent. v-x. 35. *punctata* Desvoidy.
- 72 (71) Body entirely black in ground-colour. Thorax very thinly dusted with hardly discernible markings. Eyes densely long-haired, separated by about width of third antennal segment. Wings conspicuously infuscated on anterior half. Hind tibia densely long-haired on both posterior and posteroventral surfaces. 5.75-7 mm. (= *dispar* Fall. of Meade nec Fall.).
Scotland: Sutherland., Morays., Inverness. and Argylls. England and Wales: Widely distributed from Cumberland and Durham southwards. Fairly common. iv-viii. 34. *latitarsis* Ringdahl.
- 73 (70) Eyes virtually bare. Sternopleurals 1 : 2. Arista quite twice as wide as third antennal segment. Thorax densely grey-dusted, almost without stripes. Eyes separated by slightly more than width of third antennal segment. 6-7.75 mm.
Scotland: Nairns., Inverness., Argylls., Perth., Fifes., Dumbartons., Stirlings., Midlothian and East Lothian. England and Wales: from Cumberland and Durham southwards. Fairly common. vi-x. 36. *depuncta* Fallén.
- 74 (69) Arista at most half as wide as third antennal segment. Prealar much shorter than second notopleural. Antennae and palpi black.
- 75 (76) Hind tibia, besides 2 strong anterodorsal bristles, with a row of semi-erect short posterodorsals from about basal third almost to apex, on apical two-thirds of anterior and anteroventral surfaces with dense short bristles, and of posteroventral surface with numerous longer setulose hairs. Legs entirely black. 5.75-7.75 mm. (= *quadrinaculata* Fall., 1823, nec Swed., 1787, nec F., 1787).
Scotland: Morays. and Inverness. Widely distributed in England and Wales. Males locally frequent, females rarely recorded. iv-viii. 37. *quadrinaculella* Hennig.
- 76 (75) Hind tibia with only one anterodorsal, without posterodorsals, other surfaces with fewer or without true bristles, sometimes densely fine-haired. Tibiae may be obscurely reddish to clear reddish-yellow.
- 77 (78) Tibiae reddish-yellow. Front tibia without a posterior bristle. Hind tibia, on apical two-thirds, densely fine-haired almost all round. Hind femur without long posteroventral hairs. 5-7 mm. (= *obscuripes* Zett. of Stein nec Zett.).
Only British records known, Scotland: Blairgowrie (Perths.), I. vi. 11 (A. E. J. Carter); England: Barton Mills (Suffolk), 29. iv. 33 (J. E. Collin). 38. *cothurnata* Rondani.
- 78 (77) Tibiae at most obscurely reddish. Front tibia usually with 1-2 short posterior bristles. Hind tibia with a loose row of 5-6 rather strong anteroventrals, not densely fine-haired anywhere. Hind femur, posteroventrally on basal half or more, with very long fine hairs. 5-7 mm.
Scotland: Sutherland., Ross., Inverness. and Dumfries. England and Wales: Lancs., Yorks., Caernarvons., Suffolk, Herefords., Glamorgan., Gloucs., Wilts., Somerset, Hants., Surrey, Cornwall and Dorset. Fairly frequent, more common in the north. v-ix. 39. *maculipennis* Zetterstedt.

FEMALES.

(For synonymy, distribution etc., see key for males)

- 1 (6) Hypopleuron with a cluster of hairs below spiracle. Prealar bristle shorter than second notopleural. 4 postsutural dorsocentrals.
- 2 (5) Scutellum with numerous longish fine black hairs on lateral margins below level of strong bristles, but without *pale* hairs beneath (text-fig. 10j). Legs entirely black. Eyes distinctly hairy.
- 3 (4) Scutellum with numerous fine black hairs on lower margin and beneath (text-fig. 10j). Wings with crossveins distinctly infuscated. 7-8 mm.
1. *laetifica* Desvoidy.
- 4 (3) Lower margin of scutellum almost, and underside entirely, bare. Crossveins not distinctly infuscated. 8-9 mm. 2. *annosa* Zetterstedt.
- 5 (2) Scutellum without hairs on lateral margins below level of strong bristles, but with some short pale hairs beneath towards tip. Apices of femora, and 4 posterior tibiae, usually reddish-yellow. Eyes virtually bare. 6-8 mm. 5. *atripes* Meade.
- 6 (1) Hypopleuron never with hairs below spiracle, though some may be present on upper embossed ridge (beret).
- 7 (20) Radio-cubital node (junction of radial and cubital veins) with some small setulae on underside.
- 8 (9) Scutellum with some short erect pale hairs on underside towards tip. Arista, including hairing, much wider than third antennal segment. Hind tibia without posterodorsals. Front tibia with a strong median posterior bristle. 6-7 mm. 6. *cilipes* Schnabl.
- 9 (8) Scutellum entirely bare on underside.
- 10 (15) Sternopleurals 1 : 2. Arista, including hairing, at most little more than half as wide as third antennal segment. 3 postsutural dorsocentrals.
- 11 (12) Hind tibia with a well developed posterodorsal at basal fourth or fifth, and with 2 or more anteroventrals on apical half to two-thirds. Middle femur with 4-5 strong bristles beneath on basal half. Abdominal tergites 3 and 4 each with a pair of rather ill-defined roundish brown-dusted spots which occupy hardly half the length of tergite. 5-5-7 mm.
8. *fratercula* Zetterstedt.
- 12 (11) Hind tibia without posterodorsals and with only 1-2 anteroventrals. Middle femur with only a single bristle beneath near base.
- 13 (14) Front femur largely blackish. Middle femur with the ventral bristle at about basal fifth. Hind tibia with 2 anteroventrals. Paired spots on tergites 3 and 4 large, well-defined and conspicuously black, those on tergite 3 occupying more than two-thirds the length of tergite. 5-25-5-75 mm. 7. *consimilis* Fallén.
- 14 (13) Front femur darkened about base only. Middle femur with the ventral bristle much nearer to base. Hind tibia usually with only 1 anteroventral. Paired abdominal spots rather faint and ill-defined, dusted greyish-brown, those on tergite 3 occupying little more than one-third the length of tergite. 5-6 mm. 9. *vicina* Czerny.
- 15 (10) Sternopleurals 2 : 2. Arista wider than third antennal segment.
- 16 (17) 3 postsutural dorsocentrals. Lateral margins of scutellum with some black hairs below level of strong bristles. Prealar shorter than second notopleural. Middle and hind femora with basal two-thirds black, apical third reddish-yellow. Basal antennal segments reddish-yellow or partly so. 5-5-7 mm. 13. *ciliatocosta* Zetterstedt.
- 17 (16) 4 postsutural dorsocentrals. Lateral margins of scutellum bare. Middle and hind femora mainly or entirely reddish-yellow. Antennae entirely black, at most second segment partly reddish.
- 18 (19) Front femur mainly reddish-yellow, darkened only towards base. Front tibia, in addition to the strong posterior bristle and 1-3 short anteroventrals, usually with 1-3 short posterodorsals. Anterior intra-alar bristle usually not in front of prealar. 6-7 mm. 11. *crinita* Collin.
- 19 (18) Front femur almost entirely black, pale only apically. Front tibia without posterodorsals. Anterior intra-alar usually well in front of prealar. 5-7-5 mm. 10. *anceps* Zetterstedt.
- 20 (7) Radio-cubital node bare beneath.

- 21 (44) Hind tibia with 1-4 short but clearly differentiated posterodorsal bristles, at least 1 of which lies in basal third, but is not part of a somewhat less open row of 6 or more reaching beyond middle.
- 22 (41) One or more of the intermediate abdominal tergites with well defined fixed paired spots, or if without then abdomen uniformly densely grey-dusted without trace of shifting darker patches. Sternopleurals 2 : 2.
- 23 (24) 3 postsutural dorsocentrals. Prealar absent or hardly distinguishable from other thoracic hairs. Hind tibia with a well spaced, often irregular row of 2-4 strong posterodorsals. Front tibia with 1-2 strong median posterior bristles. Arista, including hairing, less than half as wide as third antennal segment. 6-7.75 mm.....14. *protuberans* Zetterstedt.
- 24 (23) 4 postsutural dorsocentrals (very rarely only 3). Prealar distinct (except usually in *parcepilosa*, in which the arista is more than twice as wide as third antennal segment).
- 25 (28) Hind femur with 1 or more of the posteroventral bristles at apex about as long as greatest depth of femur.
- 26 (27) Postical crossvein distinctly sinuous and rather oblique, almost as long as section of discal vein between crossveins. Thoracic stripes broader and more conspicuous. 6.5-7.75 mm.....19. *arctata* Collin.
- 27 (26) Postical crossvein usually rather straight and upright, much shorter than section of discal vein between crossveins. Thoracic stripes narrower and less conspicuous. 5.25-7 mm.....20. *setiventris* Ringdahl.
- 28 (25) The posteroventrals at apex of hind femur weak and hardly half as long as greatest depth of femur.
- 29 (30) Anterior intra-alar bristle level with, or only very slightly in front of, supra-alar. Arista, including hairing, decidedly more than twice as wide as third antennal segment, but with apical fourth almost bare. Middle and hind femora largely or mainly reddish-yellow. 5-7.5 mm.
15. *parcepilosa* Stein.
- 30 (29) Anterior intra-alar well in front of supra-alar. Arista not more than twice as wide as third antennal segment, usually distinctly less, but with the hairs extending almost to tip.
- 31 (36) Front tibia posteriorly with 1-2 strong bristles (occasionally absent in *quadrum*, in which the prealar is almost or quite as long as second notopleural and all tibiae clear reddish-yellow).
- 32 (33) Prealar generally about as long as second notopleural. Hind tibia with only a single strong posterodorsal, in basal third. Abdominal spots usually small, often absent from fourth tergite. Anterior intra-alar conspicuously nearer to level of second postsutural dorsocentral than to first. 7-9 mm. 16. *quadrum* Fabricius.
- 33 (32) Prealar much shorter than second notopleural. Hind tibia with several posterodorsals of different lengths, though these may all be somewhat short and weak or inconspicuous. Intermediate tergites each with a pair of conspicuous round dark spots.
- 34 (35) Legs almost entirely reddish-yellow. Basal antennal segments reddish-yellow. Posterodorsals on hind tibia weak and often indistinct. 8-9 mm.
12. *flagripes* Rondani.
- 35 (34) Femora almost entirely black. Antennae entirely black. Posterodorsals on hind tibia strong. 6-7.5 mm.....17. *calceata* Rondani.
- 36 (31) Front tibia without posterior bristles. Either prealar very short or tibiae strongly darkened.
- 37 (38) Abdomen densely dusted yellowish-grey without trace of spots. Middle and hind tibiae entirely reddish-yellow. Anterior intra-alar mid-way between first and second postsutural dorsocentrals, or even slightly nearer to first. 6.5-7.5 mm.....18. *intermedia* Villeneuve.
- 38 (37) Abdomen with conspicuous fixed dark paired spots on intermediate tergites. All tibiae usually more or less strongly infuscated, at least partly. Anterior intra-alar conspicuously nearer to second postsutural dorsocentral.
- 39 (40) Abdominal spots more roundish, usually not more than half as long as tergite. Middle tibia without an anterodorsal bristle. 5.25-7.75 mm.
22. *duplicata* Meigen.
- 40 (39) Abdominal spots tending to be more elongate-quadrate, often with an

almost straight hindmargin, usually more than half as long as tergite. Middle tibia normally with an anterodorsal near middle. 5-7.5 mm.

21. *communis* Desvoidy.
- 41 (22) Abdominal tergites less densely dusted, without *fixed* paired spots, but with conspicuous shifting dark patches when seen from certain angles.
- 42 (43) Prealar not much more than two-thirds the length of second notopleural. Arista, including hairing, slightly wider than third antennal segment. Sternopleurals 1 : 2. 3 postsutural dorsocentrals. 6-8 mm.
23. *allotalla* Meigen.
- 43 (42) Prealar longer than second notopleural. Arista about as wide as third antennal segment. Sternopleurals 2 : 2. 4 postsutural dorsocentrals. Hind femur with strong anteroventrals along almost whole length. 6.25-8.5 mm. 3. *obscurata* Meigen.
- 44 (21) Hind tibia without a clearly differentiated posterodorsal on basal third, or if one or more somewhat less erect bristles are present on basal third they form part of a fairly regular row of 6 or more extending on to apical half.
- 45 (48) Thorax with a pair of conspicuously strong presutural acrostichals. Arista, including hairing, about as wide as, or wider than, third antennal segment. Second antennal segment reddish-yellow. Abdomen entirely black in ground-colour. Legs almost entirely reddish-yellow. Front tibia with 1-2 posterior bristles.
- 46 (47) Prealar about as long as, or longer than, second notopleural. Sternopleurals 1 : 2. Palpi reddish-yellow. Arista hardly as wide as third antennal segment. Eyes almost bare. 6.75-8.25 mm. 24. *impuncta* Fallén.
- 47 (46) Prealar much shorter than second notopleural. Sternopleurals 2 : 2. Palpi black. Arista twice as wide as third antennal segment. Eyes rather densely short-haired. 7-9 mm. 25. *quadrinotata* Meigen.
- 48 (45) No strong presutural acrostichals present, at most 1 or more pairs of rather stronger hairs among the outer rows, but then *either* arista hardly half as wide as third antennal segment, or antennae entirely black, or abdomen largely translucent reddish-yellow.
- 49 (70) 4 postsutural dorsocentrals.
- 50 (55) Sternopleurals 2 : 2.
- 51 (54) Prealar bristle distinctly (usually much) shorter than second notopleural. Legs mainly reddish-yellow. Prosternum (between front coxae) entirely bare.
- 52 (53) Arista, including hairing, hardly one-third the width of third antennal segment. Front femur almost entirely dark. Hind tibia with only 1 anterodorsal bristle. 5.75-8 mm. 26. *pertusa* Meigen.
- 53 (52) Arista wider than third antennal segment. Front femur mainly or entirely reddish-yellow. Hind tibia with numerous anterodorsals. 7.75-8.5 mm.
12. *flagripes* Rondani.
- 54 (51) Prealar about as long as second notopleural. Legs entirely black. Prosternum more or less hairy on side-margins. Hind femur with strong anteroventrals on apical half only. 7-8 mm. 4. *rothi* Ringdahl.
- 55 (50) Sternopleurals 1 : 2. Arista at most little more than half as wide as third antennal segment. Legs mainly reddish-yellow.
- 56 (57) Arista almost bare, longest hairs shorter than its basal diameter. Basal antennal segments entirely, and base of third segment broadly, reddish-yellow. Scutellum entirely black in ground-colour. Abdomen entirely black in ground-colour, without or with only faint paired dark spots on intermediate tergites. Palpi reddish-yellow, more or less broadly blackish at tip. Front femur largely or mainly darkened. Front tibia usually with 1-2 posterior bristles. 5-6.5 mm. 27. *pulchella* Ringdahl.
- 57 (56) Longest hairs of arista decidedly longer than its basal diameter. At least third antennal segment entirely black, or if broadly reddish-yellow then either abdomen and scutellum largely translucent reddish-yellow, or at least scutellum reddish-yellow at tip.
- 58 (61) 1 or more of the intermediate abdominal tergites with distinct (even though faint) fixed paired spots. Front tibia without a posterior bristle. Palpi at least partly pale, reddish- or brownish-yellow on at least basal half.

- 59 (60) Humeri, scutellum and abdomen largely translucent reddish-yellow. Palpi entirely, and base of third antennal segment broadly, reddish-yellow. 5-6 mm. 28. *abdominalis* Zetterstedt.
- 60 (59) Above parts entirely black in ground-colour. Third antennal segment at most obscurely reddish at extreme base. Palpi darkened at tip. 5.25-7.5 mm. 29. *lasiophthalma* Macquart.
- 61 (58) Abdomen without distinct paired spots. Front tibia with 1-2 posterior bristles.
- 62 (63) Eyes conspicuously, though not densely, short-haired. Scutellum distinctly reddish-yellow at tip. Arista, including hairing, quite half as wide as third antennal segment. Crossveins distinctly infuscated, the postical one rather sloping. 5.75-7 mm. 30. *pubescens* Stein.
- 63 (62) Eyes virtually bare.
- 64 (67) Arista, including hairing, half or more the width of third antennal segment. Lower squama uniformly faintly yellowish.
- 65 (66) Palpi entirely reddish-yellow, or at most faintly brownish at extreme tip. Scutellum more or less broadly translucent reddish-yellow at tip. Legs, apart from tarsi, entirely reddish-yellow. 6.75-8.25 mm. 24. *impuncta* Fallén.
- 66 (65) Palpi entirely black, or at most brownish towards base. Scutellum entirely black in ground-colour. Front femur black on basal half or more. 6-7 mm. 31. *concolor* Czerny.
- 67 (64) Arista hardly one-third the width of third antennal segment. Lower squama rather broadly brownish-yellow around margin, contrasting with the paler disc.
- 68 (69) All femora entirely reddish-yellow. Thorax, seen from behind, more uniformly dusted, the median pair of darker stripes dull and rather indistinct. Frons, seen from above and illuminated from in front, with the paler frontal triangle extending only half-way to lunule. 6.5-7.5 mm. 32. *pubiseta* Zetterstedt.
- 69 (68) Front femur more or less broadly blackish at base. Dark thoracic stripes, seen from behind, more thinly dusted, conspicuously darker and more shining. Frons, seen as above, with the paler frontal triangle extending much more than half way to lunule. 6-7.25 mm. 33. *denudata* Zetterstedt.
- 70 (40) 3 postsutural dorsocentrals.
- 71 (76) Arista, including hairing, at least as wide as third antennal segment. Prealar about as long as second notopleural, or if much shorter than palpi entirely reddish-yellow.
- 72 (75) Sternopleurals 2 : 2. Arista less than twice as wide as third antennal segment.
- 73 (74) Scutellum and abdomen largely translucent reddish-yellow. Thorax and scutellum, seen from behind, each with a pair of dark brown elongate spots. Front tarsus normal. 5-7 mm. 35. *punctata* Desvoidy.
- 74 (73) Scutellum and abdomen entirely black in ground-colour. Thorax and scutellum, seen from behind, black, dusted slate-grey, former with 4 distinct dark brownish stripes which fade out before reaching hindmargin. Front tarsus with intermediate segments distinctly broadened (text-fig. 10c). 5.25-7 mm. 34. *latitarsis* Ringdahl.
- 75 (72) Sternopleurals 1 : 2. Arista quite twice as wide as third antennal segment. Prealar distinctly longer than second notopleural. Front tibia with a strong posterior bristle. 6-8.5 mm. 36. *depuncta* Fallén.
- 76 (71) Arista not more than about half as wide as third antennal segment. Prealar much shorter than second notopleural. Palpi entirely black.
- 77 (78) Anterior intra-alar bristle distinctly in front of prealar. Hind tibia usually with more or less numerous short semi-erect postarodorsal bristles between basal third and apex. Legs entirely black. Front tibia with a strong posterior bristle. 5.5-7 mm. 37. *quadrinaculella* Hennig.
- 78 (77) Anterior intra-alar well behind level of prealar. Hind tibia posterodorsally without bristles, with only decumbent hairs. Middle and hind tibiae brownish to reddish-yellow.
- 79 (80) Four posterior tibiae clear reddish-yellow. Front tibia without posterior

- bristles. 5-7 mm. 38. *cothurnata* Rondani.
 80 (79) Posterior tibiae usually more brownish. Front tibia with 1-2 strong
 posterior bristles. 5-7 mm. 39. *maculipennis* Zetterstedt.

Genus *Hebecnema* Schnabl, 1889.

KEY TO SPECIES.

- 1 (4) Legs largely reddish-yellow, or at least knees and extreme apices of femora
 conspicuously pale. Halteres yellow. ♂: lower squama and its fringe
 distinctly brownish-yellow.
- 2 (3) All tibiae and middle and hind femora reddish-yellow. Abdomen tending
 to be somewhat translucent brownish and shining. Eyes practically
 bare. 5-6.75 mm.
Generally distributed. Frequent. ii-x. 3. nigricolor Fallén.
- 3 (2) All femora mainly black, the extreme apex conspicuously pale in contrast
 to rest. Middle and hind tibiae usually obscurely translucent reddish.
 Facial orbits in profile mainly (♂), or on lower part (♀), invisible. ♂:
 eyes densely hairy; abdomen, seen from behind, rather densely dusted
 brownish-grey with a hardly discernible median darker area. ♀: eyes
 microscopically but distinctly pubescent; frontal triangle, seen from
 slightly behind, not extending more than halfway from front ocellus to
 lunule. 5.5-6.25 mm.
*Worcs., Middx., Gloucs., Berks., Oxon., Somerset, Hants., Devon and
 Surrey. Uncommon. iii-x. 2. fumosa* Meigen.
- 4 (1) Legs entirely black or brownish-black, at most the knees occasionally
 obscurely reddish. Facial orbits, in profile, quite distinct throughout
 their length. ♂: lower squama whitish with pale yellow fringe.
- 5 (6) Eyes densely long- (♂) or short- (♀) haired. Abdomen, seen from behind,
 with (♂) rather dense grey dusting and a sharply defined narrow median
 dark line, or (♀) with thin dusting and a broader, less sharply defined
 dark median area and faint shifting dark spots. ♀: thorax, seen from
 in front, with 4 faint but more or less distinct darker stripes; frontal
 triangle, seen from slightly behind, usually extending almost to lunule.
 3.5-6 mm.
Generally distributed. Very common. iv-x. 1. umbratica Meigen.
- 6 (5) Eyes practically bare. Thorax and abdomen more uniformly dull brownish-
 black, without distinct markings.
- 7 (8) Halteres with brownish-black to black knob and paler stem. Hind tibia
 with only 1 anteroventral bristle. 4-5.25 mm.
*Scotland: Morays., Inverness. and Aberdeens. England and Wales:
 Norfolk, Herefords., Glamorgan., Gloucs., Berks., Oxon., Herts., Somerset,
 Hants., Devon and Kent. Fairly common. iv-ix. 4. vespertina* Fallén.
- 8 (7) Halteres entirely yellow. Hind tibia with 2 anteroventrals. 4-5.5 mm.
Generally distributed. Common. v-x. 5. affinis Malloch.

Genus *Graphomya* Desvoidy, 1830.

KEY TO SPECIES.

MALES.

- 1 (2) Middle tibia with a short but strong anterodorsal bristle below middle.
 Facial orbits, viewed from in front and above, glistening silvery-white.
 Abdomen longer than broad, the orange-yellow colour not occupying
 more than lateral thirds of third tergite, extending on to hindmargin of
 second and foremargin of fourth, these pale areas often greatly reduced
 or even absent. 7.5-9 mm.
*Scotland: Inverness. (Aviemore). England and Wales: Yorks. (Barnby
 Dun), Cheshire (Pettypool and Arden Hall), Notts. (Clumber Park), Merio-
 neths. (Dolgellau), Norfolk (Horsey, Horning and Ringmere), Suffolk (Red-
 grave Fen), Herefords. (Shobden Marsh), Glamorgan. (Oxwich), Somerset
 (Sharpham), Hants. (Linwood and Lyndhurst), Cornwall (Marazion Marsh)
 and Kent (Lee). Scarce. v-viii. 1. picta* Zetterstedt.

- 2 (1) Middle tibia without an anterodorsal. Facial orbits, seen as above, more brownish-grey. Abdomen as broad as, or broader than, long, tergites 2-4 almost entirely translucent orange-yellow. 7.25-9 mm.
Scotland: Caithness, Ross., Nairns., Inverness., Argylls. and Midlothian. England and Wales: Widely distributed from Northumberland to south coast. Common. v-ix. 2. maculata Scopoli.

FEMALES.

(For distribution etc., see key for males)

- 1 (2) Middle tibia with an anterodorsal bristle below middle. Thorax, seen from behind, with the presutural median pale-dusted stripe much less conspicuous than the other pale-dusted stripes, and distinctly narrower than the adjacent black stripes. 7-9 mm. 1. *picta* Zetterstedt.
 2 (1) Middle tibia without an anterodorsal. The median pale-dusted stripe on thorax, seen from behind, as conspicuous as the others and quite, or very nearly as broad as the adjacent black stripes. 7-9 mm. 2. *maculata* Scopoli.

Genus *Limnophora* Desvoidy, 1830.

KEY TO SPECIES.

MALES.

- 1 (8) Frons broad, at vertex two-fifths to almost half head-width, or $3\frac{1}{2}$ to 4 times as wide as third antennal segment. Arista, including hairing, never half as wide as third antennal segment.
 2 (5) Frons, in profile, flat and almost horizontal, making about a right-angle with the face, shorter than distance from base of antennae to vibrissal angles (text-fig. 10M). (s.g. *Calliophrys* Kowarz, 1893).
 3 (4) Frons conspicuously wider at base of antennae than at vertex. Frontal triangle, seen from in front, glistening silvery-white. Vibrissal angles darkened from some points of view. 4-5.5 mm.
Scotland: Sutherland., Ross., Inverness., and Perth. *England: Durham, Westmorland, Lancs., Yorks., Cheshire, Notts., Suffolk, Gloucs., Wilts., Somerset, Hants., Surrey and Devon. Fairly common but local. iv-x. 1. riparia* Fallén.
 4 (3) Frons practically parallel-sided. Frontal triangle, seen from in front, with a brownish-grey sheen. Vibrissal angles silvery-white like face from all points of view. 4-5 mm.
Scotland: Ross. and Dumfries. England and Wales: Cumberland, Westmorland, Lancs., Yorks., Cheshire, Derbys., Suffolk, Pembs., Brecc. and Devon. On boulders in fast-running streams. Less frequent and more local than riparia. v-ix. 2. exuta Kowarz.
 5 (2) Frons more convex in profile, distinctly sloping and making an angle with face of much more than 90° (text-fig. 10N). Jowls, vertically below eye, not more than $1\frac{1}{2}$ times as deep as width of third antennal segment. (s.g. *Pseudolimnophora* Strobl, 1893).
 6 (7) 3 postsutural dorsocentrals. Middle tibia with only 1 posterodorsal bristle. Frons, seen from in front, with a distinct brownish or brownish-grey sheen. 2.75-3.75 mm.
Scotland: Ross., Inverness., Angus, Perth. and I. of Arran. England and Wales: Kent to Suffolk to Herefords. to Glamorgan. to Dorset. Very common. v-x. 3. triangula Fallén.
 7 (6) 4 postsutural dorsocentrals. Middle tibia with 2 posterodorsals. Frons, seen from in front, with a silvery-grey sheen. 3-3.75 mm.
Scotland: Ross., Morays., Inverness., Perth. and I. of Arran. Wales: Glamorgan. (Oxwich). Frequent in Scotland, less so in Wales. vi-vii. 4. nigripes Desvoidy.
 8 (1) Frons much narrower, not more than about one-fifth head-width, or about twice as wide as third antennal segment. (s.g. *Limnophora s.str.*).
 9 (10) Thorax with 2 broad black stripes before suture, and a broad black transverse band immediately behind suture. Arista, including hairing, about as

wide as third antennal segment. 5-5.75 mm. (= *notata* Fall., 1823 *nec* F., 1781 *nec* Estl., 1796).

Lancs., Cheshire, Norfolk, Cambs., Glamorgan, Gloucs., Herts., Essex, Somerset, Hants., Surrey, Dorset and Kent. Locally frequent. v-x.

5. *tigrina* Am Stein.

- 10 (9) Thorax with 3 dark stripes which often become confluent behind suture. Arista less than half as wide as third antennal segment.

- 11 (14) Scutellum grey-dusted at least on disc, with larger or smaller lateral dark patches at base.

- 12 (13) Arista, including hairing, about one-third the width of third antennal segment. Hind femur posteroventrally with only short setulose hairs on basal half. First abdominal sternite entirely bare. Usually 3 postsutural dorsocentrals, though occasionally with 4. 5-6 mm.

Bred from pupae found in partially submerged moss in a woodland stream. Scotland: Sutherland, Ross., Inverness and Aberdeens. England and Wales: From Westmorland and Yorks. southwards. Fairly common. v-ix.

6. *maculosa* Meigen.

- 13 (12) Arista hardly one-fourth the width of third antennal segment. Hind femur posteroventrally with a rather loose row of 4-5 fine bristles on basal half, 1 or more almost as long as greatest depth of femur. First sternite with 1 or more pairs of rather widely spaced longish hindmarginal setulose hairs (text-fig. 10x). 4 postsutural dorsocentrals. 4-5 mm.

Scotland: Inverness and Perth. England and Wales: Lancs., Yorks., Anglesey, Herefords. and Glamorgan. Uncommon and local. v-vii.

7. *scrupulosa* Zetterstedt.

- 14 (11) Scutellum uniformly brownish-black. 4 postsutural dorsocentrals.

- 15 (16) Thorax, seen from behind, with the postsutural dark patch extending rearward in the form of 3 distinct dark stripes. First abdominal sternite with a pair of rather widely-spaced longish hindmarginal setulose hairs and usually some other short fine hairs (text-fig. 10L). 4-5 mm. (= *exsurda* auctt. *nec* Pand.).

Scotland: Sutherland, Ross., Inverness and Perth. England and Wales: Cumberland, Lancs., Yorks., Caernarvons., Cheshire, Montgomerys., Shrops., Pems., Herefords., Cornwall, Devon and Dorset. Locally frequent. vi-viii.

8. *olympiae* Lyneborg.

- 16 (15) Postsutural half of thorax uniformly brownish-black with traces of slightly paler dusting in front of scutellum, but without discernible stripes. First sternite entirely bare. 5-6 mm.

Scotland: Nairns. (Lochindorb), Inverness. (Loch Garten, Glenmore and Aviemore) and Perth. (Dalnaspidal). England and Wales: Westmorland (Moor House Nature Reserve) and Merioneth. (Cuder Ffronwen). Often numerous in Cairngorms area of Inverness., otherwise uncommon. v-vii.

9. *uniseta* Stein.

FEMALES.

(For synonymy, distribution etc., see key for males).

- 1 (4) Frons, in profile, flat and almost horizontal, making an angle of about 90° with face (text-fig. 10M). Antennae inserted almost at level of upper eye-margin.

- 2 (3) Frons distinctly wider at base of antennae than at vertex. Frontal triangle, seen from in front, glistening white. Vibrissal angles with dark reflections from some points of view. 5.25-6.5 mm. 1. *riparia* Fallén.

- 3 (2) Frons of practically uniform width throughout. Frontal triangle rather large, with a brownish-grey sheen. Vibrissal angles silvery-white, without blackish reflections from any point of view. 5-6 mm. . . . 2. *exuta* Kowarz.

- 4 (1) Frons, in profile, conspicuously convex and sloping, angle made with face much more than 90° (text-fig. 10N). Antennae inserted well below level of upper eye-margin.

- 5 (6) Thorax with only 2 broad black stripes. Arista, including hairing, almost as wide as third antennal segment. 4.5-6 mm. . . . 5. *tigrina* Am Stein.

- 6 (5) Thorax with 3 or more dark stripes. Arista less than half as wide as third antennal segment.

- 7 (10) Jowl below eye not more than $1\frac{1}{2}$ times as deep as width of third antennal segment. Longest hairs of arista not or hardly as long as its basal diameter.
- 8 (9) 3 postsutural dorsocentrals. Middle tibia with only 1 posterodorsal. Frons, seen from behind, with the grey dusting about ocellar triangle confluent with the grey frontal orbits at vertex. Discal vein very slightly but distinctly curved forwards at apex. 3-4.75 mm. 3. *triangula* Fallén.
- 9 (8) 4 postsutural dorsocentrals. Middle tibia with 2 posterodorsals. Frons, seen from behind, with the grey dusting at vertex separated from each orbit by a narrow black stripe. Discal vein practically straight in apical section. 3.75-5 mm. 4. *nigripes* Desvoidy.
- 10 (7) Jowl below eye more than twice as wide as third antennal segment, or if less than twice as wide then longest hairs of arista about twice as long as its basal diameter.
- 11 (14) Disc of scutellum, seen from in front, grey-dusted with a conspicuous broad dark spot at each basal corner, extending broadly downward on lateral face to lower margin, and rearward about half-way to apex, occasionally covering greater part of disc. Middle femur beneath either with short (hardly half depth of femur) hairs on basal half, or with one bristle at extreme base which is somewhat shorter than depth of femur, and sometimes with an even shorter one at basal fourth or fifth.
- 12 (13) Abdomen, seen from behind, dusted cinereous-grey with somewhat rectangular spots, those on fourth tergite not reaching side-margins and separated on hindmargin by about their own width. Arista with the longest hairs about twice as long as its basal diameter. Frons, seen from directly in front, with the frontal triangle brownish-grey against the more blackish-grey frontalia. First sternite entirely bare. 5-7 mm.
- 13 (12) Abdomen, seen from behind, dusted somewhat bluish-grey with rather broad spots, those on fourth tergite extending quite or almost to side-margins and separated by less than one-fourth their own width. Arista with longest hairs hardly as long as its basal diameter. Frontalia, seen from directly in front, uniformly dusted light brownish-grey, frontal triangle not differentiated. First sternite with a pair of wide-spaced longish setulose hairs on hindmargin and with numerous short hairs on sides (text-fig. 10L). 4.75-6 mm. 6. *maculosa* Meigen.
- 14 (11) Disc of scutellum, seen from in front, with at most a somewhat inconspicuous darkening at extreme basal corners, which may narrowly extend downward to lower margin, and rearward to first strong bristle. Middle femur, beneath on basal half, with a regular row of 4-5 bristles which are about as long as depth of femur.
- 15 (16) Hind femur with a row of anteroventral bristles occupying somewhat more than apical half, none longer than greatest depth of femur. Abdomen, seen from behind, dusted pale ash-grey with small, rather roundish, sharply-defined spots, those on fourth tergite separated on hindmargin by at least their own width. First abdominal sternite with a pair of wide-spaced longish setulose hairs on hindmargin and with 1-2 short hairs about each hind corner. 4.5-6.5 mm. 8. *olympiae* Lynéborg.
- 16 (15) Bristles of anteroventral row on hind femur occupying distinctly less than apical half, 1 or more longer than depth of femur. Abdomen, seen from behind, dusted yellowish- to brownish-grey with ill-defined and somewhat indistinct paired darker patches, those on fourth tergite separated on hindmargin by obviously less than their own width. First sternite entirely bare. 5.75-6.5 mm. 7. *scrupulosa* Zetterstedt.
- 16 (15) Bristles of anteroventral row on hind femur occupying distinctly less than apical half, 1 or more longer than depth of femur. Abdomen, seen from behind, dusted yellowish- to brownish-grey with ill-defined and somewhat indistinct paired darker patches, those on fourth tergite separated on hindmargin by obviously less than their own width. First sternite entirely bare. 5.75-6.5 mm. 9. *uniseta* Stein.

Genus *Neolimnophora* Schnabl, 1902.

KEY TO SPECIES.

MALES.

- 1 (2) Presutural acrostichals of practically uniform length, in 3-4 rows. Abdomen, seen from behind, with distinct, even though somewhat faint, paired

darker spots. Seen from above and illuminated from in front, frontal triangle tapering towards front of frons, leaving a narrow black wedge of frontalia on each side. 6-6.5 mm. (= *candicans* Villen.).

Only localities at present known: Norfolk (Blakeney Point) and Devon (Dawlish Warren). Reported to have been taken at light. Scarce. vi-viii.

1. *maritima* von Röder.

- 2 (1) Presutural acrostichals in 2-3 rows, 1 or more pairs distinctly stronger than the rest. Abdominal spots almost indistinguishable. Seen as above, frontal triangle broad, occupying practically whole of space between frontal orbits, leaving barely discernible frontalia. 4.5-5.5 mm.

Scotland: Sutherland (Loch Assynt). England: Norfolk (Blakeney Point), Essex (Walton-on-Naze) and Dorset (Arne and Studland). Scarce. vi-vii.

2. *virgo* Villeneuve.

FEMALES.

(For synonymy, distribution etc., see key for males).

- 1 (2) Presutural acrostichals quadri-serial. Seen from above and illuminated from in front, frontal triangle tapering to a point at front of frons, leaving 2 rather narrow black wedges of frontalia (text-fig. 7π). Body dusted pale grey with a yellowish tinge. 6-6.5 mm. . . . 1. *maritima* von Röder.

- 2 (1) Presutural acrostichals bi-serial, sometimes with an isolated small bristle or two between the rows. Seen as above, frontal triangle extending broadly to front margin of frons so that frontalia appears as 2 linear dark streaks. A silvery-grey dusted species. 4.5-5.5 mm.

2. *virgo* Villeneuve.

Genus *Spilogona* Schnabl, 1911.

KEY TO SPECIES.

MALES.

- 1 (2) Vibrissal angles well above mouthedge and separated by hardly the width of third antennal segment (text-fig. 11A). Frons almost one-third head-width. (s.g. *Villeneuveia* Schnabl, 1912). 6-7 mm.

Scotland: Sutherland, Ross., Morays., Argylls. and I. of Skye. England and Wales: Anglesey, Lincs., Norfolk, Glamorgan., Hants., Cornwall, Devon and Sussex. Channel Is. (Jersey). Sea-coast species favouring wet sand. Frequent but very local. vi-viii. 1. *aestuum* Villeneuve.

- 2 (1) Vibrissal angles at same level as mouthedge and much more widely separated. Frons not more than one-fourth head-width, usually much narrower. (s.g. *Spilogona s.str.*).

- 3 (6) Arista, including hairing, almost or quite as wide as third antennal segment, at least obviously more than half as wide. Middle tibia with an antero-dorsal on apical half.

- 4 (5) Frons at narrowest part quite 3 times as wide as third antennal segment. Hindmargin of mesopleuron without a supplementary bristle (text-fig. 11B). Thorax, seen from behind, more or less grey-dusted with a distinct median dark stripe, visible at least in front of suture. Hind femur without posteroventral bristles. Wings almost clear. 5-6 mm.

Scotland: Sutherland, Ross., Inverness. and Perth. England and Wales: Cumberland, Westmorland, Yorks., Caernarvons., Cheshire, Derbys., Notts., Merioneths., Montgomerys. and Kent (Thames Marshes). Frequent, especially in the Scottish highlands. v-vi. 2. *litorea* Fallén.

- 5 (4) Frons at narrowest part less than twice as wide as third antennal segment. Hindmargin of mesopleuron with 1 supplementary bristle (text-fig. 11C→). Thorax black, practically without dusting and therefore without a distinct median stripe. Hind femur with long posteroventrals on basal half. Wings strongly blackened. 5-5.75 mm.

Scotland: Sutherland, Inverness. and Perth. England and Wales: Widely distributed from Cumberland and Durham to south coast. Fairly common. v-viii. 4. *denigrata* Meigen.

- 6 (3) Arista not more than half as wide as third antennal segment, generally much narrower.

- 7 (8) Middle femur with a well developed anterior preapical bristle. Front tibia with a strong median posterior bristle. Middle tibia with an anterodorsal. Abdomen uniformly as deep as wide throughout its length. 4.5-5.75 mm.
Scotland: Sutherland, Ross., Inverness., Morays., Aberdeens. and Perth.
England and Wales: Westmorland, Lancs., Yorks., Cheshire, Derbys., Merioneths., Shrops., Gloucs. (Blaise Woods) and Devon (Ottery St. Mary).
Abundant in Scotland, scarce in the south. v-vii.
5. *contractifrons* Zetterstedt.
- 8 (7) Middle femur without trace of an anterior preapical.
- 9 (10) Middle tibia with a distinct posteroventral bristle at about apical third, sometimes with a shorter ventral bristle slightly above. Hind femur without distinct posteroventral bristles on basal half. Front tibia with 1-2 median posterior bristles. 5.25-7 mm. (= *armipes* Stein).
Scotland: Ross., Morays., Inverness. and Aberdeens. England and Wales: Cumberland, Westmorland, Lancs., Yorks., Caernarvons, Merioneths. and Devon (Doone Valley). Frequent in Scottish highlands, scarce in south of England. vi-vii......9. *brunneisquama* Zetterstedt.
- 10 (9) Middle tibia without bristles beneath.
- 11 (14) Halteres blackish. Hindmargin of mesopleuron without a supplementary bristle (text-fig. 11b). Mouthedge distinctly produced, more prominent than frons.
- 12 (13) Eyes separated by more than 2½ times the width of third antennal segment. Middle tibia with an anterodorsal. A conspicuously bluish-grey dusted species. Usually only 3 postsutural dorsocentrals. 3-3.5 mm.
Only British record, 1 ♂, Ben Lavers (Perth.) (3000 feet), 26.vi.57 (C. H. Andrews)......6. *alpica* Zetterstedt.
- 13 (12) Eyes separated by less than the width of third antennal segment. Middle tibia without an anterodorsal. A more blackish species with 4 postsutural dorsocentrals. 4.5-5.5 mm.
Inverness.: Ben Nevis, vi.31 (F. W. Edwards), Cairngorm, 23.vi.64 (C. H. Andrews); Banffs.: Cairngorm, 21.vi.62 (F. Skidmore); Perth.: Beinn a' Chreachain, Meall Ghaordie and Ben Vorlich, vi.32 (F. W. Edwards). 3500-4000 feet on snow patches. Scarce.
19. *triangulifera* Zetterstedt.
- 14 (11) Halteres clear yellow, or if darkened then mesopleuron with a supplementary bristle (text-fig. 11c→). Mouthedge not more prominent than frons, usually less so.
- 15 (22) 3 postsutural dorsocentrals.
- 16 (17) Middle femur with an isolated long strong posteroventral bristle at about basal sixth, with usually a short weaker one at extreme base, otherwise only short-haired beneath. Third tergite, seen from behind, apparently with a single large quadrate dark spot, owing to the stripe separating the normal pair of spots being so dark as to be practically indistinguishable. 5.5-6.5 mm.
Stirlings. (Strathblane), 19.vi.99 (G. W. Ord); Dunbartons. (Bonhill), 17.vi.97 (J. R. Malloch); Dumfries. (Moffatt), 17.vi.93 (E. A. Fonseca).
13. *longipes* Ringdahl.
- 17 (16) Middle femur beneath with numerous long bristles or setulose hairs. Paired spots on third tergite distinctly separated by a more or less pale grey-dusted stripe.
- 18 (19) Third antennal segment with a sharply rectangular anterior tip. Middle tibia with an anterodorsal. Hind tibia with a posterodorsal. Dark species with mainly blackish thorax. 5-6 mm.
Scotland: Nairne., Inverness. and Perth. England and Wales: Lancs., Yorks., Merioneths., Norfolk, Pems., Herts., Somerset, Hants., Cornwall and Sussex. Fairly common. v-vi......3. *surda* Zetterstedt.
- 19 (18) Third antennal segment with a uniformly rounded tip. Middle tibia without an anterodorsal.
- 20 (21) Frons at narrowest part hardly as wide as third antennal segment. Front tibia without a posterior bristle. Hind tibia without posterodorsals. Mainly dark species. 4.25-5 mm. (= *fumipennis* Zett. of Stein *nee* Zett.).
Scotland: Sutherland (Bettyhill), Morays. (Culbin Sands and Finshorn),

- Inverness.* (Aviemore, Kincaig and Loch Laggan) and *Aberdeens.* (Balmoral).
England: Yorks. (Malham Tarn) and Dorset (Studland). Uncommon. vi-vii. 7. *baltica* Ringdahl.
- 21 (20) Frons at narrowest part distinctly wider than third antennal segment. Front tibia with a median posterior bristle. Hind tibia with 1-2 posterodorsals. Pale grey-dusted species. 4.75-5.25 mm.
Sutherland (Lairg), *Nairns.* (Lochindorb), *Inverness.* (Glen Urquhart, Spey Bridge, Glen Feshie and Glenmore), *Argylls.* (Lephanmore), *Perths.* (Rannoch and Comrie) and *Dumfries.* (Moffatt). Scarce. vi-vii. 8. *griseola* Collin.
- 22 (15) 4 postsutural dorsocentrals.
- 23 (34) Middle tibia with one or more anterodorsals. Hind tibia with 1 or more posterodorsals.
- 24 (25) Hind femur with long strong anteroventrals along whole length, somewhat weaker only at base. First abdominal sternite hairy all over disc (text-fig. 10H). Middle tibia with 2-3 anterodorsals. Front tibia with a strong median posterior bristle. Scutellum dark with a greyish patch at tip. 8-8.5 mm.
Perths. (Loch Tay), *East Lothian* (Aberlady) and *Bute* (I. of Arran). Uncommon and local. vi-vii. 10. *compuncta* Wiedemann.
- 25 (24) Hind femur with strong anteroventrals on apical half only. First sternite entirely bare, or at most with an isolated hair or two.
- 26 (27) Eyes densely short-haired. Abdominal spots large, quite or almost confluent so that abdomen, seen from behind, appears almost entirely black. Notopleuron with some scattered hairs about bases of the 2 strong bristles. 5.5-6.5 mm.
Inverness. (Glenmore and Glen Einich) and *Perths.* (Killin, Ben Lawers and Dalnaspidal). Scarce. vi-vii. 15. *depressiuscula* Zetterstedt.
- 27 (26) Eyes practically or entirely bare. Abdominal spots more distinctly separated by grey dusting. Notopleuron without hairs.
- 28 (29) Hind femur with 4-6 rather short (not longer than depth of femur) posteroventral bristles. Mentum almost entirely shining black and undusted. Hindmargin of mesopleuron with 1 supplementary bristle (text-fig. 11c→). Thorax, seen from in front, bluish-grey dusted with 3 distinct

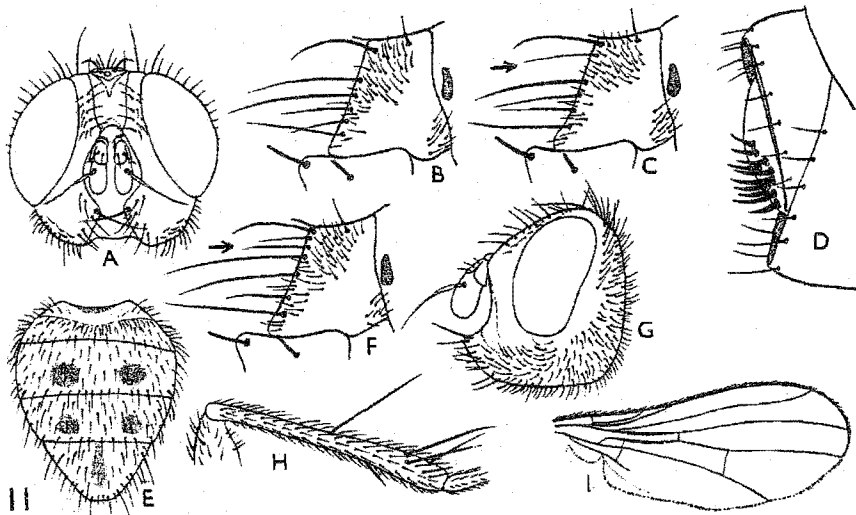


FIG. 11—A, *Spilogona aestuum*; B, *S. litorea* (mesopleuron); C, *S. denigrata* (do.); D, *S. meadei* ♀ (postgenital plate); E, *S. vana* ♀; F, *S. marina* (mesopleuron); G, *S. vana* ♀; H, *Coenosia intermedia* (rt. hind tibia); I, *C. distinguens*.

dark brownish stripes, median one broad. 4.5-5 mm. (= *trianguligera* Zett. of Meade nec Zett. = *curata* Coll.).

Scotland: Sutherland to Perth. England and Wales: Westmorland, Yorks., Caernarvons., Cheshire, Notts., Merioneths., Montgomerys., Brecks., Glamorgan., Havts. and Devon. Very common in the Scottish highlands, becoming less frequent southwards. v-vii.....12. meadel Schnabl.

29 (28) Hind femur, posteroventrally on basal half, with 1 or more bristles or setulose hairs which are distinctly longer than greatest depth of femur. Mentum mainly or entirely dulled by greyish dust. Mesopleuron without a supplementary bristle.

30 (31) Eyes with the narrow frontal orbits touching. Jowl below eye less than twice as deep as width of third antennal segment. 4-4.25 mm. (= *mundula* Coll.).

Ross. (Loch Maree), Inverness. (Loch Garten and Aviemore) and Bute (I. of Arran). Uncommon. v-vi.....14. septernotata Zetterstedt.

31 (30) Eyes separated by more than the width of third antennal segment. Jowl below eye distinctly more than twice as deep as width of third antennal segment.

32 (33) Dark spots on third tergite very large and almost quadrate, separated by a narrow grey-dusted stripe hardly one-eighth their own hindmarginal width, those on fourth tergite broadly trapezoidal and separated by about one-fourth their own greatest width. Third antennal segment uniformly rounded at tip. Posteroventral bristles on basal half of hind femur only a little longer than greatest depth of femur. 5.5-7 mm. (= *insularis* Coll.).

Scotland: Sutherland (Tongue), Nairns. (Nairn), Morays. (Forres), Inverness. (Glenmore) and Perth. (Aberfoyle). England: Staffs. (Manifold Valley). Scarce. vi-vii.....11. trianguligera Zetterstedt.

33 (32) Dark spots on third tergite smaller, separated at middle by more than half their own greatest width, those on fourth tergite rather narrowly triangular and separated by hardly less than their own greatest width. Third antennal segment with a sharply rectangular anterior tip. Posteroventrals on basal half of hind femur finer and mostly conspicuously longer than greatest depth of femur. (See above).....3. surda Zetterstedt.

34 (23) Middle tibia without anterodorsal bristles.

35 (46) Presutural acrostichals all fine and hair-like, in 4-6 irregular rows and with numerous similar hairs between them and dorsocentrals.

36 (37) Eyes separated by hardly more than half the width of third antennal segment, frontal orbits quite or almost touching. Thorax, seen at a low angle from behind, blackish with a conspicuous grey-dusted patch in front of scutellum. Dark spots on third tergite separated on hindmargin by one-third to half their own width. Hind femur, posteroventrally on basal half, with only decumbent hairs. Hindmargin of mesopleuron without a supplementary bristle (text-fig. 11b). 4.5-5 mm. (= *nupta* Zett.).

Scotland: Sutherland, Inverness., Morays. and Perth. England and Wales: Widely distributed from Durham to south coast. Common. v-viii. 16. vana Zetterstedt.

37 (36) Eyes separated by at least only slightly less than width of third antennal segment. Thorax, seen as above, either without a distinct paler pre-scutellar patch, or entirely dusted pale grey.

38 (45) Frons at narrowest part less than twice the width of third antennal segment. Thorax, seen from above and illuminated from in front, mainly greyish-black or brownish-black.

39 (40) Mesopleuron without a supplementary bristle (text-fig. 11b). Middle femur with an isolated long coarse bristle at about basal sixth, with usually a short weaker one at extreme base, otherwise comparatively short-haired on ventral surface. (See above).....13. longipes Ringdahl.

40 (39) Mesopleuron with 1 or more supplementary bristles on hindmargin. Middle femur beneath with numerous long bristles or setulose hairs.

41 (42) Mesopleuron with only 1 supplementary bristle (text-fig. 11c→). Hind femur, posteroventrally on basal half, with 4-6 moderately strong but not

- very long bristles. Thorax, seen from in front, bluish-grey dusted with 3 more or less distinct brown stripes, the median one broad. Notopleuron without hairs about bases of the 2 bristles. Mentum shining black, undusted. (See above). 12. *meadei* Schnabl.
- 42 (41) Mesopleuron with at least 2 supplementary bristles (text-fig. 11F→). Hind femur only short-haired posteroventrally. Thorax, seen from in front, all dark without discernible stripes. Notopleuron with hairs about bases of the 2 bristles. Mentum partly dulled by dust, at least on sides.
- 43 (44) Abdomen, seen from behind, with the spots on third tergite distinctly separated by a grey-dusted stripe. Eyes densely long-haired, separated by more than the width of third antennal segment. Middle femur posteroventrally with rather short setulose hairs. 4.75-5.25 mm.
Widespread round the British coast. Frequent. vi-ix.
- 44 (43) Seen from behind, spots on third tergite almost or quite confluent. Eyes more sparsely short-haired, separated by hardly the width of third antennal segment. Middle femur with a spaced row of posteroventral bristles which are much longer than depth of femur. 4-4.5 mm.
Widespread round the British coast. Frequent. vi-viii.
- 45 (38) Frons at narrowest part quite 3 times the width of third antennal segment. Thorax, seen as above, uniformly densely dusted whitish-grey, almost without markings. Mentum densely dusted all round. 4-5 mm. (= *solitaria* auctt. nec Zett.).
Common throughout the Scottish highlands, becoming progressively less frequent southwards in England and Wales to Herefordshire. vi-vii.
- 46 (35) Presutural acrostichals more bristle-like, in 2 approximated rows with sometimes a third row of weaker bristles between, but with only an odd hair or two between outer rows and dorsocentrals. Arista almost bare.
- 47 (48) Mentum undusted, glossy black. Jowl below eye about 1½ times the width of third antennal segment. Abdomen, seen from behind, with the spots on tergites 3 and 4 widely separated, those on third tergite fairly large and trapezoidal, on fourth rather small and roundish. 3.5-5 mm.
*Scotland: Dumbartons. (Bonhill). England and Wales: Anglesey (Rhos-neigr), Lincs. (Gibraltar Point), Norfolk (Blakeney Point), Suffolk (Shingle Street), Essex (Benfleet), Hants. (Mudford), Dorset (Studland) and Kent (Pegwell Bay). Uncommon. v-ix. 21. *biseriata* Stein.*
- 48 (47) Mentum mainly densely dusted. Jowl about twice the width of third antennal segment. Seen from behind, abdominal spots conspicuously triangular, those on third tergite rather narrowly separated.
- 49 (50) Eyes separated by 3 times the width of third antennal segment, frontal orbits separated by a broad frontalial. Hind tibia with the dorsal preapical quite half as long as hind metatarsus. 4-4 mm.
*Scotland: Sutherland, Nairns. and Morays. England and Wales: Westmorland, Lancs., Cheshire, Suffolk, Glamorgan, Somerset, Dorset and Kent. Locally frequent. v-ix. 22. *veterrima* Zetterstedt.*
- 50 (49) Eyes much more approximated, frontal orbits touching. Dorsal preapical on hind tibia distinctly less than half as long as hind metatarsus. 3-4 mm. (= *signata* Stein).
Only British records known, Westmorland: Milnthorpe, 23. vi. 29 (H. Britten Snr.); Hants: Mudford, 19 and 24. viii. 36 (H. W. Andrews).
23. *scutulata* Schnabl.

FEMALES.

(For synonymy, distribution etc., see key for males)

- 1 (2) Vibrissal angles well above mouthedge and separated by little more than width of third antennal segment (text-fig. 11A). Abdomen, seen from behind, densely grey-dusted, third and fourth tergites each with a pair of small diffuse light brownish patches. 7-7.5 mm.
1. *aestuum* Villeneuve.

- 2 (1) Vibrissal angles level with mouthedge and separated by at least twice the width of third antennal segment.
- 3 (4) Frontal triangle shining black without trace of dusting, sharply defined at side-margins and extending almost to front of frons. Mesopleuron with at least 2 supplementary bristles on hindmargin (text-fig. 11F→). 3.75-5 mm..... 18. *aerea* Fallén.
- 4 (3) Frontal triangle more or less densely dusted brownish or greyish.
- 5 (8) Middle tibia with 1 or more bristles beneath.
- 6 (7) Notopleuron with hairs, at least about base of hinder bristle. Front tibia without a posterior bristle. 5.5-6.5 mm... 15. *depressiuscula* Zetterstedt.
- 7 (6) Notopleuron without hairs. Front tibia with 1-2 strong posterior bristles. 5.75-7 mm..... 9. *brunneisquama* Zetterstedt.
- 8 (5) Middle tibia without bristles beneath.
- 9 (10) Middle femur with a well developed anterior preapical bristle. Arista very short-pubescent. Lower sternopleural practically equidistant from the two upper ones (text-fig. 5J). Mentum glossy black, undusted. 4-5.5 mm..... 5. *contractifrons* Zetterstedt.
- 10 (9) Middle femur without trace of anterior preapical, or if sometimes with a short one (some *denigrata*) then arista, including hairing, about as wide as third antennal segment. Lower sternopleural, when present, conspicuously nearer to hind upper one.
- 11 (14) Halteres brownish-black. Mouthedge distinctly protruding, vibrissal angles more prominent than frons (text-fig. 11c).
- 12 (13) 3 postsutural dorsocentrals. Front tibia without a posterior bristle. Hind tibia with 2-3 posterodorsals. Facial orbits hardly two-thirds the width of third antennal segment. 3-3.5 mm..... 6. *alpica* Zetterstedt.
- 13 (12) 4 postsutural dorsocentrals. Front tibia with a distinct posterior bristle. Hind tibia with only 1 posterodorsal. Facial orbits distinctly broader than third antennal segment. 5-6 mm... 19. *triangulifera* Zetterstedt.
- 14 (11) Halteres clear yellow. Mouthedge usually not protruding, vibrissal angles less prominent than frons.
- 15 (18) Arista, including hairing, distinctly more than half as wide as third antennal segment. 2 pairs of well developed upper fronto-orbitals present.
- 16 (17) Mentum glossy black, without trace of dusting. Disc of thorax mainly black, almost without dusting and without distinct stripes, scutellum unicolorous with thorax. Hind femur, posteroventrally on basal half, with 2-6 long setulose hairs. Hindmargin of mesopleuron with a supplementary bristle (text-fig. 11c→). Usually 4 postsutural dorsocentrals. 5.25-6.75 mm..... 4. *denigrata* Meigen.
- 17 (16) Mentum mainly dulled by dust. Thorax and scutellum distinctly grey-dusted, former with 3 dark stripes, latter with dark basal side patches. Hind femur short-haired posteroventrally. Mesopleuron without a supplementary bristle (text-fig. 11B). 3 postsutural dorsocentrals. 5.25-6.75 mm..... 2. *litorea* Fallén.
- 18 (15) Arista not more than half as wide as third antennal segment, generally only short-pubescent.
- 19 (28) 3 postsutural dorsocentrals.
- 20 (21) Third antennal segment with a more or less sharply rectangular anterior tip. Frontal triangle, seen from directly above and illuminated from in front, not distinguishable from the black frontalia. Only 1 pair of well developed fronto-orbitals. 5.75-6.25 mm..... 3. *surda* Zetterstedt.
- 21 (20) Third antennal segment with more or less uniformly rounded tip. Seen as above, frontal triangle conspicuous.
- 22 (23) Middle femur without distinct bristles beneath, apart from a single long one sometimes present at base. 6.5-7.25 mm.... 13. *longipes* Ringdahl.
- 23 (22) Middle femur with 2 or more erect bristles beneath.
- 24 (25) Postgenital plate with spines (text-fig. 11D). Middle tibia with a strong anterodorsal at about apical third. Hindmargin of mesopleuron usually with a short fine supplementary bristle. Mentum entirely shining black, undusted. 5-6 mm..... 12. *meadei* Schnabl.
- 25 (24) Postgenital plate without spines, only hairy. Middle tibia usually without

- an anterodorsal. Mesopleuron without a supplementary bristle (text-fig. 11b). Mentum largely grey-dusted.
- 26 (27) Hind tibia without posterodorsals. Front tibia without a posterior bristle. Only 1 pair of upper fronto-orbitals present. Dark spots on fourth abdominal tergite wider than the grey-dusted stripe separating them. 3.5-5.25 mm. 7. *baltica* Ringdahl.
- 27 (26) Hind tibia with 1-2 posterodorsals. Front tibia with a posterior bristle. 2 pairs of upper fronto-orbitals. Spots on fourth tergite not wider than the stripe separating them. 5-5.5 mm. 8. *griseola* Collin.
- 28 (18) 4 postsutural dorsocentrals.
- 29 (30) First abdominal sternite hairy all over disc (text-fig. 10π). Hind femur with long strong anteroventrals along whole length. Middle tibia with 2-3 anterodorsals. Mentum entirely shining black, undusted. Abdominal spots brown-dusted and rather small, those on fourth tergite separated by more than their own width. 8-8.5 mm. 10. *compuncta* Wiedemann.
- 30 (29) First sternite bare, at most with an isolated hair or two. Hind femur with strong anteroventrals on apical half only.
- 31 (42) Middle tibia with 1 or more anterodorsals. Hind tibia with a distinct posterodorsal.
- 32 (39) Mentum largely or entirely dulled by dust.
- 33 (34) Facial orbit only half as wide, jowl below eye not $1\frac{1}{2}$ times as wide, as third antennal segment. Front tibia without a posterior bristle. Thorax, seen from behind, almost uniformly dusted whitish-grey, humeri and notopleural area not very conspicuously paler. Postgenital plate without spines. 4-4.5 mm. 14. *septemnotata* Zetterstedt.
- 34 (33) Facial orbit at least as wide, jowl quite twice as wide, as third antennal segment, or if rather narrower than front tibia with a strong posterior bristle. Thorax, seen from behind, appearing mainly blackish or brownish-black, contrasting more or less strongly with the pale dusting on humeri and notopleural area. Postgenital plate with spines (text-fig. 11b).
- 35 (36) Middle femur beneath without distinct bristles, apart from a single long one sometimes present at base. Frons, seen from above and illuminated from in front, with the narrow silvery-grey frontal triangle contrasting strongly with the dark brown or black frontalia. 6.5-7.25 mm. 13. *longipes* Ringdahl.
- 36 (35) Middle femur with several longish erect bristles beneath. Frons, seen as above, with the frontal triangle either visible and brown-dusted, or indistinguishable from the frontalia.
- 37 (38) Third antennal segment with a sharply rectangular anterior tip. Only 1 pair of upper fronto-orbitals. Frons, seen as above, with the frontal triangle indistinguishable from the black frontalia. Middle tibia with only 1 anterodorsal. Front tibia with a posterior bristle. 5.75-6.25 mm. 3. *surda* Zetterstedt.
- 38 (37) Third antennal segment with a uniformly rounded tip. 2 pairs of upper fronto-orbitals. Frons, seen as above, with the narrow brown-dusted frontal triangle sharply defined and contrasting with the dark frontalia. Middle tibia often with 2 anterodorsals. Front tibia usually without a posterior bristle. 5.75-7 mm. 11. *trianguligera* Zetterstedt.
- 39 (32) Mentum shining black and undusted, at least on sides.
- 40 (41) Eyes virtually bare. Notopleuron with at most an isolated hair or two about bases of bristles. Dorsocentral rows lying on 2 dark stripes. Postgenital plate with spines (text-fig. 11d). Hindmargin of mesopleuron usually with a short fine supplementary bristle. 5-6 mm. 12. *meadei* Schnabl.
- 41 (40) Eyes distinctly, even though shortly, hairy. Notopleuron with scattered hairs, at least about base of hinder bristle. Dorsocentrals lying on 2 grey-dusted stripes between dark stripes. Postgenital plate without spines, only hairy. Mesopleuron without a supplementary bristle (text-fig. 11b). 5-5.65 mm. 15. *depressiuscula* Zetterstedt.
- 42 (31) Middle tibia without an anterodorsal.
- 43 (48) Presutural acrostichals all fine and hair-like, in 4-6 irregular rows and with numerous similar hairs between them and dorsocentrals. 2 pairs of upper fronto-orbitals.

- 44 (45) Hindmargin of mesopleuron with 1 or more supplementary bristles (text-fig. 11c, F). Notopleuron with scattered hairs about bases of the 2 bristles. Abdomen, seen from behind, with second tergite appearing uniformly blackish. Frons, seen from above and illuminated from in front, with the frontal triangle at most distinguishable only by its slightly stronger shine. Thorax, seen from slightly behind, entirely dark brownish-grey with only humeri and notopleural area paler-dusted. 4.75-6 mm. 17. *marina* Collin.
- 45 (44) Mesopleuron without supplementary bristles (text-fig. 11B). Notopleuron without hairs. Abdomen, seen from behind, with second tergite not entirely blackish. Frons, seen as above, with frontal triangle quite dull and usually paler than the dark frontalia. Thorax, seen as above, pale-dusted with or without distinct brown stripes or patches.
- 46 (47) A well developed lower hind sternopleural bristle present, much stronger than rest of sternopleural hairs. Abdominal spots small and roundish (text-fig. 11E). Frons, seen from directly above and illuminated from in front, with the pale dusted frontal triangle contrasting strongly with the blackish frontalia and extending almost to front of frons. Hind tibia with a distinct posterodorsal. 4-5.5 mm. 16. *vana* Zetterstedt.
- 47 (46) No lower hind sternopleural distinguishable from rest of sternopleural hairs. Abdominal spots large and trapezoidal. Frons, seen as above, with frontal triangle at most only slightly paler than frontalia and extending less than half-way to front of frons. Hind tibia without a distinct posterodorsal. 4-6 mm. 20. *solitaria* Collin.
- 48 (43) Presutural acrostichals more bristle-like, in 2 approximated rows with sometimes a third row of smaller bristles in between, but with only an isolated hair or two between outer rows and dorsocentrals. Arista almost bare.
- 49 (50) Mentum glossy black, undusted. Jowl below eye hardly $1\frac{1}{2}$ times the width of third antennal segment. Abdomen with conspicuous, rather small dark brown spots on tergites 3 and 4. Postgenital plate without spines, only hairy. 4-5 mm. 21. *biseriata* Stein.
- 50 (49) Mentum mainly or entirely grey-dusted. Jowl quite twice the width of third antennal segment. Abdominal spots somewhat faint, sometimes absent. Postgenital plate with spines (text-fig. 11D).
- 51 (52) Second presutural dorsocentral half-way between first and suture. Facial orbit only slightly narrowing from base of antennae, lower half of practically uniform width. Thorax, seen from in front, with a pair of narrow dark presutural stripes between lines of bristles. 4-5.5 mm. 22. *veterrima* Zetterstedt.
- 52 (51) Second presutural dorsocentral markedly nearer to first than to suture. Facial orbit conspicuously and uniformly narrowing from base of antennae to lower eye-margin. Thorax, seen from in front, without distinct presutural stripes, usually with a broad median light brownish patch. 3-4 mm. 23. *scutulata* Schnabl.

Subfamily COENOSIINAE

Primarily distinguished by the characteristic arrangement of the sternopleural bristles (text-fig. 5K) and by a distinct down-curved lower prostigmal bristle (somewhat weak and upcurved in *Pseudocoenosia solitaria*).

KEY TO GENERA.

- 1 (2) Wings conspicuously and broadly darkened along front margin. Scutellum with only the subapical pair of marginal bristles, basal pair absent. Hind tibia with a well developed posteroventral apical bristle. 3-3.75 mm.
Glamorgan.: *Llangennydd*, 7.vii.57 and *E. Kent: Sandwich Bay*, 23-30.vii.57 (*E. A. Fonseca*); *Devon: Dawlish Warren*, 20-25.vii.60 (*L. H. Woollatt*); *Dorset: Arne*, 6.vi.60 and *Studland*, 29.vi.60 (*C. H. Andrewes*)..... 2. *Orchisia costata* Meigen.
- 2 (1) Wings quite clear, at most, somewhat milky, or if somewhat darkened on

- front margin then scutellum with a well developed basal pair of marginals and hind tibia without a posteroventral apical.
- 3 (10) Hind tibia with 2 strong anterodorsal bristles in addition to the preapical, or if with only 1 (δ of *Pseudocoenosia abnormis*) then frons at narrowest part less than twice as wide as third antennal segment. Postvertical bristles conspicuously shorter and weaker than ocellars.
- 4 (5) Hind tibia with 2 well differentiated posterodorsals, upper one longer than greatest diameter of tibia and lying in basal third. Antennae at least partly, and palpi entirely, reddish-yellow. Frons always longer than wide. 1. *Lispocephala* (p. 67)
- 5 (4) Hind tibia with only 1 well differentiated posterodorsal (near middle) or without. Antennae entirely black in ground-colour, or if partly reddish-yellow (*Schoenomyza litorella*) then frons wider than long. Palpi black.
- 6 (9) Frons longer than wide and not, or only slightly, narrower in front than at vertex. Middle tibia without an anteroventral bristle. 2 presutural dorsocentrals, front one half to seven-eighths the length of hinder one.
- 7 (8) Frons at vertex decidedly more than one-third head-width (text-fig. 12A). Facial orbit uniformly narrowing downwards, especially in female (text-fig. 12A). Hind femur with only 1-2 longish anteroventrals at apex. 2.5-3 mm. (δ), 3-4 mm. (σ).
- Scotland: Sutherland (*The Mound*) and Bute (*I. of Arran*). England and Wales: Norfolk (*Cley*), Suffolk (*Woodbridge and Aldeburgh*), Glamorgan. (*Oxwich and Kenfig Burrows*), Cornwall (*Sheviock*) and Kent (*Lower Halston and Sandwich Bay*). Locally common. vi-ix.
3. *Limnospila albifrons* Zetterstedt.
- 8 (7) Frons at vertex distinctly (often considerably) less than one-third head-width (text-fig. 12B). Facial orbit not conspicuously narrowing downwards, lower half being of almost uniform width, sometimes widening below (text-fig. 12B). Hind femur with strong anteroventrals along almost whole length. 4. *Pseudocoenosia* (p. 69).
- 9 (6) Frons much wider than long, strongly narrowing towards front and with convex side-margins. Middle tibia with a strong anteroventral bristle.

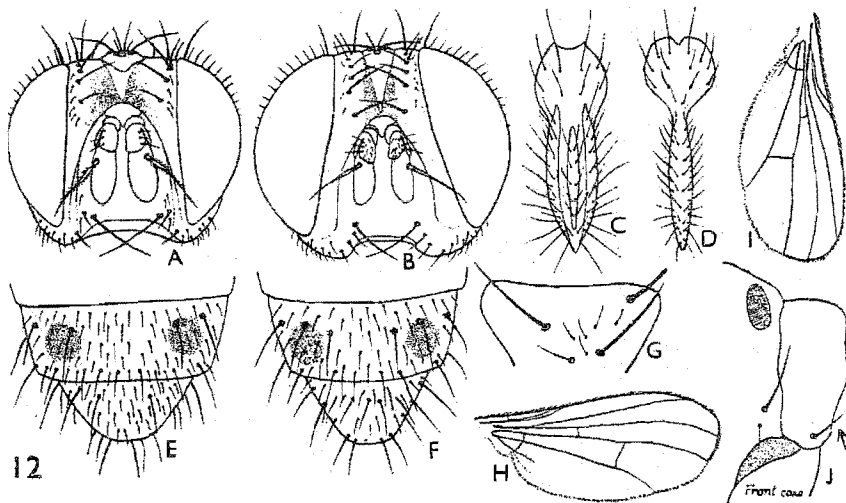


FIG. 12—A, *Limnospila albifrons* ♀; B, *Pseudocoenosia abnormis* ♀; C, *Lispocephala alma* ♂ (genital mesolobe); D, *L. fulviculata* ♂ (do.); E, *L. alma* ♀; F, *L. fulviculata* ♀; G, *Pseudocoenosia abnormis* (sternoepileuron); H, *Coenosia pedella* ♀; I, do. ♂; J, *C. tricolor* (propleuron).

- Only one presutural dorsocentral. Face deep orange (♂), or pale greyish-yellow (♀). 2.5-2.75 mm. (♂), 2.75-3.5 mm. (♀).
- Scotland: Inverness. England and Wales: from Westmorland and Yorks. to south coast. Common. iv-x. . . 11. *Schoenomyza litorella* Fallén.
- 10 (3) Hind tibia with only 1 strong anterodorsal (absent in *Coenosia antennata*). Frons at narrowest part always distinctly more than twice as wide as third antennal segment. Postvertical bristles usually at least as long and strong as ocellars, only in *Caricea*, and in some species of *Coenosia*, somewhat shorter and weaker.
- 11 (12) 2 reclinate upper fronto-orbital bristles, anterior one much the stronger. Acrostichals uni-serial or practically so. Antennae and palpi entirely reddish-yellow (♂), or third antennal segment occasionally extensively browned (♀). ♂: front and middle tibiae without bristles on shaft. ♀: hind tibia with a posteroventral apical bristle. 5-6 mm.
Merioneths., Norfolk, Worcs., Cambs., Suffolk, Herefords., Glamorgan., Gloucs., Somerset, Hants., Surrey, Devon, Dorset and Sussex. Marshland. Widespread but not common. vi-viii.
6. *Spanochaeta dorsalis* von Roser.
- 12 (11) Only 1 reclinate upper fronto-orbital.
- 13 (16) 2 presutural dorsocentrals, anterior one more than one-third the length of posterior one. Hind tibia with an anteroventral, but without a true anterior bristle. Costa extending to apex of discal vein.
- 14 (15) Anterior presutural dorsocentral almost as long as posterior one, at least much longer and stronger than the longest presutural acrostichal bristle. Anal vein extending about two-thirds (at least distinctly more than half the distance from anal cell to wing-margin. 5-5.5 mm. (♂), 5-7 mm. (♀).
Scotland: Sutherland, Inverness., Aberdeens., and Perth. England and Wales: from Cumberland and Durham southwards. Locally frequent. v-viii. 7. *Macrorchis meditata* Fallén.
- 15 (14) Anterior presutural dorsocentral slightly more than one-third the length of posterior one, but hardly longer than the longest presutural acrostichal, sometimes shorter. Anal vein extending distinctly less than half-way from anal cell to wing-margin. 5. *Dexiopsis* (p. 69).
- 16 (13) Only 1 presutural dorsocentral and that one conspicuous, any other bristle in front of it in the same line at most hardly one-fourth its length and not, or hardly, distinguishable from rest of thoracic hairs.
- 17 (18) Costa extending only to, or very slightly beyond, apex of cubital vein. Disc of thorax and abdomen almost uniformly brownish-black, pleural areas and side of abdomen densely grey-dusted. 2.25-2.75 mm. (♂), 2.75-3.75 mm. (♀).
Widespread throughout the British Isles. Common. v-x.
10. *Allognota agromyzina* Fallén.
- 18 (17) Costa extending to apex of discal vein.
- 19 (20) Hind tibia, in addition to the anterodorsal, with an anteroventral but without a true anterior bristle (sometimes with only the anterodorsal or without bristles on shaft). Front tibia without a true ventral apical, though a posteroventral apical is present. Abdomen with erect discal bristles on posterior tergites. 8. *Coenosia* (p. 70).
- 20 (19) Hind tibia, besides the anterodorsal, with a true anterior bristle close to it, but without an anteroventral. Front tibia with both posteroventral and true ventral apicals, or if without the ventral apical then abdominal tergites without erect discal bristles. 9. *Caricea* (p. 76).

Genus *Lispocephala* Pokorny, 1893.

KEY TO SPECIES.

- 1 (2) Antennae, palpi and legs entirely reddish-yellow. Front of frons and base of abdomen more or less broadly reddish-yellow. Longest hairs of arista hardly longer than its basal diameter, not noticeably longer towards base than about middle. Thorax densely dusted whitish-grey without stripes. 3.75-4.25 mm.

On sand-dunes. Sutherland: Bettyhill, 14-17.vi.65; Morays: Culbin Sands, 5.vii.31 and 6.viii.35; Anglesey: Aberffraw, 3.viii.53; Glamorgan.: Orwich, 9.vii.54; Devon: Braunton Burrows, 16.vi.51. Uncommon.

1. *rubricornis* Zetterstedt.

- 2 (1) At least front femur partly or mainly black, and more than apical half of third antennal segment darkened. Aristal hairs conspicuously longer towards base than about middle.

- 3 (4) Middle tibia with 1-2 well developed anterodorsals. Costal spine strong, as long as discal crossvein. Arista, including hairing, wider than third antennal segment. Femora black, pale at extreme apex, tibiae reddish-yellow. Abdominal tergites 3-5 each with a pair of blackish rounded (δ), or elongate (η), spots. 4-4.75 mm.

Scotland: Ross. (Ullapool), Inverness. (Nethybridge and Kincaig), Dunbartons. (Bonhill). England: Yorks. (Hole of Horcum), Norfolk (Ringmere), Hants. (Yew Tree Heath, Denny Bog, Brook and I. of Wight). Uncommon. vii-viii. 2. *verna* Fabricius.

- 4 (3) Middle tibia without an anterodorsal. Costal spine inconspicuous. Arista narrower than third antennal segment.

- 5 (6) Abdomen entirely reddish-yellow with some very thin pale dusting, faint traces of paired spots and a median stripe sometimes visible from behind. Middle and hind femora entirely, and apex of front femur rather broadly, reddish-yellow. 4.25-5.5 mm.

Lancs. (Wathbarrow Point), Glamorgan. (Llangennydd), Gloucs. (Blaise Woods, Morton, Durdham Down and Beaudesert Park). Uncommon. iii-vi. 3. *brachialis* Rondani.

- 6 (5) Abdomen entirely or largely black in ground-colour, dark paired spots conspicuous on tergites 3 and 4, often also on fifth, and a more or less distinct dark median stripe. All femora black, only more or less narrowly pale at apex.

- 7 (8) Scutellum unicolorous whitish-grey dusted. Arista long-pubescent towards base, where it is more than half as wide (including hairing) as third antennal segment. Crossveins without trace of infuscation and not darker-pigmented than the other veins. Abdomen entirely black in ground-colour. 2.75-4 mm.

Scotland: Ross. and Inverness. England and Wales: Yorks., Notts., Norfolk, Glamorgan., Somerset, Surrey, Dorset, Sussex and Kent. Locally common. iv-viii, x. 4. *erythroca* Desvoidy.

- 8 (7) Scutellum pale-dusted with a conspicuous dark brown spot on each side at base. Arista hardly one-third the width of third antennal segment. Crossveins infuscated, or at least more strongly pigmented so that they appear darker than the other veins. Abdomen in males always, in females sometimes, more or less reddish-yellow at base.

- 9 (10) Crossveins not distinctly infuscated but appearing darker than the other veins. Femora reddish-yellow on apical fifth or sixth. Base of third antennal segment reddish-yellow at least as far as insertion of arista. Frontalia entirely dark, rarely obscurely reddish at extreme front. η : abdomen always partly reddish-yellow at base. 4.5-5.5 mm. (= *vitripennis* Ringd. = *serena* Coll.).

Scotland: West Lothian (Winchburgh) and Dunbartons. (Bonhill). England: Westmorland (Patterdale), Yorks. (Pateley Bridge), Cheshire (Delamere), Herefords. (Pontrilas), Worcs. (Wyre Forest), Gloucs. (Blaise Woods), Somerset (Yeo Reservoir). Uncommon. iii-vi, viii-ix.

5. *spuria* Zetterstedt.

- 10 (9) Crossveins conspicuously, even though not broadly, infuscated. Femora reddish-yellow only at extreme apex. Third antennal segment entirely black.

- 11 (14) Hind tibia with the setulae on anterior face short and decumbent like those on posterior face. Tarsi (especially the front) with the apical two-thirds of fifth segment blackish in contrast with the pale basal third. δ : fifth sternite with a cluster of short stout bristles near base of each lobe.

- 12 (13) δ : genital mesolobe broader and rapidly narrowing to a point, with a median and pair of lateral ridges (text-fig. 12c); apical segment of front tarsus

with the basal third conspicuously paler than the other segments. ♀: dorsal surface of fourth abdominal tergite with at most 2 strong erect discal bristles near each side-margin, inner one usually not nearer to median line of abdomen than inner margin of dark spot (text-fig. 12B). 4.5-5 mm. (= *ungulata* Rond. of Meade nec Rond.).

Scotland: Sutherland, Ross. and Inverness. England and Wales: Durham, Westmorland, Yorks., Cheshire, Notts., Lincs., Norfolk, Cambs., Glamorgan., Herts., Hants., Surrey and Sussex. Frequent. iv-v, vii-ix.

- 13 (12) ♂: mesolobe very slender and gradually narrowing to a point, with a median ridge only (text-fig. 12D); apical segment of front tarsus with the basal third concolorous with the other segments. ♀: fourth tergite, in addition to the 2 pairs of lateral discal bristles, with at least 1 pair of similar strong erect discals well in-board of the dark spots and occasionally a weaker median pair (text-fig. 12F). 4.5-5 mm.

Cambs. (Chippenham Fen), Suffolk (Barton Mills), Gloucs. (Morton), Oxon. (Nuneham Courtney), Essex (Wrabness) and Surrey (Bookham Common). Locally not uncommon. ii-v.....7. *falculata* Collin.

- 14 (11) Hind tibia with a number of setulae on apical half of anterior face which are longer, stronger and more erect than those on posterior face. Apical segment of all tarsi more or less uniformly dark on dorsal surface. ♂: lobes of fifth sternite without a cluster of stout bristles. 4.5-5.5 mm.

Somerset (Holford), Hants. (New Forest) and Devon (Newton Abbot). Uncommon. iv-vi.....8. *pallipalpis* Zetterstedt.

Genus *Pseudocoenosia* Stein, 1916.

KEY TO SPECIES.

- 1 (2) 4 postsutural dorsocentrals. An additional rather weak sternopleura bristle present in front of, and close to, the normal lower strong one (text-fig. 12G). Tibiae reddish- to brownish-yellow. ♂: eyes separated by about 1½ times the width of third antennal segment. ♀: seen from above and illuminated from in front, frontal triangle very conspicuous and extending to front of frons (text-fig. 12B). 3.25-4 mm. (♂), 4-5 mm. (♀). (= *Coenosiosoma* Ringd., 1947 = *Paracoenosia* Ringd., 1945 nec Mall., 1938).

Scotland: Sutherland, Ross., Morays., Inverness. and Aberdeens. England and Wales: Yorks., Anglesey, Caernarvons., Flints., Cheshire, Merioneths., Shrops., Norfolk, Warwicks., Glamorgan, Somerset, Hants., Surrey, Devon, Dorset, Sussex and Kent. Locally common. v-ix.....1. *abnormis* Stein.

- 2 (1) 3 postsutural dorsocentrals. Only the normal 3 strong sternopleurals present. Legs entirely dark. ♂: eyes separated by about 3 times the width of third antennal segment. ♀: seen as above, frontal triangle not conspicuous, extending less than half-way towards front of frons. 4.5-6 mm. (= *longisquama* Zett. = *longicauda* Zett.).

Scotland: Sutherland., Inverness., Aberdeens. and Perth. England and Wales: Cumberland, Westmorland, Yorks., Caernarvons., Cheshire, Warwicks., Herefords., Somerset, Hants., Surrey and Sussex. Fairly frequent. vii-x.2. *solitaria* Zetterstedt.

Genus *Dexiopsis* Pokorny, 1893.

KEY TO SPECIES.

- 1 (2) Femora black with extreme tip pale. Palpi and antennae black, apart from tip of second segment of latter. Frontalia entirely black in ground-colour,

⁹ *Lispocephala alma* appears to occur in two different forms, the summer form, in July to September, with abdomen extensively reddish-yellow at base and frontalia more or less broadly reddish-yellow in front; and the spring form, in April and May, with little or no reddish-yellow colour on base of abdomen and frontalia entirely dark. This difference, which may also occur in other species of this group, is probably an indication of the state of maturity.

grey-dusted. Upper postocular ciliation with a more or less regular row of shorter setulae immediately below. Abdomen dusted bluish-grey with very indistinct (♂), or conspicuous (♀), paired dark spots on third and fourth tergites. 3-5-4 (♂), 3-5-5-5 (♀).

Scotland: Sutherland, Ross and Morays. England and Wales: Westmorland, Lancs., Yorks., Anglesey, Caernarvons., Merioneths., Norfolk, Worcs., Suffolk, Glamorgan., Essex, Somerset, Hants., Devon and Kent. Mainly coastal. Frequent. v-ix.....1. lacteipennis Zetterstedt.

- 2 (1) At least middle and hind femora, palpi and basal antennal segments, reddish-yellow. Frontalia broadly reddish-yellow in front, or if entirely black in ground-colour then upper postocular ciliation with only an isolated small setula or two immediately below.

- 3 (4) Frontalia entirely black in ground-colour. Hind femur with a complete row of long strong anteroventral bristles, and with finer posteroventrals on basal half to two-thirds which are longer than depth of femur. Abdomen normally entirely black in ground-colour, but occasionally somewhat translucent reddish-yellow at base. Anterodorsal on middle tibia long and strong, about one-third the length of tibia. 4-5 mm.

Lincs. (Gibraltar Point), Suffolk (Aldeburgh and Southwold), Essex (Walton-on-Naze), Somerset (Clevedon), Hants. (Buckler's Hard) and Kent (Pegwell Bay). Coastal. Uncommon. vii-viii.....2. lacustris Karl.

- 4 (3) Frontalia largely or entirely reddish-yellow. Hind femur anteroventrally, apart from the strong bristles at apex, with only short (less than depth of femur) bristles, posteroventrally with only 2-3 quite short setulose hairs on basal half. Anterodorsal on middle tibia much less than one-third the length of tibia.

- 5 (6) Frontalia more or less blackish behind, the pale-dusted frontal triangle (seen from in front) conspicuous and extending to front of frons. Basal 3 segments of abdomen largely or entirely translucent reddish-yellow. Antennae rather short, falling short of mouth edge by more than width of third segment. 3-4 mm.

Lancs., Cheshire, Notts., Merioneths., Norfolk, Suffolk, Pemb., Glamorgan, Essex, Berks., Somerset, Cornwall, Devon, Dorset and Kent. Frequent. v-viii.....3. litoralis Zetterstedt.

- 6 (5) Frontalia entirely reddish-yellow, frontal triangle (seen from in front) practically indiscernible. Abdomen entirely black in ground-colour. Antennae longer, falling short of mouthedge by less than width of third segment. 3-3.75 mm. (♂), 3.75-4.75 mm. (♀).

Scotland: Sutherland (Golspie). England and Wales: Anglesey (Newborough), Norfolk (Winterton), Suffolk (Aldeburgh), Glamorgan. (Ozwich and Broughton), Somerset (Barrow) and Devon (Braunton Burrows and Dawlish). Sand-dunes Locally frequent. vi-viii.

4. *minutalis* Zetterstedt.

Genus *Coenosia* Meigen, 1826.

KEY TO SPECIES.

- 1 (4) Hind tibia with a long strong posterodorsal preapical bristle in addition to the normal dorsal and anterodorsal ones (text-fig. 11H). Middle femur with a well developed anterior preapical.

- 2 (3) All tibiae, and middle and hind femora, reddish-yellow. More yellowish-grey dusted species. 5-6.5 mm.

Scotland: Inverness., Argylls., Dunbartons., Fifes. and Midlothian. England and Wales: Cumberland, Westmorland, Lancs., Yorks., Caernarvons., Cheshire, Derbys., Notts., Lincs., Merioneths., Glamorgan., Gloucs., Somerset, Hants., Surrey and Kent. Frequent. vi-viii.

1. *intermedia* Fallén.

- 3 (2) Legs black, only knees and trochanters reddish-yellow. More bluish-grey dusted species. 4-5.5 mm.

Scotland: *Morays., Inverness. and Perth.* England and Wales: *Westmorland., Yorks., Caernarvons., Cheshire, Merioneths., Shrops., Glamorgan. and Gloucs.* Frequent, especially in Scottish highlands. v-vii.

2. means Meigen.

- 4 (1) Hind tibia, besides the dorsal and anterodorsal preapicals, with at most a weak posterodorsal one which is much shorter than the dorsal.
- 5 (12) Lower squama shorter (at least not longer) than wide.
- 6 (7) Middle femur with a well developed anterior preapical. Abdomen (δ) more or less broadly reddish-yellow at base, tergites 3-5 each with a pair of large brown-dusted spots, or (\varnothing) normally entirely reddish-yellow without spots.¹⁰ δ : palpi and third antenal segment entirely reddish-yellow. 3.5-4 mm. (δ), 4-5 mm. (\varnothing). (s.g. *Oplogaster* Rondani, 1856).
Generally distributed. Common. v-ix. 3. *mollicula* Fallén.
- 7 (6) Middle femur without an anterior preapical. Abdomen always entirely black in ground-colour. Palpi and antennae black.
- 8 (9) Scutellum with the basal pair of marginal bristles extremely small and weak, or even absent. δ : front and middle tibiae without bristles on shaft; cubital and discal veins (especially latter) conspicuously thickened in basal section (text-fig. 11r). \varnothing : abdomen with distinct paired brown-dusted spots on intermediate tergites. 2.25-3 mm.
- Scotland: *Sutherland (Tongue), Ross. (Ullapool), Inverness. (Cannich, Glen Feshie and Fort Augustus).* England and Wales: *Cumberland (Derwentwater), Yorks. (Goole), Flints. (Whixall Moss), Hants., New Forest (Aldridge Hill), Surrey (Bookham Common) and Kent (Tonbridge Wells).* Uncommon and local. vi-vii. 6. *distinguens* Collin.
- 9 (8) Scutellum with 2 pairs of well developed marginal bristles, basal pair more than two-thirds the length of subapical pair. δ : front and middle tibiae with the normal bristles on shaft; cubital and discal veins normal, not noticeably thickened anywhere.
- 10 (11) Hind femur (δ) entirely, or (\varnothing) mainly, reddish-yellow. Middle tibia with an anterodorsal bristle about middle. Thorax ash-grey dusted with a conspicuous pair of dark brown dorsocentral stripes. \varnothing : abdomen without paired dark spots except sometimes on fifth tergite. 3.5-4.75 mm.
Scotland: *Ross., Nairns., Inverness. and Perth.* England: *Cheshire (Bollin Valley), Worcs. (Wyre Forest and Bewdley), Suffolk (Neumarket) and Herefords. (Monnow Valley).* Common in Scottish highlands, becoming scarce southwards. v-viii. 4. *bilineella* Zetterstedt.
- 11 (10) δ only. Hind femur darkened on apical third. Middle tibia without an anterodorsal. Thorax dark grey-dusted with hardly discernible stripes. 2-5 mm.
Only record known, 1 δ , *Blackheath (Kent), 24. v. 63 (A. A. Allen).*
5. *brevisquama* Fonseca δ .
- 12 (5) Lower squama conspicuously longer than wide, projecting well beyond upper.
- 13 (14) Front tibia with a strong anterodorsal at about apical third. Hind tibia with 1-2 short posterodorsals. Middle femur with an anterior preapical. δ : fifth sternite large and prominent, clothed with dense long erect hairs. 4.75-5.25 mm. (δ), 5-6 mm. (\varnothing).
Scottish highlands, especially the Cairngorms area of Inverness., Midlothian. Fairly frequent. v-vii. 7. *trilineella* Zetterstedt.
- 14 (13) Front tibia without an anterodorsal. Hind tibia without posterodorsals.
- 15 (24) Middle femur with a well developed anterior preapical. *Either* middle femur with 2 posterior preapicals, or apical section of postical vein (δ) not much more than $1\frac{1}{2}$ times as long as, or (\varnothing) only little longer than, postical crossvein.
- 16 (17) Abdominal tergites without dark paired spots. Axillary lobe of wing less developed than usual so that (δ) wing uniformly narrowed from about apical third to base (text-fig. 12r), or (\varnothing) greatest distance of axillary vein to wing-margin conspicuously less than greatest width of hind tibia (text-fig. 12n). Mouthedge distinctly produced, often as far as frons.

¹⁰ Females occur in which the abdomen is partly or entirely black in ground-colour, grey-dusted, the extreme form corresponding to var. *biocellata* Zett.

Middle femur with 2 posterior preapicals. 2.75-3.75 mm. (= *decepiens* Mg.).

Scotland: Sutherland, Ross., Inverness., Aberdeens. and Perth. England and Wales: Westmorland, Yorks., Anglesey, Caernarvons., Notts., Suffolk, Brecs., Glamorgan., Somerset, Hants., Devon and Kent. Locally frequent. vi-viii. 8. *pedella* Fallén.

- 17 (16) Intermediate tergites with paired dark spots, though these may sometimes be faint and ill-defined. Axillary lobe with normal development. Mouth-edge not conspicuously produced.

- 18 (19) Middle femur usually with 2 posterior preapicals. ♂: hind tibia largely brownish-black; middle and hind femora with apical two-fifths abruptly black. ♀: all tibiae more or less brownish to blackish, pale only at base, femora entirely black. 2.25-2.75 mm. (♂), 3-3.5 mm. (♀). (= *geniculata* Fall., 1825 nec Deg., 1776).

Scotland: Sutherland, Ross., Morays., Inverness., Aberdeens. and Perth. England and Wales: Caernarvons., Norfolk, Suffolk, Glamorgan., Somerset, Hants., Surrey, Dorset and Sussex. Common. v-ix.

9. *femoralis* Desvoidy.

- 19 (18) Middle femur with only 1 posterior preapical. ♂: hind tibia at most slightly brownish; middle and hind femora entirely reddish-yellow, or at most hind femur brownish at tip. ♀: front and middle tibiae reddish-yellow.

- 20 (21) Hind femur, in addition to a long posteroventral bristle just above middle, with numerous erect fine hairs on posterior and posteroventral surfaces, some of those in ♂ as long as greatest depth of femur, shorter in ♀. Frontalia, seen from above and in front, appearing dull blackish. 3.5-4.25 mm.

Scotland: Morays (Lochindorb), Inverness. (Glenmore and Aviemore), Aberdeens. (Braemar, Balmoral and Loch Callater) and Perth. (Ben Lavers, Killin and Dalnaspidal). England and Wales: Westmorland (Moor House N.R.) and Brecs. (Cray). Uncommon and local. vi-vii.

10. *perpusilla* Meigen.

- 21 (20) Hind femur, apart from a few fairly short posteroventrals on basal half, with only decumbent hairs on posterior and posteroventral surfaces. Frontalia, seen as above, more greyish.

- 22 (23) All tarsi dark, at most apical segment somewhat paler. Dark abdominal

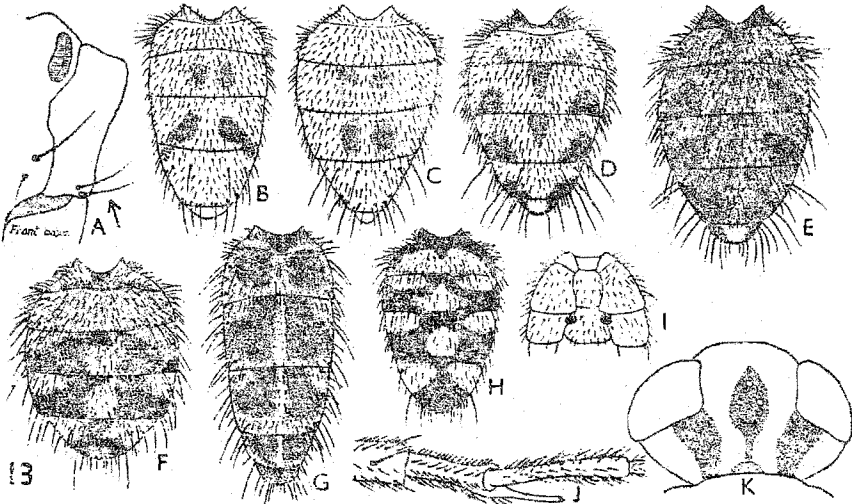


FIG. 13—A, *Coenosia dubiosa* (propleuron); B-H, abdomens of *Lispe* spp. (dorsal view): B, *caesia* ♂; C, do. ♀; D, *loewi* ♂; E, *titorea* ♂; F, *tentaculata* ♂; G, *uliginosa* ♂; H, *nana* ♂; I, do. (ventral view); J, *L. tentaculata* ♂ (rt. front tarsus); K, *L. nana* ♀.

- spots smaller and more clearly defined on the grey-dusted ground. Hind femur usually brownish at tip. 2.75-3.25 mm.
Generally distributed. Very common. iv-viii. 11. pumila Fallén.
- 23 (22) All tarsi reddish-yellow. Abdomen more generally brownish dorsally, so that the paired spots are not easily discernible. Hind femur entirely reddish-yellow. About 2.75 mm.
Scotland: Loch Garten (Inverness) 1 ♂, vii and Rannoch (Perths.) 1 ♂, 1 ♀, vii (J. E. Collin). England: Malham Tarn (Yorks.) 2 ♂, 5, vii.53 (G. C. Varley). 12. paidis Tiensuu.
- 24 (15) Middle femur without an anterior preapical, or if with a rather weak one (*vibrisata*) then middle femur with only 1 posterior preapical and apical section of postical vein (♂) quite twice as long as, or (♀) about 1½ times as long as, postical crossvein.
- 25 (34) Hind femur with 1 or more outstanding posteroventral bristles on apical half. ♂: middle and hind coxae mainly or entirely reddish-yellow in ground-colour, at most somewhat darkened on outer face; middle and hind femora entirely reddish-yellow, or (*pudorosa*) more or less darkened on apical two-fifths.
- 26 (20) All coxae entirely reddish-yellow. Arista, including hairing, one-third to half the width of third antennal segment. Legs, except tarsi, entirely or mainly reddish-yellow. Only 1 propleural bristle present (text-fig. 12J ↑). ♂: middle tibia without an anterodorsal; third antennal segment usually more or less broadly reddish-yellow at base.
- 27 (28) Abdomen more or less translucent pale yellowish at base. Palpi reddish-yellow, at most only narrowly darkened at tip. ♀: femora and tibiae entirely reddish-yellow. 3.5-5 mm.
Scotland: Ross., Morays., Inverness., Perths., and Fifes. England and Wales: from Cumberland and Yorks. southwards. Common. vi-ix. 13. rufipalpis Meigen.
- 28 (27) Abdomen entirely dark in ground-colour. Palpi broadly darkened at apex, sometimes entirely dark brown. ♀: front femur partly, and tip of middle and hind femora, usually darkened. 3.5-4.5 mm.
Scotland: Ross. (Loch Maree), Morays. (Culbin Sands), Inverness. (Nethybridge, Aviemore and Kinrara). England: Norfolk (Poulsmere), Worcs. (Shrawley Wood), Beds. (Apsley Heath), Somerset (Horner) and Sussex (Balcombe). Scarce. vi-viii. 14. flavicauda Ringdahl.
- 29 (26) Coxae distinctly darkened on outer face, or if a male with entirely reddish-yellow coxae then middle tibia with an anterodorsal bristle. 2 propleural bristles present (text-fig. 13A ↑). Middle femur with 2 posterior preapicals.
- 30 (31) Hind tibia, in dorsal view, conspicuously stouter than middle tibia. Presutural acrostichals in 2 regular well separated rows. Scutellum with numerous setulae covering most of disc. 3.75-5 mm.
Generally distributed. Very common. v-x. 15. lineatipes Zetterstedt.
- 31 (30) Hind tibia not noticeably stouter than middle tibia. Presutural acrostichal rows more approximated, often appearing irregularly uni-series. Disc of scutellum without, or with very few bristles on basal half.
- 32 (33) The submedian bristle beneath hind tibia only semi-erect and strictly anteroventral in position. Abdominal spots much narrower than the grey-dusted area separating them. Middle and hind femora (♂) entirely reddish-yellow, or (♀) faintly darkened dorsally at apex. Middle tibia with a strong anterodorsal. 4.5-5 mm.
Scotland: Ross. (Stac Polly), Inverness. (Arisaig), Argylls. (Port Appin and Loch Eil), Perths. (Rannoch and Loch Voil). England: Yorks. (Bradford), Oxon. (Newton) and Hants. (New Forest). Scarce. iv-viii. 16. sexnotata Meigen.
- 33 (32) The bristle beneath hind tibia fine, quite erect and placed almost ventral in position. Abdominal spots (♂) distinctly wider than, or (♀) almost as wide as, the grey-dusted area separating them. Middle and hind femora distinctly blackened towards apex, especially in female. ♂: middle tibia without an anterodorsal. 3.75-4.5 mm.
Merioneths. (Clogwyn Melyn), Somerset (Holford), Devon (Shute, Ottery

- St. Mary and Lustleigh Cleeve*. Scarce. v-vi. 17. **pudorosa** Collin.
- 34 (25) Hind femur with distinct posteroventrals on basal half only, rarely (*dubiosa* ♂) with long fine antero- and posteroventral setulose hairs beyond middle, but in this case middle and hind coxae entirely black in ground-colour.
- 35 (36) Thorax, on anterior slope towards neck, with about 10 short spine-like bristles, the middle 6 being arranged in pairs on the lines of dorsocentrals and acrostichals. Wing with the subcostal cell rather conspicuously darkened, the darkening becoming less marked in dried specimens. Middle femur with 2 posterior preapicals. 2 propleural bristles present (text-fig. 13A ↑). 3-3.75 mm. (♂), 4-5 mm. (♀).
Only records known, Monnow Valley (Herefords.), 7.ix.10 (J. H. Wood); Oxwich (Glamorgan.), 22-24.vi.52 and 30-31.v.53 (E. A. Fonseca). Rare. 18. **stigmatica** Wood.
- 36 (35) Anterior slope of thorax with only the normal short fine hairs. Wings entirely clear, or at most faintly milky.
- 37 (42) Hind tibia with the anterodorsal preapical beyond the dorsal one by almost the width of tibia. Middle and hind coxae at least partly reddish-yellow in ground-colour, sometimes only apically. Middle femur with only 1 posterior preapical. Only 1 propleural bristle present (text-fig. 12J ↑).
- 38 (41) ♂: abdomen broadly translucent reddish-yellow on basal half, with at most only a narrow median dark area. ♀: middle and hind femora entirely reddish-yellow, or if somewhat darkened then jowl below eye distinctly narrower than third antennal segment.
- 39 (40) Jowl below eye about 1½ times (♂), or 1¼ times (♀), the width of third antennal segment. Frontalia more or less distinctly reddish in front. ♂: palpi reddish-yellow. ♀: section of discal vein between crossveins only very slightly shorter than apical section of postical vein. 2.75-3.5 mm. (♂), 3-4 mm. (♀).
Generally distributed. Very common. iv-x. 19. tricolor Zetterstedt.
- 40 (39) Jowl below eye narrower than third antennal segment, especially so in male. Frontalia entirely dark. ♂: palpi blackish-brown. ♀: section of discal vein between crossveins very distinctly shorter than apical section of postical vein. 2.5-3 mm. (♂), 3-3.5 mm. (♀).
Scotland: Inverness., Perth., Fifes. and Midlothian. England and Wales: Anglesey, Cheshire, Norfolk, Hunts., Cambs., Suffolk, Gloucs., Oxon., Herts., Essex, Wilts., Berks., Middx., Somerset, Hants., Surrey, Sussex and Kent. Fairly common, probably overlooked owing to its great similarity to the common tricolor. v-ix. 20. infantula Rondani.
- 41 (38) ♂: abdomen broadly (one-third or more of width) dark dorsally, with distinct, though sometimes faint, yellowish to brownish-yellow patches on sides of first three tergites. ♀: middle and hind femora more or less extensively darkened, never entirely reddish-yellow: jowl below eye as wide as or wider than third antennal segment. 3-3.5 mm.
Lancs.: Shaw, 13.v.61 (P. Skidmore); Kent: Blackheath, 24-27.v.63 (A. A. Allen); Gloucs.: Bristol, 7.v.61 (E. A. Fonseca); Surrey: Mickleham, 7.v.61 and Beddington, 27.v.62 (L. Parmenter). 21. alleni Fonseca.
- 42 (37) Hind tibia with the anterodorsal preapical beyond the dorsal one by less than half the width of tibia, usually almost at same level.
- 43 (44) Middle femur with 2 posterior preapicals. Middle and hind femora more or less abruptly black on apical two-fifths, basal three-fifths reddish-yellow. Arista much longer than third antennal segment. 2 propleural bristles present (text-fig. 13A ↑). ♂: hind femur ventrally with very long erect hairs, and with long fine bristles on more than basal half of antero- and posteroventral surfaces. 2.5-3 mm. (♂), 3.5-3.75 mm. (♀). (= *dubia* Schnabl, 1911 nec Macq., 1835).
Only British records known, E. Kent: Sandwich Bay, 7.viii.56 and 27.vii-1.viii.57 (E. A. Fonseca). 22. dubiosa Hennig.
- 44 (43) Middle femur with only one posterior preapical. Middle and hind femora differently coloured (except in ♂ of *antennata*, but in this case arista shorter than third antennal segment).
- 45 (46) Frons, seen from in front and above, entirely and densely dusted silvery-white, frontalia not (♂), or hardly (♀), distinguishable from frontal orbits.

Anterior tip of third antennal segment produced into a minute spine. ♂: abdomen densely dusted whitish-grey without markings. 2-2.25 mm. (♂), 2.75-3 mm. (♀).

- Glamorgan. (Porthcawl, Kenfig Burrows and Oxwich), Devon (Braunton Burrows). Uncommon and very local. vi-vii. . . . 23. albatella* Zetterstedt.
- 46 (45) Frons, seen as above, with blackish frontalia contrasting with pale-dusted orbits. Anterior tip of third antennal segment, although sometimes sharply angular, not produced into a spine. Abdomen mainly dusted dark grey, or if paler grey then with distinct paired spots.
- 47 (50) Apical section of postical vein (♂) not much more than $1\frac{1}{2}$ times as long as, or (♀) only little longer than, postical crossvein. Arista very short-pubescent, hairs obviously shorter than its basal diameter. Anterior tip of third antennal segment sharply angular.
- 48 (49) Only one propleural bristle (text-fig. 12J ↑). ♂: arista much longer than third antennal segment; tibiae with the normal bristles on shaft. ♀: third antennal segment only about $1\frac{1}{2}$ times as long as second segment; middle and hind tibiae blackish-brown. 2.5-3 mm.
- Scotland: Ross. (Stac Polly and Ullapool), Inverness. (Glenmore and Aviemore), Aberdeens. (Aberdeen), Perth. (Beinn Heasgarnich, Beinn Ghlas and Dalnaspidal). England and Wales: Caernarvons. (Pwllheli), Merioneths. (Maentwrog), Suffolk (Westleton), Wilts. (Wilton), Hants. (Linwood), Surrey (Wimbledon Common and Bookham Common) and Dorset (Studland). Scarce. v-viii. 24. pulicaria* Zetterstedt.
- 49 (48) 2 propleural bristles (text-fig. 13A ↑). ♂: arista shorter than third antennal segment; tibiae, apart from preapicals, without bristles on shaft. ♀: third antennal segment more than twice as long as second segment; middle and hind tibiae largely reddish-yellow. 2.75-3 mm. (♂), 3.25-3.75 mm. (♀). (= *salinarum* Stein).
- Lines. (Gibraltar Pt.), Norfolk (Cley), Suffolk (Butley, Flatford, Aldeburgh, Woodbridge and Shingle Street), Essex (Wrabness and Benfleet), Merioneths. (Llanbedr), Glamorgan, (Oxwich), Somerset (Shapwick), Dorset (Studland and Poole), Hants. (Buckler's Hard), Sussex (Cuckmere Haven) and Kent (Lower Halston and Pegwell Bay). Frequent but local. vi-ix. 25. antennata* Zetterstedt.
- 50 (47) Apical section of postical vein (♂) about twice as long as, or (♀) about $1\frac{1}{2}$ times as long as, postical crossvein. Longest hairs of arista at least as long as its basal diameter. Antennae long, almost reaching mouthedge. 2 propleural bristles present (text-fig. 13A ↑).
- 51 (52) Vibrissae almost as long as arista, longest hairs of latter not longer than its basal diameter. ♂: facial orbits, at about level of second antennal segment, with a dark, somewhat glistening brown-dusted spot. ♀: frons of uniform width, or slightly broadening towards front; hind tarsus normal, in dorsal view little more than half as broad as tibia. 2.75-3 mm.
- Dorset: Studland, v. 12 (J. W. Yerbury); Channel Is.: Guernsey, summer of 1917 (J. E. Collin); Cambs.: Woodditton Wood, 28. v. 55 (E. A. Fonseca); Sussex: East Grinstead, 7. viii. 66 (C. H. Andrewes). Scarce.*
26. vibrissata Collin.
- 52 (51) Vibrissae conspicuously shorter than arista, longest hairs of latter longer than its basal diameter. ♂: facial orbits uniformly dusted silvery-white. ♀: frons slightly but distinctly narrowing towards front; hind tarsus (or at least metatarsus) in dorsal view almost as broad as tibia.
- 53 (54) Jowl below eye distinctly deeper than width of third antennal segment. Facial orbit at narrowest part obviously wider than diameter of front ocellus. ♂: middle and hind femora more or less broadly blackened at apex. ♀: frontalia, seen from somewhat behind and illuminated from in front, with the pale-dusted frontal triangle not reaching level of uppermost incurved fronto-orbital bristle. 2.5-3 mm. (= *steirni* Verr., 1912 nec Strobl, 1908).
- Merioneths. (Llanbedr, Harlech and Barmouth), Pems. (Newport), Somerset (Berrow), Dorset (Studland), Devon (Braunton Burrows) and Cornwall (Lelant Towans and Hayle Towans). Frequent but local. v-ix. 27. verralli* Collin.

- 54 (53) Jowl below eye not deeper than width of third antennal segment. Facial orbit at narrowest part almost linear, distinctly narrower than diameter of front ocellus. ♂: middle femur always, hind femur often, entirely reddish-yellow. ♀: frontal triangle, seen as above, extending beyond uppermost incurved fronto-orbital. 2.5-3 mm.

Yorks. (Cantley and Sedburgh), Suffolk (Walsham, Flatford and Walberswick), Glamorgan. (Kenfig Burrows), Hants. (Hengistbury Head). Uncommon. v-vii. 28. *pygmaea* Zetterstedt.

Genus *Caricea* Desvoidy, 1830.

KEY TO SPECIES.

- 1 (4) Thorax and abdomen densely dusted greyish, latter with conspicuous brown-dusted paired spots on at least intermediate tergites, fourth and fifth tergites with one or more pairs of strong discal bristles. Front tibia with a long ventral apical bristle in addition to the normal posteroventral one. (s.g. *Caricea s.str.*).
- 2 (3) Femora broadly reddish-yellow at apex. Arista, including hairing (on basal half only), wider than third antennal segment. Tergites 3-5 almost always with fainter lateral spots in addition to those on disc. 4.75-5.75 mm. (♂), 5.75-7 mm. (♀).
Generally distributed. Very common. v-ix. 1. *tigrina* Fabricius.
- 3 (2) Femora black, at most with extreme tip pale. Arista (on which hairing extends to tip) narrower than third antennal segment. Tergites 3-5 without additional lateral spots. 3-3.5 mm. (♂), 3.5-5 mm. (♀).
Cumberland, Lancs., Yorks., Notts., Glamorgan., Gloucs., Berks., Herts., Somerset, Hants., Surrey, Dorset and Kent. Fairly frequent. vi-ix.
2. *humilis* Meigen.
- 4 (1) Abdomen and disc of thorax shining black, without trace of markings apart from some silvery-grey dusting. Abdominal tergites without discal bristles. Front tibia without a ventral apical bristle. 2.5-2.75 mm. (♂), 2.75-3.25 mm. (♀). (s.g. *Lamprocoenostia* Ringdahl, 1945).
Scotland: Perth. (Kilbin). England and Wales: Notts. (Widmerpool), Norfolk (Ringmere), Suffolk (Redgrave Fen), Glamorgan. (Port Talbot and Margam), Wilts. (Savernake Forest), Somerset (Oare and Berrow), Devon (Braunton Burrows), Kent (Sholden). Uncommon. vi-ix. 3. *atra* Meigen.

Subfamily LISPINAE.

Genus *Lispe* Latreille, 1796.

KEY TO SPECIES.

- 1 (10) Front tibia with a posterior bristle. Middle tibia with 1 or more anterodorsals.
- 2 (7) Palpi black in ground-colour, though often densely dusted glistening white. Abdomen, seen from behind, whitish-grey dusted with dark brown paired spots, but without any chalk-white markings (text-figs. 13B-E).
- 3 (4) Front femur beneath, in addition to antero- and posteroventral rows of fine bristles, with numerous small black spines. Hind tibia with 1-2 antero-ventrals. Arista about equal in length to third antennal segment. ♂: hind metatarsus short and stout, densely short-haired behind. (Abdomen, text-figs. 13B, C). 5-6.75 mm. (♂), 6-8 mm. (♀).
Lancs. (Silverdale), Linco. (Theddlethorpe and Gibraltar Pt.), Norfolk (Blakeney Pt.), Suffolk (Aldeburgh), Glamorgan. (Orwich), Essex (Shoeburyness), Somerset (Berrow), Hants. (Calshot), Dorset (Lodmoor) and Kent (Pegwell Bay). Locally frequent. vi-x. 1. *caesia* Meigen.
- 4 (3) Front femur beneath with only fine hairs in addition to the antero- and posteroventral bristles. Hind tibia without anteroventrals. Arista distinctly longer than third antennal segment.
- 5 (6) Abdominal tergites 2-4, seen from behind, in addition to paired lateral spots, each with a broadly triangular dark spot on median line (text-fig. 13D).

Facial orbit, seen from above and illuminated from in front, without a dark spot opposite base of antennae. Hind femur with only 5-8 antero-ventrals. ♂: vibrissae absent. 5-7.5 mm.

Cheshire (Newbridge), Norfolk (Horsey), Suffolk (Aldeburgh and Felixstowe), Essex (Walton-on-Naze and Benfleet), Somerset (Clevedon), Hants. (Christchurch and Hythe), Dorset (Lodmoor) and Kent (Thames Marshes, Gravesend and Sandwich Bay). Locally frequent. v-ix.

2. *loewi* Ringdahl.

- 6 (5) Tergites, seen from behind, besides lateral spots with at most only faint traces of a narrow dark median line (text-fig. 13E). Facial orbit, seen as above, with a conspicuous broad deep blackish spot separating it from frontal orbit. Hind femur with 10-15 anteroventrals. ♂: vibrissae well developed. 5-7 mm. (♂), 6.75-8 mm. (♀). (= *pilosa* Loew).

Scotland: Nairns and Morays. England and Wales: Westmorland, Lancs., Yorks., Anglesey, Cheshire, Notts., Lincs., Norfolk, Suffolk, Gloucs., Essex, Somerset, Dorset and Kent. Locally common. vi-ix.

3. *litorea* Fallén.

- 7 (2) Palpi orange-yellow in ground-colour.
8 (9) Front tibia without an anterodorsal, hind tibia without anteroventrals. Tibiae black, pale only at extreme base. Abdomen, seen from behind, densely dusted whitish-grey with traces of a darker median line but without spots. 4.5-5.5 mm.

Only ?British specimen known is a ♀ (taken by Rev. Marshall) in the Ferrall Collection, owned by Mr. J. E. Collin, the label bearing the date 13. 9. 1865, but no locality. 4. *hydromyzina* Fallén.

- 9 (8) Front tibia with a short strong anterodorsal, hind tibia with a rather long anteroventral at apical third. All tibiae reddish-yellow. Abdomen, seen from behind, dusted whitish-grey with very large sub-triangular paired black spots on tergites 2-5, the spots occupying the greater part of dorsal surface of tergites (text-fig. 13G). 6.5-8.5 mm.

Lancs. (Freshfield), Yorks. (Bubwith), Norfolk (Ringmere), Suffolk (Shingle Street), Herefords. (Moccas Park), Gloucs. (Bristol), Somerset (Queens Sedgemoor), Devon (Croyde) and Dorset (Studland). Uncommon. vi-viii. 5. *uliginosa* Fallén.

- 10 (1) Front tibia without a posterior bristle. Middle tibia without anterodorsals. Palpi usually orange-yellow in ground-colour.
11 (12) Three well developed sternopleural bristles, lower one practically equidistant from either upper one, occasionally slightly nearer to front one. Palpi less strongly dilated at apex, at widest part hardly 1½ times as wide as third antennal segment. Hind tibia without a posterodorsal. All tibiae reddish-yellow. 4.75-6.5 mm.

Scotland: Morays. (Culbin Sands) and Inverness. (Kinrara). England and Wales: Lancs., Yorks., Merioneths., Glamorgan., Herts., Essex, Somerset, Devon, Dorset and Kent. Locally frequent. v-ix.

6. *pygmaea* Fallén.

- 12 (11) Lower sternopleural usually short and hair-like, always conspicuously nearer to hind upper one. Palpi strongly dilated at apex, 2½-3 times as wide as third antennal segment. Hind tibia with a distinct though rather small posterodorsal.
13 (16) Occiput more or less uniformly grey-dusted, area between upper corners of eyes not conspicuously paler than area on either side. Thorax, in dorsal view, dusted rather dark grey, with 3 not very broad dark brown stripes along almost whole length of dorsocentral and acrostichal lines. Jowl below eye about twice as deep as width of third antennal segment.

- 14 (15) Hind femur, on slightly the anterior side of ventral surface, with 2-5 long bristles. Hind metatarsus slightly though distinctly swollen in basal half (often indistinct in ♀). Legs (except knees) entirely black. ♂: front metatarsus produced posteriorly into a long finger-like process (text-fig. 13J). (Abdomen, text-fig. 13F). 6-7.5 mm.

Scotland: Nairns., Morays. and Inverness. England and Wales: Widely distributed from Westmorland and Yorks. southwards. Common. v-ix.

7. *tentaculata* Degeer.

- 15 (14) Hind femur without long anteroventrals. Hind metatarsus normal, of uniform thickness throughout. Tibiae reddish-yellow, only front one somewhat darkened towards tip. 6-7 mm.
Cornwall: Padstow, ix.04 (C. G. Lamb); *Devon: Croyde*, 3.viii.47 and *Puttsborough*, 14.viii.47 (E. A. Fonseca). Rare. .8. *consanguinea* Loew.
- 16 (13) Occiput with a conspicuous broad median pale-dusted band, divided at middle and flanked on either side by a deep black area (text-fig. 13x). Thorax, in dorsal view, with a pair of presutural broad black stripes separated by an equally broad grey-dusted stripe. Jowl below eye hardly $1\frac{1}{2}$ times as deep as width of third antennal segment. ♂: Second tergite, on each ventral hindmarginal corner, with a small rounded black scale-like process (text-fig. 13r). (Abdomen, text-fig. 13s). 4-5 mm. (♂), 4.75-6.5 mm. (♀). (= *pulchella* Loew).
Glamorgan. (Porthcawl), *Herts. (Felden)*, *Essex (Walton-on-Naze)*, *Somerset (Berrow)*, *Hants. (Hengistbury Head)*, *Devon (Puttsborough, Torcross and Dawlish)* and *Kent (Sandwich Bay)*. Locally frequent.
 vi-x. 9. *nana* Macquart

Subfamily FANNIINAE.

KEY TO GENERA.

- 1 (2) Arista short- or long-plumose, its width (including hairing) at least two-thirds the width of third antennal segment. 2. *Piezura* (p. 99).
- 2 (1) Arista at most short-pubescent, longest hairs shorter than its basal diameter. 1. *Fannia* (p. 78).

Genus *Fannia* Desvoidy, 1830.

The males of the majority of species may be found, under suitable sunny conditions, hovering, or patrolling to and fro, beneath the overhanging foliage of trees and the associated females can almost always be swept from low vegetation in the same locality. This male behaviour is not apparently followed by every species. Males of *subpubescens* and *corvina*, for instance, are in the habit of whirling erratically in the open and well removed from any trees, at a height of 15 to 20 feet from the ground. Both sexes of other species, such as *glaucescens* and *norvegica*, appear to be obtained only by sweeping low vegetation, some numbers of the former having been collected in this way from Seablite (*Sueda maritima* Dum.) at Pegwell Bay (E. Kent) in 1949. In my experience, also, the males of *tuberculata* and *minutipalpis* are more usually taken by sweeping the upper foliage of Silver Birch trees, and in an open space in Woolwich Wood (E. Kent) I found males of *vesparia* hovering singly and almost stationary just above a sapling of Spanish Chestnut. The collecting of birds' nests in late summer, or bats' droppings from occupied roosts, will often repay the collector handsomely by yielding some of the rarer *Fannia*.

KEY TO SPECIES.

MALES.

- 1 (16) Middle coxa, on anterior apical margin, with 1-2 more or less coarse spine-like bristles with the pointed tips bent or curved rearwards (text-figs. 14A, B); in doubtful cases front coxa with a short stout blunt spine behind. Hind coxa with 1 or more fine bristles on inner posterior margin (text-fig. 14c). Acrostichal bristles (or hairs) in 3 or more rows.
- 2 (5) Front tibia, posteroventrally at apex, with a dense brush of coarse flattened bristles (text-fig. 14d).

- 3 (4) Hind tibia posteroventrally with a row of bristles of uneven length on apical two-thirds. Hind femur with strong anteroventrals along almost whole length, 2-3 at apex longer and stronger than the rest. Middle tibia more strongly dilated in apical half. (Genitalia, Pl. II, Fig. 13). 5.5-6.5 mm.
Larvae or pupae have been found on a dead gull, in rabbit's excrement and in putrid cabbage-leaves. Generally distributed. Very common. iii-xi.
- 4 (3) Hind tibia almost devoid of bristles on posteroventral surface. Hind femur with strong anteroventrals (2-3) at apex only, otherwise with short weak bristles anteroventrally. Middle tibia less strongly dilated in apical half. (Genitalia, Pl. II, Fig. 14). 4.5-5.5 mm.
Has been reared from various fungi, including Polyporus squamosus and Pleurotus cornucopiae; larvae found in rotten bracken. Generally distributed. Common. iv-x. 13. manicata Meigen.
- 5 (2) Front tibia without this brush of flattened bristles.
- 6 (11) Sternopleuron ventrally with a long straight stout, somewhat blunt spine pointing vertically downwards. All tibiae reddish-yellow (in *fuscula* sometimes only very obscurely reddish).
- 7 (8) Middle and hind femora entirely reddish-yellow. Hind tibia, on apical two-thirds, with a row of very long fine anteroventral bristles, and a slightly more ventral row of somewhat shorter and finer ones, ventrally and posteroventrally densely fine-haired. Disc of abdomen usually dark in ground-colour, but occasionally partly (more rarely entirely) reddish-yellow. (Genitalia, Pl. II, Fig. 15). 6.75-8.75 mm.
Scotland: Sutherland, Ross., Inverness. and Aberdeens. England and Wales: from Lancs. and Yorks. southwards. Frequent. iv-viii. 14. monilis Haliday.
- 8 (7) All femora black. Anteroventral bristles on hind tibia shorter, less than twice as long as diameter of tibia. Abdomen always entirely black in ground-colour.
- 9 (10) Middle tibia only slightly dilated in apical half. Hind tibia, ventrally and posteroventrally, densely clothed with erect long fine hairs. Abdomen, seen from behind, with a narrow undusted median stripe of uniform width. (Genitalia, Pl. II, Fig. 17). 5.75-7 mm.
Generally distributed. Fairly common. iv-ix. 15. hamata Macquart.
- 10 (9) Middle tibia more strongly dilated in apical half. Hind tibia, apart from the normal decumbent hairs, almost bare on ventral and posteroventral surfaces. Abdomen, seen from behind, with the median undusted stripe broadened out towards hindmargins of tergites 2-4. (Genitalia, Pl. II, Fig. 16). 5.5-7.5 mm. (= *insignis* Stein).
Breeds in nests of Vespula vulgaris and V. germanica. Scotland: Inverness. England and Wales: Cheshire, Notts., Lincs., Denbighs., Worcs., Gloucs., Herts., Somerset, Hants., Surrey and Kent. Uncommon. v-viii. 16. vesparia Meade.
- 11 (6) Sternopleuron without a long ventral spine. Front coxa with a short stout blunt spine behind. Legs almost entirely black, at most tibiae somewhat reddish at base.
- 12 (13) Middle tibia with a conspicuous, partly shining black projection at about apical third beneath (text-fig. 14E). Middle coxa with 2 very coarse spine-like bristles bent over at tip. Front coxal spine at about apical third. Hind tibia with about 4 short anteroventrals which are hardly as long as diameter of tibia. (Genitalia, Pl. II, Fig. 11). 6.25-7.5 mm.
Has been bred from the nests of Vespula and Bombus, from manure, rotting meat and human faeces. Scotland: Inverness. England and Wales: widely distributed from Yorkshire to south coast. Common. iii-x. 11. scalaris Fabricius.
- 13 (12) Middle tibia without such a projection. Middle coxa with only one spine-like bristle, the tip often more curved than bent (text-fig. 14B). Front coxal spine distinctly nearer to tip. Anteroventrals on hind tibia longer.
- 14 (15) Hind tibia, both anterodorsally and anteroventrally, with a complete close-set row of very long setulose hairs which decrease somewhat in length towards apex of tibia, those of anteroventral row distinctly less hair-like,

the 2 dorsal bristles (submedian and preapical) about as long as hind metatarsus, posteroventrally without bristles (text-fig. 14H). Hind femur with about 4 strong anteroventrals at apex. Front tibia reddish-yellow on basal fourth to third. Lower squama brownish with brownish-black border and fringe. (Genitalia, Pl. II, Fig. 18). 5.25-5.75 mm. (= *ciliata* Stein, *syn. nov.*, teste A. C. Pont, *in press*).

Bred from *Boletus* sp. Scotland: *Inverness*. (*Spey Bridge*). England: *Worce.* (*Wyre Forest*), *Somerset* (*Bourton Coombe*), *Hants.* (*New Forest*), *Sussex* (*Tilgate Forest*), *Kent* (*Tonbridge and Woolwich Wood*). *Scarce.* vi-viii.

- 15 (14) Hind tibia anterodorsally, besides the normal strong bristle at about apical third, with a row of 6-8 shorter bristles above, anteroventrally with 4-6 short strong bristles, posteroventrally with a rather regular row of 5-7 short finer bristles somewhat below middle third, the 2 dorsal bristles much shorter than hind metatarsus. Hind femur with a complete row of about 12 anteroventrals, 3-4 at apex conspicuously longer and stronger. Lower squama whitish with pale yellow border and fringe.

- 15a (15b) Palpi distinctly dilated from near base towards apex, at widest part about half the width of third antennal segment. Upper postocular ciliation with an extensive setulose area on occiput immediately below. Front tibia with a distinct, even though short, anterodorsal bristle at about apical fourth. (Genitalia, Pl. III, Fig. 21). 5-5.5 mm.

Only British records known, *Camb.*: *Devil's Ditch*, 1 ♂, 16.v.64 and *Gloucs.*: *Bristol*, 2 ♂, 6.v.65 (*E. A. Fonseca*); *Wilts.*: *Downton*, 1 ♂, 12.v.54 (*C. H. Andrewes*). Females have been taken regularly on windows at *Bristol* from May to July since 1956.

- 15b (15a) Palpi filiform, much less than half the width of third antennal segment. Upper postocular ciliation with only a single row of shorter setulae immediately below. Front tibia without trace of an anterodorsal. (Genitalia, Pl. II, Fig. 20). 4.25-4.5 mm.

Only records known, *Sutherland*: *Bettyhill and Tongue*, 11 ♂, 1 ♀.

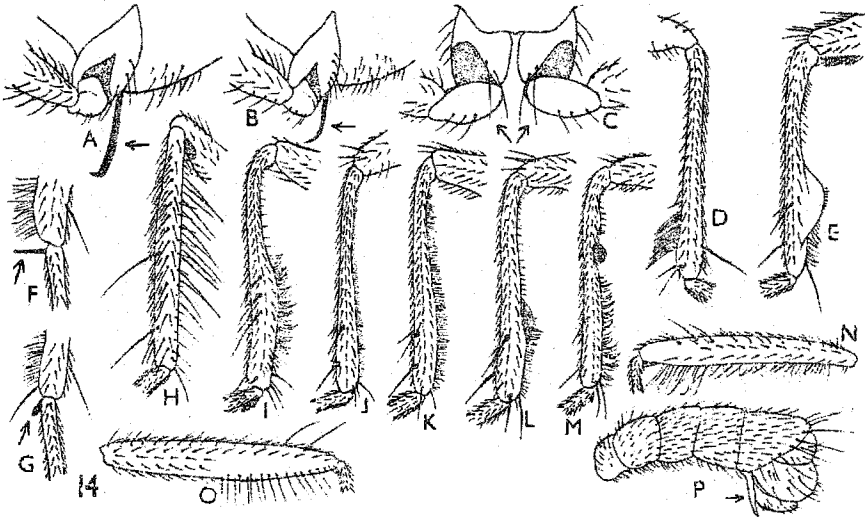


FIG. 14—*Fannia* spp.: A, *manicata* ♂ (mid. coxae); B, *atripes* ♂ (do.); C, *mutica* (hind coxae); D, *manicata* ♂ (rt. front tibia); E, *scalaris* ♂ (rt. mid. tibia); F, *nidica* ♂ (mid. metatarsus); G, *umbrosa* ♂ (do.); H, *melania* ♂ (rt. hind tibia); I-M, ♂ rt. mid. tibiae: I, *armata*; J, *caricularis*; K, *aegulineata*; L, *coracina*; M, *tuberculata*; N, *pretiosa* ♂ (rt. hind femur); O, *umbrosa* ♂ (do.); P, *glaucescens* ♂.

- 3-8.vii.38 (*J. E. Collin*); *Perth*: nr. *Keltneyburn*, 1 ♂, 13.vii.37 (*C. J. Wainwright*).....20. **subatripes** Fonseca.
- 16 (1) Middle coxa without hooked spine-like bristles on anterior margin. Front coxa never with a stout blunt spine behind.
- 17 (34) Middle metatarsus, ventrally at extreme base, with a small, more or less conspicuous process resembling a tooth or spine, usually consisting of a number of coalescent bristles or hairs (text-figs. 14f, c, r). Hind coxa bare on inner posterior margin.
- 18 (21) Eyes conspicuously and densely haired, hairs mainly at least as long as diameter of front ocellus. Halteres normally blackish. Presutural acrostichals bi-serial.
- 19 (20) Hind tibia with the normal dorsal preapical well developed. Hind femur, both antero- and posteroventrally, with a row of long setulose hairs. Middle tibia with 2 anterodorsals and 2-3 posterodorsals. (Genitalia, Pl. IV, Fig. 34). 4.5-5 mm.
Only British record, Inverness: *Nethybridge*, 1 ♂, 1.vi.34 (*J. E. Collin*).
34. **hirticeps** Stein.
- 20 (19) Hind tibia without dorsal preapical. Hind femur with 3-6 anteroventral bristles towards apex, without posteroventrals. Middle tibia with only one each antero- and posterodorsal. (Genitalia, Pl. IV, Fig. 35). About 3.75 mm.
Only records known, Oxon: *Wychwood Forest*, 1 ♂, 2.vi.63 (*A. C. Pont*) and 1 ♀, 20.v.61 (*E. A. Fonseca*).....35. **novalis** Pont.
- 21 (18) Eyes bare or practically so (in *nidica* and *ringdahlana* the eyes may sometimes be sparsely short-pubescent).
- 22 (23) The ventro-basal process on middle metatarsus long, slender and erect, its length distinctly more than diameter of metatarsus (text-fig. 14f). Fifth sternite with a row of short spine-like bristles near lower (inner) margin of each lobe, and an outer row of 3 longer bristles, apical one longest and strongest. Presutural acrostichals bi-serial. Squamae whitish. (Genitalia, Pl. III, Fig. 26). 4.75-5.5 mm.
Reared from an unidentified bird's nest at Dullingham Ley (Cams.) and from song-thrush's nests in Bucks. Oxon. (Wychwood Forest and Middleton Stoney) and Somerset (Bourton Coombe). *Scarce*. iv-vi.
- 23 (22) Middle metatarsal process broader and more tooth-like, less conspicuous and not entirely erect (text-figs. 14g, 1). Lobes of fifth sternite not armed as above.
- 24 (27) Squamae whitish or pale yellowish. Halteres with at least the knob clear yellow. Middle tibia with 2-3 anterodorsal and 2 posterodorsal bristles in addition to the preapical. Hind femur with about 5 strong antero-ventrals on apical half. Presutural acrostichals bi-serial, sometimes with isolated small setulae between the rows.
- 25 (26) Upper postocular ciliation uni-serial. Middle tibia rather slender in basal half and abruptly thickened just before middle to about twice basal diameter, pubescence beneath apical half somewhat coarse, as long as (or longer than) diameter of tibia and in places almost tufted (text-fig. 14r). Hind tibia abundantly clothed with long fine setulose hairs curled over at tips. (Genitalia, Pl. III, Fig. 30). 4-5.25 mm.
Generally distributed. Very common. v-ix.....30. **armata** Meigen.
- 26 (25) Upper postocular ciliation with a second row of shorter setulae immediately below. Middle tibia less slender at base, thickening more or less uniformly to apex, ventral pubescence only about two-thirds as long as greatest diameter of tibia. Hind tibia with the normal bristles, including 2-3 anterodorsals and 1-2 anteroventrals. Middle metatarsal "tooth" rather inconspicuous, resembling a shallow fin-like ridge. (Genitalia, Pl. IV, Fig. 38). About 6.5 mm.
Only record known, Gloucs.: *Coombe Dingle, Bristol*, 1 ♂, 29.iv.54 (*E. A. Fonseca*).....38. **pseudonorvegica** Fonseca.
- 27 (24) Lower squama brownish to blackish-brown, with darker border and brownish fringe. Knob of halteres darkened, brownish to blackish, at least on apical half (in *umbrosa* occasionally entirely yellow). Middle tibia with

- only 1 each antero- and posterodorsal. Hind femur with not more than 2 strong anteroventrals at apex.
- 28 (29) Presutural acrostichals more or less uniformly tri-serial. Lower squama little developed, its greatest length from base (thoracic margin) to hind (outer) margin hardly more than width of hind tibia at extreme base, hindmargin only very slightly convex (see text-fig. 16b). Hind femur without distinct anteroventrals at apex, posteroventrally along whole length with curved fine hairs which become progressively longer towards apex of femur. (Genitalia, Pl. V, Fig. 45). 3.5-4 mm. (= *aerea* Mg.).
Has been bred from nest of House Martin (Delichon urbica). Generally distributed. Common. iv-ix. 45. rondanii Strobl.
- 29 (28) Presutural acrostichals bi-serial, though isolated small setulae may be found between the rows. Lower squama more developed, its greatest length from base to the conspicuously rounded hindmargin decidedly more than basal width of hind tibia (text-fig. 16c). Hind femur with 1-2 well developed anteroventrals at apex, posteroventrally on apical half with a row of bristles.
- 30 (31) Frontal bristles more numerous (12-14 pairs), extending quite or almost up to front ocellus. Hind femur with 2 anteroventrals at apex, and posteroventrally on apical half with a uni-serial row of 7-9 bristles which are longer than greatest depth of femur, those towards middle of femur being more posterior in position than those at apex. (Genitalia, Pl. III, Fig. 22). 5-5.5 mm. (= *umbrosa* Stein of Ringdahl nec Stein).
Scotland: Ballater (Aberdeens.), 24.vii.42 and Spey Bridge (Inverness.), 30.vi.43 (C. J. Wainwright); Loch Garten (Inverness.), 25.vi.63 (E. A. Fonseca); Loch Polchar (Inverness.), 6.ix.66 (D. M. Ackland). Wales: Dolgellau (Merioneths.), 21.iv.38 (J. E. Collin). . . 22. ringdahlana Collin.
- 31 (30) Frontal bristles less numerous (7-9 pairs), not extending much more than two-thirds of the way up to front ocellus. Hind femur usually with only 1 anteroventral at apex, the posteroventral row of bristles either more than 9 or less than 7 in number.
- 32 (33) Posteroventral row on apical half of hind femur consisting of 10-14 bristles of almost uniform length (about equal to depth of femur), those near middle usually bi-serial and not noticeably more posterior in position than those at apex (text-fig. 14c). Thorax, seen from behind, deep brownish-black, pale-dusted in front of scutellum. (Genitalia, Pl. III, Fig. 23). 4-4.75 mm. (= *subumbrosa* Ringdahl).
Has been bred from leaf-litter and detritus collected from rotten oak. Scotland: Sutherland and Inverness. England and Wales: widely distributed from Lancs. and Yorks. to south coast. Frequent. iv-ix.
23. *umbrosa* Stein.
- 33 (32) Posteroventral row on apical half of hind femur consisting of only 5-6 longer bristles, becoming shorter (but not bi-serial) and distinctly more posterior as they approach middle of femur. Thorax deep brownish-black, but without distinct pale dusting in front of scutellum. (Genitalia, Pl. III, Fig. 27). 4.5-5 mm.
Inverness.: Loch Garten, 3 ♂, 21.v.34 (C. J. Wainwright), Aviemore, 1 ♂, 26.v.34 (J. E. Collin), Loch Garten, 1 ♂, 17.vi.60 and Glen Urquhart, 1 ♀, 9.vi.62 (E. A. Fonseca). 27. umbratica Collin.
- 34 (17) Middle metatarsus simple, without spine or tooth beneath at base.
- 35 (36) Hypopygium very strongly developed, forming a conspicuous globular projection beneath tip of abdomen (text-fig. 14p). Fifth sternite of unusual structure, glossy black without obvious hairs or bristles, and instead of the normal pair of hindmarginal lobes with a median broad triangular plate which projects downwards perpendicular to venter (text-fig. 14r ↑). Eyes separated by more than width of third antennal segment. Hind tibia, anterodorsally and anteroventrally, with only 1 bristle. Hind femur short-haired posteroventrally. Hind coxa with 1 or more fine bristles on inner posterior margin. (Genitalia, Pl. I, Fig. 7). 4-4.75 mm.
Fairly widely distributed from Durham to south coast. Uncommon. vi-ix. 7. glaucescens Zetterstedt.

- 36 (35) Hypopygium much less developed, not conspicuously globular. Fifth sternite with the usual pair of hindmarginal lobes more or less developed, lying quite or almost in the same plane as rest of sternites, never turned downwards perpendicular to venter.
- 37 (38) Abdomen, including hypopygium, entirely reddish-yellow, rather thinly dusted whitish with a broad undusted median stripe. Middle and hind femora entirely reddish-yellow. Middle and hind tibiae broadly reddish-yellow apically. Hind femur, posteroventrally on basal three-fourths, with an irregular row of fine bristles, most of which are as long as greatest depth of femur. (Genitalia, Pl. I, Fig. 10). 5-6.5 mm.
Herefords.: *Moccas Park*, 1 ♀, 6.viii.34 (*C. J. Wainwright*); *Brecc.*: *Port Newydd*, 1 ♀, 16.viii.34 (*J. E. Collin*); *Gloucs.*: *Brockworth*, 1 ♂, 5 ♀, 6.v.57 (*R. S. George*) and *Churchdown*, 3 ♀, 19.v.57 and 1 ♂, 4 ♀ reared from larvae, 24.vi-3.vii.57 (*E. A. Fonseca*). Both *Gloucs.* records were from droppings of the *Noctule Bat* (*Nyctalus noctula* Schr.).
 10. *vespertilionis* Ringdahl.
- 38 (37) Abdomen partly or entirely black in ground-colour.
- 39 (58) Middle tibia simple, ventrally along whole length with practically uniform, extremely dense, and usually very short erect fine pubescence of which the longest hairs are not much more than half as long as greatest diameter of tibia (text-figs. 14J, K). Presutural acrostichals tri-serial (often biserial right in front), usually becoming quadri- to pluriserial behind suture. Hind coxa always with one or more fine bristles on inner posterior margin (text-fig. 14c).
- 40 (49) Abdomen reddish-yellow with more or less extensive black markings.
- 41 (42) Frontal orbits conspicuously broad, glistening silvery-white, separated throughout their length by a distinct black frontalia, so that frons at narrowest part is wider than third antennal segment. Facial orbit, at a point level with insertion of arista, wider than third antennal segment. Thorax densely dusted light sandy-grey without distinct stripes. Tibiae rather broadly reddish-yellow at base, front one on about basal half. Prealar bristle usually absent or inconspicuous. (Genitalia, Pl. I, Fig. 2). 4.75-6 mm.
Only British records known, Herefords.: *Monnow Valley*, 20.vi.06 and 23-27.v.13, bred from nests of *Sand Martin* (*Riparia riparia*) (*J. H. Wood*).
 2. *hirundinis* Ringdahl.
- 42 (41) Frontal orbits narrower and touching for at least a short distance. Facial orbit narrower. Thorax either darker grey with a more or less distinct median brown stripe, or more uniformly blackish. Tibiae less broadly reddish-yellow at base.
- 43 (44) Abdominal tergites 2 and 3 almost entirely reddish-yellow, with a more or less complete (sometimes faint on second tergite) blackish median stripe of fairly uniform width, not widening out towards hindmargins of tergites. Thorax, seen from behind, with a pair of grey-dusted stripes between the lines of bristles. Middle femur, posteroventrally along whole length, with 3-4 rows of close-set long fine bristles and setulose hairs, those of hindmost row being longest and strongest. Hind femur with almost whole of posterior and posteroventral surfaces clothed with dense fine pubescence. A well developed prealar nearer to supra-alar than to suture, often with a short one in front of it. (Genitalia, Pl. I, Fig. 6). 5.75-7.75 mm.
Wors. (*Alfrick*), *Herefords.* (*Shobden Marsh*), *Glamorgan.* (*Oxwich*), *Berks.* (*Wytham Wood, from pupae in soil beneath oak-trap*), *Devon* (*Lustleigh Cleeve*) 6. *speciosa* Villeneuve.
- 44 (43) Tergites 2 and 3 less extensively yellow, the black median stripe broadened out towards hindmargins of tergites.
- 45 (46) Ventral pubescence on middle tibia extremely short, hardly one-fourth as long as greatest diameter of tibia (text-fig. 14J). Thorax dark grey or brownish-grey with a more or less distinct darker brownish median stripe. Prealar bristle represented by 1-3 very short bristles close to supra-alar, which are usually no longer (though sometimes stouter) than rest of thoracic hairs. Hind tibia anterodorsally with distinct shorter bristles above the strong one. (Genitalia, Pl. I, Fig. 1). 4.75-6.5 mm.

- Bred from nests of Vespula and Bombus, nests of small mammals, including bats, from a larva in root of Beta species, and from various fungi. Generally distributed. Very common. Almost all year round. The "Small House-fly".* 1. *canicularis* Linné.
- 46 (45) Pubescence beneath middle tibia distinctly longer. Thorax, except sometimes immediately in front of scutellum, more uniformly blackish, without distinct median stripe. Prealar usually more strongly developed, nearer to (or at least not further from) suture than to supra-alar and often with a smaller bristle behind it. Hind tibia anterodorsally with only the single submedian strong bristle.
- 47 (48) Hind femur posteroventrally densely and shortly setulose, the setulae nowhere long or hair-like. Bristles on antero- and posteroventral surfaces of middle femur somewhat short and dense. Prealar almost exactly half-way between supra-alar and suture. Prothoracic episternum quite bare. (Genitalia, Pl. I, Fig. 5). 4.5-5.5 mm.
Scotland: Spey Bridge (Inverness.), 24.vi.43 (C. J. Wainwright); Craigellachie (Inverness.), 3.ix.66 (D. M. Ackland). England: Shobden Marsh (Herefords.), 3.viii.04 (J. H. Wood); Cookham (Berks.), 19.vii.34, bred from nest of Little Owl (Athene noctua) (E. B. Basden); Wishford (Wilts.), 28.vii.63 (C. H. Andreues); Weston-s-Mare (Somerset), 19.viii.63 (D. M. Ackland); Greenland (Bucks.), 13-21.vii.36, bred from nest of Heron (Ardea cinerea) 5. *clara* Collin.
- 48 (47) Hind femur posteroventrally with sparser longish fine hairs which are mainly about half as long as greatest depth of femur. Middle femur with less numerous and longer bristles beneath, those of posteroventral row mainly as long as depth of femur. Prealar distinctly nearer to suture. Prothoracic episternum (immediately in front of and below anterior spiracle) usually bearing some small setulae. (Genitalia, Pl. I, Fig. 4). 5-7 mm.
Bred from Lactarius piperatus. Scotland: Aberdeens. England and Wales: Kent to Norfolk to Cheshire to Gloucs. to Dorset. Frequent. v-ix.
- 49 (40) Abdomen entirely black in ground-colour.
- 50 (51) Palpi strongly dilated and flattened, at widest part almost as wide as third antennal segment (text-fig. 15κ). Middle femur posteroventrally with a series of strong bristles, starting at base as a single row but shortly becoming denser and pluri-serial almost to apex, those of all but hindermost row being shorter and weaker. Eyes separated by somewhat more than width of third antennal segment, the rather broad orbits separated by a narrow frontalia. (Genitalia, Pl. I, Fig. 9). 4-5.5 mm.
Only British records known, Dawlish Warren (S. Devon), 1 ♂, 27.vi.58 (L. H. Woodlatt); Orwicks (Glam.), 1 ♀, 12.vi.55 (E. A. Fonseca).
- 51 (50) Palpi normal, more or less filiform. Posteroventral bristles on middle femur tending more to be uni-serial throughout, except in *aequilineata*, in which the 2-3 rows present are less dense.
- 52 (53) Thorax, in dorso-lateral view, dusted ash-grey with a pair of dark brown-dusted stripes between the lines of bristles, and with a less distinct broader pair outside dorsocentral rows. Upper postocular ciliation bi-serial, the lower row of shorter setulae being somewhat irregular. Hind tibia with 5-7 fine posteroventral bristles on apical half. (Genitalia, Pl. II, Fig. 12). 6.5-7 mm.
Scotland: Dumbartons. and Midlothian. England and Wales: Widely distributed from Durham to south coast. Males frequent, females rarely recorded. iv-xi. 12. *incisurata* Zetterstedt.
- 53 (52) Thorax either dusted greyish with 1-3 brownish stripes on lines of bristles, or more uniformly brownish-black without stripes. Upper postocular ciliation uni-serial. Hind tibia without posteroventral bristles.
- 54 (55) Ventral pubescence on middle tibia quite half as long as greatest diameter of tibia (text-fig. 14κ). Hind femur posteroventrally with a row of setulose hairs, some of which are as long as (or longer than) greatest depth of femur. Hind tibia with 3-5 anteroventrals. Two prealars usually present, front one strong though not very long. Thorax, in dorso-lateral view, dusted

slate-grey with a rather indistinct brownish median stripe and sometimes with traces of dorsocentral stripes. Abdomen, seen from behind, densely grey-dusted with a median dark stripe of uniform width. (Genitalia, Pl. I, Fig. 8). 4.75-6.75 mm.

Bred from wood detritus and from the fungus Polyporus dryadeus. Strongly attracted to exudations from damaged trees, especially those attacked by Cossus. Norfolk, Cambs., Gloucs., Berks., Oxon., Somerset, Hants. and Kent. Uncommon. v-x...... 8. *aequilineata* Ringdahl.

- 55 (54) Pubescence beneath middle tibia distinctly less than half as long as tibial diameter. Hind femur with stouter posteroventral bristles which are much shorter than greatest depth of femur. Hind tibia with only 1-2 anteroventrals. Prealar represented by 1-3 very short bristles which are usually no longer (though sometimes stouter) than rest of thoracic hairs. Dusting of thorax, when present, more brownish-grey. Abdomen, seen from behind, with more or less extensive dark areas in addition to the median dark stripe.
- 56 (57) Pubescence beneath middle tibia hardly one-fourth as long as diameter of tibia (text-fig. 14r). Posteroventral bristles on middle femur, apart from the single long one at base, hardly as long as greatest depth of femur. Thorax and scutellum dusted brownish-grey (sometimes very thinly), former with a more or less distinct median darker stripe. Hind tibia usually with 2 anteroventrals. (Genitalia, Pl. I, Fig. 1). 4.75-6.5 mm.
The dark form found only out of doors, possibly with the same distribution as the typical form. Uncommon. iv-vii...... 1. *canicularis* Linné.
- 57 (56) Pubescence beneath middle tibia about one-third as long as greatest diameter of tibia. Middle femur posteroventrally with 3-4 bristles on basal half distinctly longer than greatest depth of femur. Thorax and scutellum uniformly deep brownish-black, somewhat shining, without distinct dusting except on humeri and postalar calli. Hind tibia with only one anteroventral. (Genitalia, Pl. I, Fig. 3). 4.75-6 mm.
Cambs. (Devil's Ditch), Suffolk (Newmarket), Pemb. (Abermaur), Oxon. (Nuneham Courtenay), Somerset (Fairland), Hants. (Wick, I. of Wight) and Cornwall (Newquay). Often in considerable numbers where found, but probably an overlooked species owing to its habit of flying erratically in the open and rather high up. Frequent but apparently local. iv-vii.
3. *subpubescens* Collin.
- 58 (39) Middle tibia ventrally with more sparse, not uniform, longer hairs (at least on apical half), tibia quite often with thickenings, tubercles or other irregularities (text-figs. 14r, L, M and 15D).
- 59 (64) Abdomen at least partly reddish-yellow.
- 60 (61) All femora extensively brownish to blackish, and at least middle and hind tibiae considerably darkened. One pair of presutural acrostichals distinctly longer and stronger than the rest. Antennae conspicuously short, falling short of mouthedge by about the length of third segment. Hind femur with only 1 anteroventral bristle at apex. (Genitalia, Pl. III, Fig. 25). About 4 mm.
Reared from detritus and litter collected from hollow bole of elm tree (A. C. Pont). Cambs. (Chippenham Fen and Woodditton Wood), Gloucs. (Bristol), Wilts. (Blackmoor Copse), Berks. (Wytham Wood), Oxon. (Wychwood Forest), Glamorgan. (Oxwich), Somerset (Fairland) and Hants. (New Forest). Scarce. v-vi, viii-ix...... 25. *gotlandica* Ringdahl.
- 61 (60) Femora and coxae entirely or mainly reddish-yellow, at most hind (and sometimes middle) femur darkened at apex. Presutural acrostichals of more or less uniform length. Antennae longer, falling short of mouthedge by at most half the length of third segment. Hind femur with a complete row of anteroventral bristles, 2-4 of those at apex longer than the rest.
- 62 (63) Middle tibia remarkably bent and notched at middle, with just above the notch a blackish ridge bearing a dense row of short black spines. Hind tibia, both antero- and posteroventrally, with 4-5 very long curved bristles at apex. Hind femur posteroventrally with a spaced row of short bristles, but posteriorly with only decumbent short hairs. Basal antennal segments reddish-yellow. (Genitalia, Pl. VI, Fig. 51). 5-6 mm.

Scotland : Logie (*Elgins.*), ix. 04 (*F. Jenkinson*); Bridge of Brown (*Inverness*), viii. 35 (*J. E. Collin*); Ballater (*Aberdeens.*), 1. viii. 42, *Cambus o' May* (*Aberdeens.*), 11 and 13. viii. 43 (*C. J. Wainwright*). England and Wales : Llangollen (*Denbighs.*), 14. viii. 38, Church Stretton (*Shrops.*), 16. viii. 36 and Abberley Hill (*Warcs.*), 7 and 8. ix. 41 (*C. J. Wainwright*). Scarce.
51. *ornata* Meigen.

- 63 (62) Middle tibia neither bent nor notched, with normal pubescence beneath. Hind tibia without long curved bristles at apex. Hind femur, posteroventrally and posteriorly, rather densely clothed with long fine hairs which are curled over at tips (text-fig. 14N). Basal antennal segments at most only obscurely reddish. (Genitalia, Pl. V, Fig. 48). 4.5-5 mm.

Scotland : Ross., Morays. and Aberdeens. England and Wales : Widely distributed from Cumberland and Durham southwards. Common. vii-ix.
48. *pretiosa* Schiner.

- 64 (59) Abdomen entirely black in ground-colour, more or less grey-dusted.
65 (66) All tibiae entirely reddish-yellow. Hind femur, posteroventrally on basal two-thirds, with a regular row of 8-10 rather short bristles. A single well developed prealar, two-thirds to three-fourths the length of second notopleural, much nearer to suture than to supra-alar. (Genitalia, Pl. VI, Fig. 52). 4.75-5.25 mm.

Scotland : Sutherland, Morays. and Aberdeens. England and Wales : Widely distributed from Lancs. and Yorks. to south coast. Frequent, especially autumn. vii-x. 52. *pallitibia* Rondani.

- 66 (65) Legs black, at most tibiae more or less reddish-yellow at base.
67 (78) Lower squama very little developed, its greatest length from base (thoracic margin) to hind (outer) margin not or hardly more than width of hind tibia at base, hindmargin at most only very slightly convex (text-figs. 16B, D, E). Either acrostichals strictly bi-serial throughout, or abdomen broadening uniformly from base to fourth segment.

- 68 (69) Abdomen broadening from base to hindmargin of third segment, fourth parallel-sided, fifth tapering rather abruptly to tip. Ventral margins of fourth and fifth tergites armed with close-set long strong bristles which cross beneath abdomen. Hind femur with a complete row of fairly long anteroventral bristles. (Genitalia, Pl. V, Fig. 49). 5-5.5 mm. (= *Coelomyia* Hal., 1840).

Generally distributed. Common. iv-vii. 49. *mollissima* Haliday.

- 69 (68) Abdomen normal, parallel-sided, or narrowing slightly from second segment to tip. Ventral margins of fourth and fifth tergites without strikingly long bristles. Hind femur with long anteroventrals at apex only.

- 70 (71) Hind tibia without the normal dorsal preapical bristle. Middle femur, about middle of anteroventral surface, with 3-4 outstanding bristles which are conspicuously longer and coarser than any others on that surface (text-fig. 15A). Hind femur usually with 4 of the anteroventrals at apex conspicuously stronger than the rest. Ventral pubescence on basal half of middle tibia very short and more spinose than that on apical half, latter mainly distinctly longer than diameter of tibia. (Genitalia, Pl. V, Fig. 50). 4.5-5 mm.

Generally distributed. Very common. iv-ix. 50. *sociella* Zetterstedt.

- 71 (70) Hind tibia with a distinct dorsal preapical. Middle femur without any strikingly differentiated bristles about middle of anteroventral surface. Hind femur usually with only 2-3 strong anteroventrals at apex.

- 72 (73) Upper postocular ciliation with a more or less regular row of shorter setulae immediately below. At least front tibia distinctly reddish-yellow at base. Abdomen, seen from behind, densely dusted grey with a median dark stripe which has no, or hardly any, tendency to widen out towards hindmargins of tergites. (Genitalia, Pl. VI, Fig. 54). 3.75-4.75 mm.

Scotland : Inverness. England and Wales : Yorks., Norfolk, Cambs., Suffolk, Glamorgan., Gloucs., Wilts., Berks., Oxon. and Somerset. Frequent. Probably an overlooked species owing to its great similarity to the common *serena*. v-viii. 54. *subsimilis* Ringdahl.

- 73 (72) Upper postocular ciliation strictly uni-serial.

- 74 (75) Thorax, seen from behind, with distinct greyish dusting on sides, in front of

scutellum, and rather more densely about humeri. Only a single rather long prealar present, more than half as long as second notopleural. Abdomen, seen from behind, somewhat densely dusted bluish-grey, with a conspicuous undusted median stripe which is uniformly narrow on at least fourth tergite and usually obsolete on fifth. (Genitalia, Pl. VI, Fig. 55). 4.75-5.5 mm.

- Generally distributed. Common. v-x. 55. similis Stein.*
- 75 (74) Thorax, seen from behind, more uniformly deep brownish-black, with much less distinct dusting on sides or in front of scutellum. Two distinct prealars present. Abdomen, seen from behind, more thinly dusted brownish or brownish-grey, the broader undusted median stripe widened out towards hindmargins of all tergites except sometimes fifth.
- 76 (77) Posteroventral bristles on front femur shorter, longest ones hardly longer than greatest depth of femur. Pubescence beneath middle tibia more uniform, that on basal half mainly quite half as long as on apical half and distinct right to base of tibia. Upper postocular ciliation all much longer, 7-10 of the longer hairs on each side projecting far above upper eye-margin. (Genitalia, Pl. VI, Fig. 53). 3.5-4.75 mm.
- Generally distributed. Very common. iv-ix, xi. . . . 53. serena Fallén.*
- 77 (76) Posteroventral bristles on front femur longer, longest ones almost or quite twice as long as greatest depth of femur. Pubescence beneath middle tibia distinctly less uniform, that on basal half mainly much less than half as long as on apical half and normally not reaching base of tibia. (Genitalia, Pl. V, Fig. 46). 3.5-4 mm.
- Reared from nest of House Martin (Delichon urbica). Scotland: Inverness., Aberdeens. and Dumfries. England and Wales: Notts., Merioneths., Worcs., Hunts., Cambs., Suffolk, Herefords., Glamorgan., Gloucs., Bucks., Herts., Wilts., Berks., Middx., Somerset, Hants., Surrey and Kent. Frequent; autumn females often swarm to freshly trampled grass. v-vii, ix-x. 46. parva Stein.*
- 78 (67) Lower squama more developed, its greatest length from thoracic margin to tip of lobe decidedly more than basal width of hind tibia, hindmargin conspicuously rounded or roundish-triangular (text-figs. 15g, h and 16c, r, c, n).
- 79 (82) Middle tibia with a conspicuous knob-like process or tubercle on ventral surface (text-figs. 14L, M). Hind coxa with 1 or more fine bristles on inner posterior margin.
- 80 (81) Tubercle beneath middle tibia at about apical third, broadly triangular, shining black and with some hairs on at least anterior face (text-fig. 14L). Acrostichals tri-serial in front of suture, becoming quadri- to pluri-serial behind. Prealar bristle close to supra-alar, long and fine, but distinctly stronger than other hairs which cover most of area between supra-alar and suture. Hind tibia with a row of about 8 long anteroventral bristles on apical two-thirds. Occiput, immediately below upper postocular ciliation, with several irregular rows of shorter setulae. (Genitalia, Pl. II, Fig. 19). 5-6.75 mm.
- Bred from rotting meat, from nest of Vespula vulgaris, and a ♀ reared from an old bird's nest. Generally distributed. Common. v. ix.*
19. coracina Loew.
- 81 (80) Tubercle beneath middle tibia slightly above middle, rounded, entirely bare and shining black, with a distinct concavity both above and below it (text-fig. 14M). Acrostichals bi-serial throughout. Two short subequal prealars present, both nearer to suture than to supra-alar. Hind tibia with only 1 anteroventral. Occiput with a broad bare space immediately below the uni-serial upper postocular row. (Genitalia, Pl. IV, Fig. 31). 4.5-5 mm.
- Scotland: Ross. (Glen Shiel); Aberdeens. (Cambus o'May); Inverness. (Spey Bridge, Aviemore and Glenmore); Perth. (Glen Dochart). England: Norfolk (Horning Ferry). Scarce. v-viii. . . . 31. tuberculata Zetterstedt.*
- 82 (79) Middle tibia without such a knob or tubercle beneath.
- 83 (84) Hind femur, posteroventrally near apex, with a distinct swelling bearing a dense tuft of short hairs, and anteroventrally with only 1 strong bristle at

apex (text-fig. 15B). Middle tibia with 2 well developed posterodorsal bristles. Hind coxa without bristles on inner posterior margin. Thorax, seen from behind, more or less uniformly and somewhat thinly bluish-grey dusted. (Genitalia, Pl. IV, Fig. 33). 4.75-5 mm. (= *kowarzi* Verr.).

Scotland: Inverness. (Corrimony) and Argylls. (Port Appin). England: Northumberland (Wooler), Derbys. (Matlock), Notts. (Burton Joyce), Norfolk (Foulmire), Cambs. (Devil's Ditch and Chippenham Fen), Suffolk (Barton Mills), Gloucs. (Beaudesert Park), Oxon. (Wychood Forest), Somerset (Redhill). Scarce. v-vi. 33. *metallipennis* Zetterstedt.

84 (83) Hind femur without this tufted swelling near apex, and with 2 or more anteroventral bristles. Middle tibia with only 1 posterodorsal, or if with more than 1 then either inner posterior margin of hind coxa with bristles (text-fig. 14c), or thorax black and somewhat shining with at most some thin dusting laterally.

85 (94) Lower squama brownish, with a narrow brownish-black border and brown or brownish-yellow fringe. Palpi of normal length, at least as long as mentum.

86 (87) Knob of halteres brownish-black at least on apical half. Hind femur posteroventrally without erect bristles or setulose hairs on basal half, but with 6-8 fine bristles on apical half. Hind tibia with only 1 anteroventral, and middle femur without a conspicuous outstanding bristle at extreme base beneath. (Genitalia as typical *postica*). 3.75-4.75 mm. (= *postica* Stein of Hennig nec Stein).

Occurs in Scotland together with, but less frequently than, typical *postica*.

¹¹ 24a. *postica* var. *posticaria* nom. nov.

87 (86) Knob of halteres yellow, occasionally darkened to brownish-yellow, but never

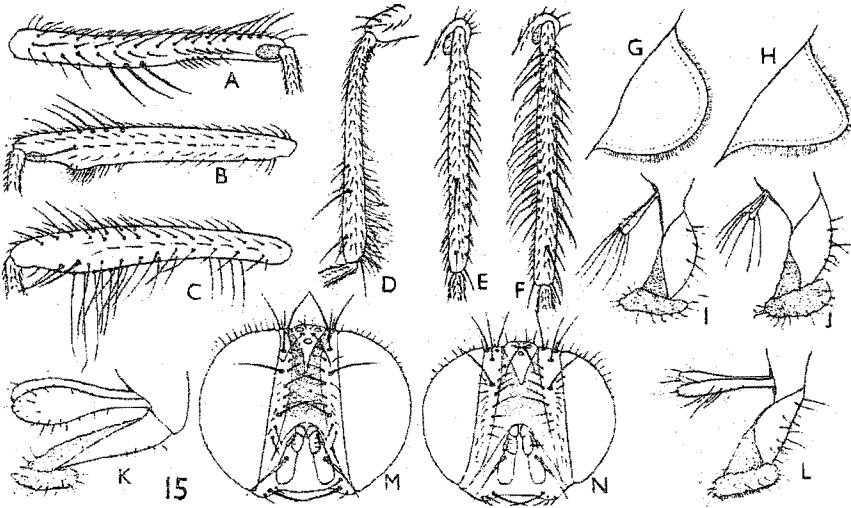


FIG. 15—*Fannia* spp.: A, *sociella* ♂ (rt. mid. femur); B, *metallipennis* ♂ (rt. hind femur); C, *atra* ♂ (do.); D, *polychaeta* ♂ (rt. mid. tibia); E, *mutica* ♂ (rt. hind tibia); F, *immutica* ♂ (do.); G, *aequalineata* ♀ (lower squama); H, *latipalpis* (do.); I-L palpi: I, *polychaeta* ♀; J, *minutipalpis* ♀; K, *latipalpis* ♂; L, *armata* ♀; M, *fuscula* ♀; N, *canicularia* ♀.

¹¹ Hennig (1955) describes typical *postica* Stein as having dark squamae and halteres and gives the name of *postica* var. *parapostica* to the form having those parts pale. Stein described *postica* from British specimens which he received from, and returned to, Verrall, and these specimens, one male of which has been selected as type by Mr. J. E. Collin, are now in the Verrall Collection and all have pale squamae and halteres. A new name was therefore required for the dark form, which is not uncommon in Scotland.

- to brownish-black. Hind femur posteroventrally either without any erect bristles or setulose hairs, or with some on basal half. Hind tibia with 2 or more anteroventrals, or if with only 1 then middle femur with a long strong erect bristle at extreme base beneath.
- 88 (89) Acrostichals strong and strictly bi-serial throughout. Hind femur, on basal fourth, with a short row of 4-5 longish fine posteroventral bristles, and on apical half, both antero- and posteroventrally, with about 6 longer and somewhat stronger bristles which increase in length towards apex of femur, where (at least posteroventrally) they are quite half the length of hind tibia (text-fig. 15c). (Genitalia, Pl. V, Fig. 44). 4.25-4.75 mm. (= *carteri* Mall. = *femorata* Lw. of Mall. nec Lw.).
Scotland: Sutherland (Brora), Inverness. (Glen Urquhart, Loch Garten, Aviemore and Glenmore), Perth. (Glen Lochay and Loch Tummel) and Argyll. (Glen Coe). England: Lancs. (Grange-over-Sands), Cheshire (Cotteril Clough), Worcs. (Wyre Forest), Oxon. (Wychwood Forest), Hants., New Forest (Bursley and Aldridge Hill). Scarce. v-vii...44. atra Stein.
- 89 (88) Acrostichals comparatively weak and more than bi-serial behind suture. Hind femur without conspicuously long bristles on apical half of either antero- or postero-ventral surface.
- 90 (91) Hind femur, posteroventrally on slightly more than basal half, with a somewhat irregular series of long fine bristles curled over at tips. Front tibia distinctly reddish-yellow on basal fifth or sixth. Hind tibia with only 1 each anterodorsal and anteroventral. Frontal bristles, 4-5 pairs, hardly reaching to middle of frons. (Genitalia, Pl. V, Fig. 47). 3.25-3.75 mm.
Scotland: Sutherland (Tongue, Glen Shin and Inveran), Ross. (Gairloch), Inverness. (Spey Bridge, Boat-o-Garten and Corrimony). England: Derbys. (Hasland), Hants., New Forest (Matley Bog and Linwood), Dorset (Arne). Uncommon. v-vi, viii-ix.....47. verralli Stein.
- 91 (90) Hind femur only short-haired posteroventrally. All legs entirely black, not even front tibia paler at base. Hind tibia with more than 1 anteroventral, and anterodorsally with 2-3 shorter bristles in addition to the normal strong one. Frontal bristles more numerous, 8-15 pairs, almost up to front ocellus.
- 92 (93) 12-15 pairs of frontal bristles present. (Genitalia, Pl. VI, Fig. 57). 4.5-5 mm. (= *smolandica* Ringd.).
Scotland: Morays. (Forres), Inverness. (Glen Feshie and Loch Garten), Aberdeens. (Ballater), Perth. (Dunalastair and Loch Tummel). England and Wales: Merioneths. (Llanelltyd), Norfolk (Kilverstone), Cambs. (Chippingham Fen), Worcs. (Wyre Forest), Oxon. (Wychwood Forest), Hants. (Matley Bog), Devon (Lynton) and Kent (Woolwich Wood). Scarce. vi-ix. 57. nigra Malloch.
- 93 (92) Only 8-10 pairs of frontal bristles. (Genitalia, Pl. VI, Fig. 56). About 4 mm.
Only records known: Farley Down (Hants.) 1 ♂, 9.vi.33 (J. E. Collin); Matley Bog, New Forest (Hants.) 2 ♂, 25.viii.57 (J. E. Collin and E. A. Fonseca).....56. collini Fonseca.
- 94 (85) Squamae whitish or pale yellowish, with a white or yellowish border and whitish fringe, or if (rarely) brownish then palpi conspicuously shorter than mentum.
- 95 (108) Middle tibia with 2 or more anterodorsal bristles in addition to the preapical, uppermost one usually shorter and weaker. A single well developed prealar bristle present close to thoracic suture, half to three-fourths the length of second notopleural.
- 96 (99) Hind femur with long posteroventrals on at least basal half.
- 97 (98) Long posteroventrals on hind femur extending from base almost to apex. Arista entirely black. Presutural acrostichals bi-serial and fairly strong, behind suture usually with a third row of much shorter and weaker setulae in between. (Genitalia, Pl. IV, Fig. 37). 5.75-6.5 mm.
Scotland: Inverness. (Spey Bridge and Nethybridge). England and Wales: Suffolk (Newmarket), Glamorgan. (Oxwich) and Hants. (New Forest). Rare. vi-vii.....37. norvegica Ringdahl.

- 98 (97) Hind femur with posteroventrals on basal half only. Arista distinctly yellowish at base. Presutural acrostichals less strictly bi-serial, becoming more tri- to quadri-serial behind. (Genitalia, Pl. IV, Fig. 36). 4.5-6 mm.
Scotland: Inverness. (Spey Bridge, Aviemore and Coylumbridge). England: Suffolk (Neumarket), Wores. (Wyre Forest), Hants. (nr. Bournemouth) and Kent (Woolwich Wood). Rare. vi-vii. 36. *carbonaria* Meigen.
- 99 (96) When present, posteroventral bristles on hind femur at most hardly as long as depth of femur, usually much shorter.
- 100 (103) Hind coxa bare on inner posterior margin. Palpi of normal length, as long as or longer than mentum, with quite short bristles at apex (text-fig. 15L). Pubescence beneath middle tibia shorter, longest hairs little more than two-thirds as long as greatest diameter of tibia. Abdomen very thinly dusted and distinctly shining, the triangular undusted markings consequently indistinct.
- 101 (102) Halteres distinctly darkened, knob never entirely clear yellow. Upper postocular ciliation with a more or less regular row of shorter setulae immediately below. All legs entirely black. (Genitalia, Pl. IV, Fig. 40). 4-5.5 mm. (= *halterata* Ringd.).
Scotland: Inverness. (Glenmore and Loch-an-Eilean). England and Wales: Pembs. (Abermawr), Glamorgan. (Oxwich), Gloucs. (Coombe Dingle and Filton), Somerset (Failand, Bourton Coombe and Worlebury), Berks. (Cothill and Tubney Wood), Hants. (New Forest) and Surrey (Farnham). Uncommon. iv-viii. 40. *corvina* Verrall.
- 102 (101) Halteres clear yellow. Upper postocular ciliation uni-serial. Front tibia distinctly reddish-yellow on basal sixth to fifth. (Genitalia, Pl. IV, Fig. 39). 4.5-5 mm.
Wetherslack (Westmorland), 5. viii. 39 and Alfrick (Wores.), 9 and 30. vi. 40 (C. J. Wainwright); Horning Ferry (Norfolk), 9. vii. 54 (J. E. Collin); Oxwich (Glam.), 8. vii. 57 (E. A. Fonseca); Ingelstone Common (Gloucs.), 7. vii. 60 and 28. vi. 64 (A. C. Pont). Rare. 39. *coracula* Collin.
- 103 (100) Hind coxa with 1 or more bristles on inner posterior margin (text-fig. 14C). Palpi conspicuously shorter than mentum, apical bristles strikingly long (text-figs. 15r, s). Pubescence beneath middle tibia longer. Abdomen, seen from behind, rather densely dusted grey with conspicuous black markings.
- 104 (105) Upper postocular ciliation uni-serial, at most with 1-2 isolated short setulae immediately below. Longest hairs of pubescence beneath middle tibia about 1½ times as long as diameter of tibia (text-fig. 15D). Hind tibia with 3-4 anteroventrals. (Genitalia, Pl. V, Fig. 41). 4.5-5 mm.
Bred from leaf-litter and detritus in rotten tree-stump. Generally distributed. Common. v-ix. 41. *polychaeta* Stein.
- 105 (104) Upper postocular ciliation with a more or less regular row of shorter setulae immediately below. Pubescence beneath middle tibia shorter, at most only slightly longer than diameter of tibia. Hind tibia with only 1-2 anteroventrals.
- 106 (107) Knob of halteres clear yellow. Disc of scutellum with numerous setulae, leaving only about middle third bare. Pubescence beneath middle tibia distinctly, though only slightly, longer than diameter of tibia. (Genitalia, Pl. V, Fig. 43). 4-5 mm.
Caernarvons. (Criccieth), Merioneths. (Maentwrog), Suffolk (Barton Mills), Cambs. (Chappenham Fen), Glamorgan. (Kenfig and Oxwich), Gloucs. (Bristol), Berks. (Wytham Wood and Tubney Wood), Somerset (Berrow and Clevedon), Hants. (New Forest and Mudeford), Devon (Dawlish), Sussex (Tilgate Forest and The Crumbles) and Kent (Woolwich Wood). Females frequent, males comparatively scarce. vi-ix. 43. *nitida* Stein.
- 107 (106) Knob of halteres decidedly darkened, never clear yellow. Disc of scutellum mainly bare, the few small setulae present confined to the sides. Pubescence beneath middle tibia distinctly shorter than diameter of tibia. (Genitalia, Pl. V, Fig. 42). 4-5 mm.
Bred from pupa found in soil beneath oak-trap at Wytham Wood (Berks.). Scotland: Ross. (Achilny), Inverness. (Aviemore, Arisaig and Glen Urquhart) and Perth. (Blairgowrie). England: Norfolk (Horning), Suffolk (Barton

- Mills), Cambs. (Chippenham Fen), Worcs. (Wyre Forest), Herts. (Bricket Wood), Oxon. (Wychwood Forest), Hants. (New Forest), Devon (Bovey Heath and Dawlish), Surrey (Limpsfield) and Kent (Eastry and Woolwich Wood). Uncommon. v-ix. 42. *minutipalpis* Stein.
- 108 (95) Middle tibia, both antero- and postero-dorsally, with only 1 bristle in addition to preapical.
- 109 (110) Hind coxa bare on inner posterior margin. Frontal bristles fewer in number, only 5-8 pairs. Hind femur, on apical two-thirds, with a row of 7-11 anteroventral bristles which become progressively longer towards apex of femur, posteroventrally with some longish fine bristles at apex. (Genitalia, Pl. III, Fig. 24). 3.75-4.75 mm.
Bred from pupa found in rotten oak stump. Generally distributed. Frequent. iv-viii. 24. *postica* Stein.
- 110 (109) Hind coxa with 1 or more bristles on inner posterior margin (text-fig. 14c). Frontal bristles more numerous, 10-15 pairs. Hind femur anteroventrally, either with a complete row of bristles of fairly uniform length (except for 2-3 longer ones at apex), or with only 2-4 strong bristles at apex.
- 111 (112) Prealar bristle entirely absent. Acrostichals bi-serial almost throughout. Frontal bristles 10-12 in number, all strong and of the same kind. Hind femur with a complete row of about 9 anteroventrals. All knees and base of tibiae conspicuously and rather broadly yellow. Face, facial orbits and jowls, seen from slightly below in front, uniformly dusted bluish-grey without blackish reflections except faintly on upper part. Abdomen, seen from behind, dusted bluish-grey with very indistinct median darker markings. (Genitalia, Pl. IV, Fig. 32). 4-4.75 mm.
Scotland: Morays., Inverness. and Perth. England and Wales: Norfolk, Suffolk, Cambs., Glamorgan., Gloucs., Herts., Berks., Somerset, Dorset, Hants. and Devon. Fairly common. iv-viii. 32. *genualis* Stein.
- 112 (111) 1-2 well developed prealars present. Acrostichals tri-serial. Frontal bristles somewhat more numerous and with a few much shorter and finer ones interspersed with them. Hind femur with 2-4 strong anteroventrals at apex, otherwise short-haired anteroventrally. Usually only front tibiae narrowly and obscurely reddish at base. Face, facial orbits and jowls, viewed as above, with strong blackish reflections. Abdomen, seen from behind, with the triangular black markings very conspicuous.
- 113 (114) Hind tibia with anterior and posterior rows of bristles about equal in length, those of posterior row somewhat finer but tips not curled over (text-fig. 15e). Hind femur with only 2 strong anteroventrals at apex. (Genitalia, Pl. III, Fig. 29). 4.75-6 mm.
Generally distributed. Common. iv-x. 29. *mutica* Zetterstedt.
- 114 (113) Hind tibia with the bristles of posterior row decidedly longer than those of anterior row and with the hair-like tips curled over (text-fig. 15f). Hind femur with a complete row of anteroventrals, 4-5 at apex long and strong. (Genitalia, Pl. III, Fig. 28). 5.25-6.25 mm.
Scotland: Musselburgh (Midlothian), vi. 06, 5 ♂, 1 ♀ bred "from fungus" (A. E. J. Carter); Spey Bridge (Inverness.), 9. vii. 38 (J. E. Collin); Bristol (Gloucs.), 7. viii. 83, Denny Wood, New Forest (Hants.), 24. viii. 57 and Fairland (Som.), 8. ix. 56, when females occurred in great numbers on umbels of *Heracleum sphondylium* (E. A. Fonseca) 28. *immutica* Collin.

FEMALES.

(For synonymy, distribution, etc., see key for males).

- I (6) Frons at vertex conspicuously narrower than an eye, equal to only one-fifth to one-fourth head-width¹² (text-fig. 15m). Hind coxa always with one or more bristles on inner posterior margin (text-fig. 14c†). Front tibia with a small anterodorsal bristle at about apical fourth, sometimes very small but always distinct from the decumbent hairs. Hind tibia with a well developed anterodorsal preapical, quite half as long as dorsal one.

¹² In immature specimens the frontalia is almost certain to shrink in drying, and it (and likewise the whole frons) will therefore appear narrower than in a normal mature specimen.

- 2 (3) Middle and hind femora entirely or mainly reddish-yellow, latter with 4 or more strong anteroventral bristles at apex. Abdomen usually dark in ground-colour, but often entirely reddish-yellow, in which case scutellum and sides of thorax are also partly reddish-yellow. 6.5-7.5 mm.
15. *hamata* Macquart.
- 3 (2) All femora black, except sometimes at extreme apex. Hind femur with only 3 strong anteroventrals at apex. Ground-colour of body black.
- 4 (5) Tibiae rather obscurely reddish or brownish-red, occasionally almost entirely black. Thorax, seen from above, all dull black except for some grey dusting about humeri and on notopleural area, without distinct stripes. Frontalia at narrowest part $1\frac{1}{2}$ to $1\frac{1}{2}$ times as wide as an orbit. Of the 2-3 short prealar bristles present, the longest one is hardly more than one-fourth the length of second notopleural. 5-6.5 mm.
17. *fuscula* Fallén.
- 5 (4) All tibiae more distinctly reddish-yellow. Thorax, seen from above, with a fairly distinct median pair of darker stripes (between rows of bristles) on a more greyish-dusted ground. Frontalia at narrowest part usually hardly wider than an orbit. At least 1 well developed prealar present, slightly less to slightly more than half as long as second notopleural. 5-6.5 mm.....16. *vesparia* Meade.
- 6 (1) Frons at vertex usually broader than an eye, at least only very slightly less than one-third head-width, generally conspicuously more than one-third (text-fig. 15N).
- 7 (24) The proclinate small setulae outside lower incurved fronto-orbitals continuing down on to facial orbits, the lowermost one being well below level of insertion of arista (text-fig. 15N), or if (rarely) not reaching level of arista (some *clara*) then legs entirely black at the same time as abdomen partly reddish-yellow, and hind tibia anterodorsally with only the sub-median strong bristle. Middle tibia never with a bristle beneath. Acrostichals tri-serial in front of suture (often bi-serial right at front), becoming irregularly quadri- to pluri-serial behind. Hind coxa always with 1 or more bristles on inner posterior margin (text-fig. 14C).
- 8 (11) Abdomen entirely or largely reddish-yellow, somewhat shining and with little or no dusting.
- 9 (10) Base of strong outcurved fronto-orbital bristle lying about half-way between inner and outer margins of orbit. Hind tibia with 2 anteroventral bristles. Prealar rather short, sometimes with a smaller one in front of it. Palpi strongly dilated, at broadest part about as wide as third antennal segment. Tibiae distinctly reddish-yellow at base, front tibia broadly. Abdomen entirely reddish-yellow. 5.5-6.5 mm.6. *speciosa* Villeneuve.
- 10 (9) Base of strong outcurved fronto-orbital much nearer to inner margin or orbit. Hind tibia with only one anteroventral. When 2 prealars are present, front one usually the stronger. Palpi much less broadened. Legs entirely black. Abdomen normally with a broad median black patch. 5-6 mm.
5. *clara* Collin.
- 11 (8) Abdomen entirely black in ground-colour, or at most somewhat reddish-yellow only at extreme sides of first 3 tergites, but then rather densely grey-dusted.
- 12 (15) Hind tibia, on both anterodorsal and anteroventral surfaces, with only a single strong bristle a little below middle, without smaller bristles either above or below.
- 13 (14) Species strongly shining black with little or no dusting. Legs entirely black. Prothoracic episternum, immediately below humerus, quite bare. Mentum mainly shining black. Base of strong outcurved fronto-orbital much nearer to inner margin of orbit. 4.5-5 mm.
7. *glaucescens* Zetterstedt.
- 14 (13) Distinctly greyish-dusted species with some reddish-yellow colour on sides of at least second abdominal tergite (sometimes extending slightly on to first and third tergites). At least base of front tibia reddish-yellow. Prothoracic episternum usually bearing a few small hairs. Mentum almost entirely dulled by greyish dust. 4-4.5 mm.....4. *difficilis* Stein.

- 15 (12) Hind tibia with 1-3 shorter, semi-erect anterodorsal bristles *below* the strong submedian bristle, and usually more than one anteroventral.
- 16 (19) Hind tibia anterodorsally without any short semi-erect bristles *above* the strong one. Palpi conspicuously dilated towards apex, at widest part only little narrower than third antennal segment. One pair of presutural acrostichals distinctly longer and stronger than the rest.
- 17 (18) Arista distinctly pubescent to tip, longest hairs about as long as its basal diameter. Frons at vertex distinctly (even though only slightly) less than one-third head-width (measured). Jowl below eye distinctly more than half as deep as width of third antennal segment. Lower squama broadly rounded, its hindmargin practically semicircular (text-fig. 15c). 4-6 mm.
8. *aequilinata* Ringdahl.
- 18 (17) Arista practically bare. Frons at vertex slightly more than one-third head-width (measured). Jowl below eye hardly half as deep as width of third antennal segment. Lower squama narrower, hindmargin more roundish-triangular in shape (text-fig. 15H). About 5.5 mm. 9. *latipalpis* Stein.
- 19 (16) Hind tibia anterodorsally with 3-5 short bristles *above* the strong submedian one, 1-2 of which are usually stronger than the rest, the uppermost one not above basal fourth of tibia. No conspicuously longer pair of presutural acrostichals.
- 20 (21) Legs almost entirely black, at most front tibia obscurely reddish at extreme base. Abdomen rather thinly dusted with more or less distinct blackish reflections seen from behind, without trace of yellow colour. Palpi moderately dilated, at widest part about two-thirds the width of third antennal segment. About 4.5 mm. 3. ?*subpubescens* Collin.
- 21 (20) All tibiae distinctly, and more or less broadly, reddish-yellow at base, front one on at least basal fifth. Abdomen without blackish reflections from any point of view. Palpi less dilated, at most little more than half as wide as third antennal segment.
- 22 (23) 1-2 distinct short prealars present. Presutural acrostichals more uniformly tri-serial. Dusting of thorax and abdomen rather darker grey, median stripe on former consequently less conspicuous. Front tibia reddish-yellow on about basal fifth. 3.5-5.5 mm. 1. *canicularis* Linné.
- 23 (22) Prealar absent, or indistinguishable from rest of thoracic hairs. Presutural acrostichals with greater tendency to be bi-serial in front. Dusting of thorax and abdomen paler grey, median stripe on former more conspicuous. Front tibia reddish-yellow on at least basal third. 4.5-6 mm.
2. *hirundinis* Ringdahl.
- 24 (7) The proclinate small setulae outside lower fronto-orbitals usually not descending below lowermost orbital, never reaching below level of insertion of arista (except occasionally in *mutica*, in which middle tibia has a bristle beneath). Legs never entirely black at the same time as abdomen is partly reddish-yellow.
- 25 (32) Abdomen entirely or mainly reddish-yellow. Legs, including femora, entirely or mainly reddish-yellow to light brownish.
- 26 (27) Palpi reddish-yellow. Front tibia with a strong posteroventral bristle near apex. Middle tibia with 2-3 anterodorsal and 2 posterodorsal bristles. Hind tibia with 3 anterodorsals. Acrostichals bi-serial. 5-5.5 mm.
51. *ornata* Meigen.
- 27 (26) Palpi black. Front tibia without a posteroventral. Middle and hind tibiae each with only 1 anterodorsal, former with only 1 posterodorsal.
- 28 (29) Hind coxa with one or more bristles on inner posterior margin (text-fig. 14c). Acrostichals mainly tri-serial in front of suture, becoming quadri- to pluri-serial behind. Front tibia more or less distinctly broadly darkened above middle, middle and hind tibiae with a narrower darkish ring near base. Hind femur with 4 strong anteroventrals at apex. 5-6 mm.
10. *vesperillonis* Ringdahl.
- 29 (28) Hind coxa bare on inner posterior margin. Acrostichals mainly bi-serial in front of suture, or if tri-serial then continuing so throughout. Tibiae more uniformly coloured, reddish-yellow or brownish. Hind femur with only 1-3 strong anteroventrals at apex.
- 30 (31) Presutural acrostichals mainly bi-serial and practically uniform in length.

- Scutellum and humeri entirely or mainly translucent reddish-yellow. Legs more distinctly reddish-yellow. 3.5-4.5 mm. 48. *pretiosa* Schiner.
- 31 (30) Acrostichals tri-serial throughout, a pair of outer ones in front of suture conspicuously longer and stronger than rest. Scutellum entirely black in ground-colour, humeri at most obscurely reddish laterally behind. Legs more brownish, femora sometimes darker brown. 3.5-4 mm. 25. *gotlandica* Ringdahl.
- 32 (25) Abdomen entirely black in ground-colour, with more or less distinct greyish or brownish dusting.
- 33 (34) All tibiae and apices of femora clear reddish-yellow. Acrostichals bi-serial throughout and uniformly rather strong. Lower squama very little developed (see text-fig. 16D). A single well-developed prealar bristle present, half (or more) the length of second notopleural. 4-5 mm. 52. *pallitibia* Rondani.
- 34 (33) Legs black, at most front tibia broadly, and 4 posterior tibiae more narrowly, reddish-yellow at base.
- 35 (54) Middle tibia with 1 or more bristles beneath on apical half.
- 36 (41) Frontal orbits glossy black without the slightest trace of dusting. Frontalia at narrowest part little more than half as wide as an orbit. Mentum dulled by dust. Prealar strong, more than half the length of second notopleural, placed much nearer to suture than to supra-alar and without smaller bristles in front or behind it. Hind coxa without bristles on inner posterior margin. Middle tibia, both antero- and posterodorsally, with 2 or more bristles on apical half.
- 37 (38) Arista with the basal segments, and sometimes extreme base of apical segment, reddish-yellow. Upper postocular ciliation uni-serial, at most with an isolated small setula or two immediately below. Base of strong outcurved fronto-orbital about half-way between inner and outer margins of orbit. About 5.5 mm. 36. *carbonaria* Meigen.
- 38 (37) Arista entirely black.
- 39 (40) Presutural acrostichals mainly tri-serial. Upper postocular ciliation with a more or less regular row of smaller setulae immediately below. Base of strong outcurved fronto-orbital about half-way between inner and outer margins of orbit, occasionally nearer to outer margin. 4-5 mm. 40. *corvina* Verrall.
- 40 (39) Presutural acrostichals strictly bi-serial, sometimes partly so even behind suture. Upper postocular ciliation uni-serial, rarely with an isolated setula or two immediately below. Base of strong outcurved fronto-

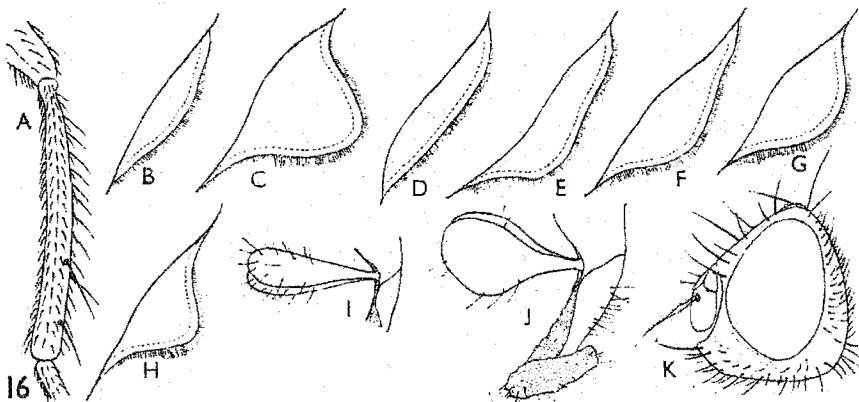


FIG. 16—*Fannia* spp.: A, *mutica* ♀ (rt. hind tibia); B-H, ♀ lower squamae: B, *umbratica*; C, *tuberculata*; D, *serena*; E, *similis*; F, *metallipennis*; G, *umbrosa*; H, *postica*; I, *umbrosa* ♀ (palpi); J, *atripes* ♀ (do.); K, *mollissima* ♀.

orbital very distinctly nearer to inner margin of orbit. 5.5-5.75 mm.

37. *norvegica* Ringdahl.
- 41 (36) Frontal orbits distinctly (even though very thinly) grey-dusted, quite obviously not *glossy* black. Frontalia at narrowest part decidedly more than half as wide as an orbit. Prealar smaller, not more than half the length of second notopleural (except possibly in *umbratica*), sometimes with a second smaller bristle in front or behind. Except in *verralli* and *umbratica*, hind coxa with 1 or more bristles on inner posterior margin (text-fig. 14c).
- 42 (45) Middle tibia, on apical half of both antero- and posterodorsal surfaces, with 2 or more bristles in addition to the preapical. Palpi conspicuously small, distinctly shorter than the somewhat dilated mentum and shorter than the strikingly long bristles at its apex (text-fig. 15i). Lower squama well developed. Upper postocular ciliation with a more or less regular row of smaller setulae immediately below.
- 43 (44) Frontal orbits more densely dusted, without trace of blackish shine when seen from slightly behind. Frontalia at narrowest part as wide as, or wider than, an orbit. Middle tibia with a pair of rather strong bristles beneath antero- and posteroventral. Base of strong outcurved fronto-orbital at most only very slightly nearer to outer margin of orbit. 4-4.5 mm.
41. *polychaeta* Stein.
- 44 (43) Orbits very thinly dusted, especially on upper part, with a distinct blackish shine when seen from slightly behind. Frontalia at narrowest part not as wide as an orbit. Bristles beneath middle tibia quite small, the posteroventral one often missing, and occasionally an even smaller second anteroventral present near apex. Base of strong outcurved fronto-orbital much nearer to outer margin of orbit. 4-4.75 mm. 43. *nitida* Stein.
- 45 (42) Middle tibia with only a single bristle (besides preapical) on both antero- and posterodorsal surfaces. Palpi normal, as long as or longer than mentum, short-bristled at apex (text-fig. 15L).
- 46 (47) Hind tibia, anterodorsally above the submedian strong bristle, with a uniform row of 7-9 shorter, more or less erect bristles, and with a few short, more decumbent bristles below (text-fig. 16A), anteroventrally with 2 or more bristles. Disc of scutellum with numerous short setulae, mainly on apical two-thirds. Upper postocular ciliation with a more or less regular row of shorter setulae immediately below. Two well developed prealars, front one usually the stronger. 4-4.75 mm.
29. *mutica* Zetterstedt.
- 47 (46) Hind tibia with only the single strong bristle anterodorsally, and with only 1 anteroventral. Disc of scutellum almost bare, at most with a few short setulae on sides.
- 48 (51) Hind femur anteroventrally with only 2-3 strong bristles at apex. Lower squama little developed, its greatest length between base (thoracic margin) and the barely rounded hind (outer) margin not much more than width of hind tibia at base (text-fig. 16B). Base of strong outcurved fronto-orbital bristle distinctly nearer to outer margin of orbit. Frontalia appearing brownish-grey when seen from directly in front. Hind coxa bare on inner posterior margin.
- 49 (50) Upper postocular ciliation with a more or less regular row of shorter setulae immediately below. Hind femur with 3 strong anteroventrals at apex. Frontalia at narrowest part decidedly wider than an orbit. Two distinct prealars present, front one the stronger. About 3-5 mm.
27. *umbratica* Collin.
- 50 (49) Upper postocular ciliation uni-serial. Hind femur with only 2 strong anteroventrals at apex. Frontalia at narrowest part not or hardly wider than an orbit. Only one prealar. 2.5-3.25 mm. 47. *verralli* Stein.
- 51 (48) Hind femur with a complete row of anteroventral bristles, 2-3 at base somewhat short and fine. Lower squama well developed with a conspicuously rounded hindmargin (text-fig. 15G). Base of strong outcurved fronto-orbital not nearer to outer margin of orbit. Frontalia, seen as above, appearing glistening white. Hind coxa with 1 or more bristles on inner posterior margin (text-fig. 14c). Mentum noticeably slender.

- 52 (53) Prealar bristle distinct, even though small, usually with one or more smaller bristles behind it. Base of strong outcurved fronto-orbital much nearer to inner margin of orbit. Front tibia usually with a small anterodorsal bristle at apical fourth, but without a posterior bristle. At least hind tibia entirely black, or at most obscurely reddish at extreme base. 3.75-4.25 mm. 31. *tuberculata* Zetterstedt.
- 53 (52) Prealar entirely absent. Base of strong outcurved fronto-orbital half-way between inner and outer margins of orbit. Front tibia, at about apical third, with a strong posterior bristle, usually also with a shorter anterodorsal at apical fourth. All femora at extreme tip, and tibiae broadly at base, conspicuously yellow. 4-4.75 mm. 32. *genualis* Stein.
- 54 (35) Middle tibia without bristles beneath.
- 55 (68) Lower squama little, or very little, developed, its greatest length from base (thoracic margin) to hindmargin (outer edge) not more (usually conspicuously less) than width of hind tibia, hindmargin at most only very slightly convex, often quite straight and parallel to thoracic margin (text-figs. 16D, E). Except in *mollissima* and *subsimilis*, upper postocular ciliation uni-serial, at most with an isolated small setula or two immediately below.
- 56 (57) Mouthedge strongly protruding, almost horizontal (text-fig. 16K). Wing with the costal ciliation mainly interspersed by a spaced row of slightly longer and conspicuously stronger spines. Acrostichals tri-serial, at least behind suture. Hind tibia with only 1 anterodorsal bristle. 3.75-4.5 mm. 49. *mollissima* Haliday.
- 57 (56) Mouthedge not or hardly protruding. Costal ciliation normal, except in *sociella* in which the acrostichals are strictly bi-serial throughout and hind tibia has 2 anterodorsals.
- 58 (59) Acrostichals tri-serial in front of suture, sometimes partly quadri-serial behind. Frontal orbits, seen from slightly behind, appearing uniformly dark grey without blackish shine. Hind femur with 2 strong antero-ventrals at apex. 2.5-3.25 mm. 45. *rondanii* Strobl.
- 59 (58) Acrostichals bi-serial, though a few isolated small setulae may be present between the rows behind suture.
- 60 (61) Frontal orbits, seen from slightly behind, with a distinct blackish shine at least on upper part. Legs usually entirely black. Upper postocular ciliation strictly uni-serial. Hind femur with 3 well developed antero-ventrals at apex, occasionally with a fourth weaker one above. 3.25-4.5 mm. 53. *serena* Fallén.
- 61 (60) Frontal orbits, seen as above, without any blackish shine. At least front knees and base of front tibiae narrowly reddish-yellow.
- 62 (63) Base of strong outcurved fronto-orbital much nearer to outer margin of orbit. Scutellum, apart from the normal pair of strongish discal bristles at about apical third, with only 2-3 small hairs on each basal corner of disc, otherwise without obvious discal hairs. Usually only front tibia somewhat narrowly reddish-yellow at base. Hind femur with only 2 strong anteroventrals at apex, rarely with a weaker third one above. 2.75-3.75 mm. 46. *parva* Stein.
- 63 (62) Base of strong outcurved fronto-orbital about half-way between inner and outer margins of orbit. Scutellum with a few small hairs on disc between the strong discal pair behind and the hairs on basal corners. All tibiae more or less distinctly reddish-yellow at base, front tibia on basal fifth to fourth.
- 64 (65) Middle tibia normally with 2 anterodorsal bristles on apical half, upper one weaker but rarely absent. Hind tibia with 2 equally strong anterodorsals which are placed above and below the strong dorsal bristle by about the width of the tibia. Hind femur with 3-4 strong anteroventrals at apex. 4.25-5 mm. 50. *sociella* Zetterstedt.
- 65 (64) Middle tibia with only a single bristle both antero- and posterodorsally. Hind tibia with only 1 anterodorsal, about level with, or slightly above, the strong dorsal bristle. Hind femur with only 1-2 strong anteroventrals at apex.
- 66 (67) Upper postocular ciliation with a more or less regular row of small setulae

- immediately below. Two distinct prealars present. Lower squama very little developed, with a practically straight hindmargin (text-fig. 16b). 3-5-4 mm. 54. *subsirmilis* Ringdahl.
- 67 (66) Upper postocular ciliation uni-serial. Only 1 prealar, and that one rather strong and almost half the length of second notopleural. Lower squama slightly more developed, with a distinct angle (almost a lobe) towards the rear (text-fig. 16a). 3-75-4-5 mm. 55. *similis* Stein.
- 68 (55) Lower squama more strongly developed, its greatest length from base to tip of lobe distinctly, usually considerably, more than greatest diameter of hind tibia, hind (outer) margin of lobe conspicuously rounded (text-figs. 15c and 16f, g, h).
- 69 (76) Frontal orbits very thinly dusted, especially on upper part, showing a decided blackish shine when seen from slightly behind, at widest part at least as wide as frontalia. Eyes with distinct hairs, though these are sometimes sparse and extremely short.
- 70 (71) Palpi conspicuously small, much shorter than the noticeably stout mentum, slightly but rather abruptly dilated at tip where they bear strikingly long bristles (text-fig. 15j). Hind coxa with one or more bristles on inner posterior margin (text-fig. 14c). Lower squama well developed, the fully rounded lobe occupying practically the whole width of thoracic margin. Hind tibia with 2 anterodorsal bristles, upper one distinctly the stronger. 3-5-4-5 mm. 42. *minutipalpis* Stein.
- 71 (70) Palpi of normal length, as long as or longer than mentum, short-bristled at apex (text-fig. 15l). Hind coxa bare on inner posterior margin. Lower squama somewhat less developed, the lobe more roundish-triangular in shape and occupying distinctly less than whole width of thoracic margin. Hind tibia with only 1 anterodorsal, or if with 2 then upper one smaller and weaker than lower.
- 72 (73) Hind femur with only 2 strong anteroventrals at apex, otherwise with short decumbent hairs anteroventrally. Eye-hairs shorter and less dense. Frontalia at narrowest part decidedly wider than an orbit. 3-75-4-25 mm. 26. *nidica* Collin.
- 73 (72) Hind femur with 3 or more strong anteroventrals at apex. Eye-hairs longer and denser. Frontalia at narrowest part at most as wide as an orbit.
- 74 (75) Middle tibia with 2 anterodorsals and 1-2 posterodorsals. Front tibia without an anterodorsal. Hind femur with 4-5 strong anteroventrals at apex. Frontalia at narrowest part distinctly narrower than an orbit. Eye-hairs somewhat longer. 4-5 mm. 34. *hirticeps* Stein.
- 75 (74) Middle tibia with only one each antero- and posterodorsal. Front tibia with a small anterodorsal at about apical fifth. Hind femur with only 3 strong anteroventrals at apex. Frontalia at narrowest part equal in width to an orbit. Eye-hairs somewhat shorter. About 3-75 mm. 35. *novalis* Pont.
- 76 (69) Frontal orbits, seen as above, dulled by dust and without a blackish shine. Eyes absolutely bare, or at most sparsely and microscopically pubescent under high magnification.
- 77 (86) The strong anterodorsal bristle on hind tibia at the same level as, or slightly above, the strong dorsal bristle, rarely below but in this case by less than half the width of tibia. Hind coxa bare on inner posterior margin. Lower squama only moderately developed, its length (greatest distance from thoracic margin to tip of lobe) distinctly less than distance between notopleural bristles (text-figs. 16f, g, h), but if more strongly developed (text-fig. 15c) then middle tibia with 2 or more anterodorsal bristles.
- 78 (83) Length of lower squama not more than two-thirds to three-fourths the distance between notopleural bristles. Mentum entirely undusted, shining black. The proclinate small setulae outside strong orbital bristles uni-serial throughout. Middle tibia with only one anterodorsal.
- 79 (80) Upper postocular ciliation with a row of shorter strong setulae immediately below. Strong outcurved fronto-orbital bristle decidedly nearer to outer margin of orbit. Middle tibia with 2 or more posterodorsals. All tibiae distinctly reddish-yellow at base, front one on basal fourth to third. 4-4-75 mm. 32. *metallipennis* Zetterstedt.
- 80 (79) Upper postocular ciliation uni-serial, at most with 1-2 isolated small setulae

- immediately below. Strong outcurved fronto-orbital almost midway between inner and outer margins of orbit. Middle tibia with only one posterodorsal. Only front tibia with a trace of reddish colour at extreme base.
- 81 (82) Lower squama more fully developed, the lobe more rounded and occupying the full (or nearly the full) width of thoracic margin (text-fig. 16c). Acrostichals with a tendency to become tri-serial behind. Frontal orbits more densely dusted and less contrasting with the greyish-white facial orbits when seen from directly above (illuminated from in front). Frontalia at narrowest part slightly wider than an orbit. Palpi conspicuously dilated, at widest part at least two-thirds the width of third antennal segment (text-fig. 16r). 3-4.25 mm. 23. *umbrosa* Stein.
- 82 (81) Lobe of lower squama less well developed, more roundish-triangular in shape and occupying only about two-thirds of thoracic margin (text-fig. 16a). Acrostichals more uniformly bi-serial. Frontal orbits more thinly dusted, with a somewhat more blackish appearance, strongly contrasting with the glistening white facial orbits when seen as above. Frontalia at narrowest part slightly narrower than an orbit. Palpi at most only slightly broadened, not more than half the width of third antennal segment. 3-4 mm 24. *postica* Stein.
- 83 (78) Lower squama strongly developed, its length equal to (or greater than) distance between notopleurals (text-fig. 15g). Mentum entirely grey-dusted. Proclinate orbital setulae (outside fronto-orbitals) in more than a single row. Middle tibia with 2 or more anterodorsals.
- 84 (85) Frontal orbits densely grey-dusted, the small proclinate setulae in 3-4 irregular rows at least on lower part. Thorax distinctly grey-dusted, hardly shining when seen from behind. Middle tibia normally with 3 anterodorsals and 2-3 posterodorsals. Hind tibia with 3-5 antero-ventrals. 3.75-4.75 mm. 30. *armata* Meigen.
- 85 (84) Frontal orbits more thinly dusted, appearing more blackish-grey when seen from slightly behind, the small proclinate setulae on lower half practically uni-serial. Thorax more uniformly shining black, with little or no dusting, except in front of scutellum where it is brownish. Middle tibia with 2 anterodorsals and 1 posterodorsal. Hind tibia with only 2 anteroventrals. 3.5-3.75 mm. 44. *atra* Stein.
- 86 (77) The strong anterodorsal bristle on hind tibia well below the dorsal bristle, always by more than half the width of tibia. Except sometimes in *nigra*, hind coxa with 1 or more bristles on inner posterior margin (text-fig. 14c). Lower squama always strongly developed, its length at least equal to distance between notopleural bristles, and middle tibia with only 1 anterodorsal. Mentum always mainly or entirely grey-dusted.
- 87 (90) Prealar bristle moderately well developed, nearer to suture than to supra-alar and usually with a shorter one behind it. Strong outcurved fronto-orbital bristle midway (or almost) between inner and outer margins of orbit.
- 88 (89) Upper postocular ciliation uni-serial. Prealar less than half the length of second notopleural. Middle tibia with 2 posterodorsals. Hind tibia with only 2 anterodorsals, lower one the stronger. Facial orbits and jowls narrow, former not more than one-sixth, latter about one-third, as wide as third antennal segment. 3.5-4 mm. 57. *nigra* Malloch.
- 89 (88) Upper postocular ciliation with a second more or less regular row of shorter setulae immediately below. Prealar more than half the length of second notopleural. Middle tibia with only 1 posterodorsal. Hind tibia anterodorsally, in addition to the strong submedian bristle, with an almost comb-like row of 8-10 shorter bristles above (see text-fig. 16a). Facial orbits and jowls distinctly broader. 4.25-5 mm. 28. *immutica* Collin.
- 90 (87) Prealar short and weak, much nearer to supra-alar than to suture, usually with 1 or more setulose hairs between it and suture. Strong outcurved fronto-orbital much nearer to outer margin of orbit.
- 91 (86) Front tibia without an anterodorsal bristle and with at least basal third reddish-yellow. Thorax, in dorso-lateral view, uniformly blackish or greyish-black without stripes.

- 92 (93) Front tibia reddish-yellow on only basal third. Hind tibia with 6-8 anteroventral bristles, and with 1-2 of the shorter anterodorsals two-thirds to three-fourths the length of the strong anterodorsal. 4.25-4.5 mm.
18. *melania* Dufour.
- 93 (92) Front tibia reddish-yellow on basal half or more. Hind tibia with only 3-5 anteroventrals, the longest of the shorter anterodorsals less than two-thirds the length of the strong bristle.
- 94 (95) The 1-3 short weak proalars present hardly distinguishable from rest of thoracic hairs. Hind femur anteroventrally with 3 strong bristles at apex, otherwise with only decumbent hairs. The shorter anterodorsals above strong one on hind tibia usually more numerous, more erect, and more uniform in length. 3.5-4.5 mm..... 14. *monilis* Haliday.
- 95 (94) Prealar obviously longer and stronger than rest of thoracic hairs, and contrasting with any other small bristles in the same line. Hind femur anteroventrally, in addition to 3 strong bristles at apex, with 1 or more shorter finer erect bristles above them. The shorter anterodorsals above strong one on hind tibia fewer in number, less erect and distinctly uneven in length. 4-5 mm..... 13. *manicata* Meigen.
- 96 (91) Front tibia with a distinct anterodorsal bristle at apical fifth to fourth, sometimes rather small and consequently partially hidden among the decumbent hairs. Front tibia with much less than basal third reddish-yellow, or if extensively reddish-yellow then thorax, in dorso-lateral view, distinctly grey-dusted with a pair of brownish stripes between lines of bristles.
- 97 (100) Thorax, in dorso-lateral view, rather thinly grey-dusted with a pair of more or less distinct brownish stripes between lines of bristles. Front tibia broadly reddish-yellow at base.
- 98 (99) Upper postocular ciliation uni-serial, at most with 1-2 isolated small setulae immediately below. Facial orbit narrower, at narrowest part (level with tip of third antennal segment) not as wide as front tibia at base. Middle femur with a long erect posteroventral setulose hair at extreme base. 5-6.25 mm..... 11. *scalaris* Fabricius.
- 99 (98) Upper postocular ciliation with a second row of shorter setulae immediately below. Facial orbit at narrowest part as wide as base of front tibia. Middle femur without this erect hair at base beneath. 5-5.5 mm.
12. *incisurata* Zetterstedt.
- 100 (97) Thorax, in dorso-lateral view, uniformly greyish-black without stripes. Legs almost entirely black, even front tibia only obscurely reddish at base.
- 101 (102) Palpi strikingly dilated, spoon-shaped, at widest part as wide as, or wider than, third antennal segment (text-fig. 16j). 4-5.25 mm.
21. *atripes* Stein.
- 102 (101) Palpi usually filiform, at most only slightly broadened towards apex, at widest part not half as wide as third antennal segment.
- 103 (104) Frontalia at narrowest part distinctly narrower than an orbit. Orbits, seen from slightly behind, brownish-dusted. Upper postocular ciliation with only a single row of shorter setulae immediately below. Two very short weak prealar bristles present. About 4.5 mm.. 20. *subatripes* Fonseca.
- 104 (103) Frontalia at narrowest part decidedly wider than an orbit. Orbits, seen as above, more greyish-dusted. Upper postocular ciliation with 2 or more distinct rows of shorter setulae immediately below. Prealar moderately well developed, about one-third the length of second notopleural. 4.5-5.25 mm..... 19. *coracina* Loew.

Genus *Piezura* Rondani, 1866.

KEY TO SPECIES.

- 1 (2) Arista, including hairing, about two-thirds the width of third antennal segment. Humeri entirely reddish-yellow. Costal spine quite short and inconspicuous. ♂: eyes approximated, frontal orbits separated by not more than about twice the diameter of front ocellus. ♀: abdominal tergites 3 and 4 each with a pair of lateral dark spots and a dark median stripe. 4.75-6.5 mm. (= *pardalina* Rond.).

- Cumberland, Westmorland, Lancs., Yorks., Herefords., Glamorgan., Gloucs., Wilts., Berks., Oxon., Bucks., Somerset, Hants and Kent. Frequent. v-x. 1. *graminicola* Zetterstedt.
- 2 (1) Arista wider than third antennal segment. Humeri entirely black in ground-colour. Costal spine strong, as long as discal crossvein. ♂: frons more than one-third head-width. ♀: abdomen uniformly reddish-yellow without dark markings. 4.25-5.5 mm. (= *Platycoenosia* Strobl, 1894).
Only British records known, Abbey Wood (Kent), 2.vii.62 and 4.vii.63, resting on Sycamore trunks (A. A. Allen); Bagley Wood (Berks.), 8.vii.62 (D. M. Ackland). 2. *miki* Strobl.

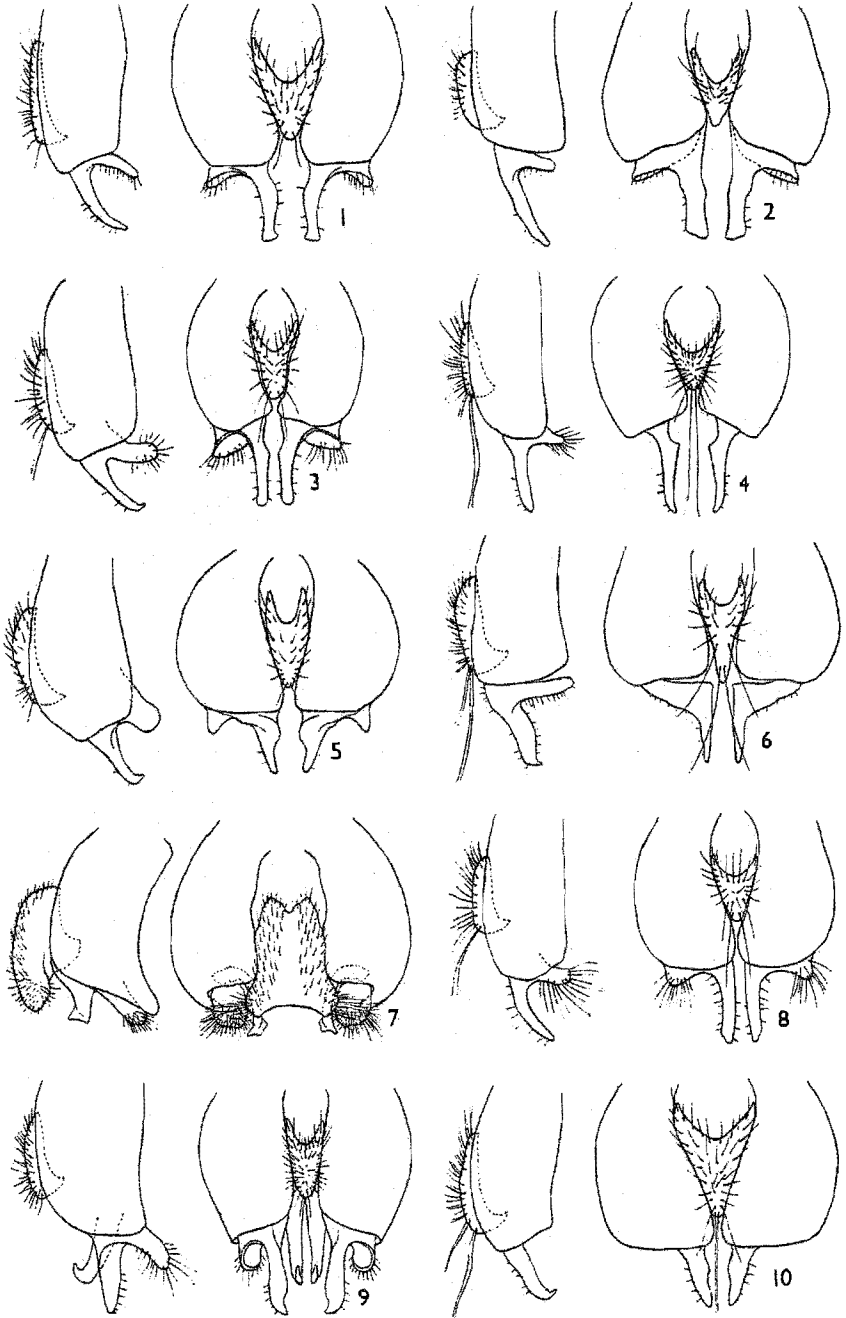
REFERENCES.

- ACKLAND, D. M., 1962, *Platycoenosia miki* Strobl (Dipt., Muscidae) new to Britain. *Entomologist's mon. Mag.* 98: 174.
- , 1964, Records of some uncommon Muscidae (Dipt.). *Ibid.* 100: 287.
- ALLEN, A. A., 1964, *Platycoenosia miki* Strobl (Dipt., Muscidae) discovered in N.W. Kent (S.E. London). *Entomologist's mon. Mag.* 100: 157.
- ASSIS FONSECA, E. C. M., 1949, *Phaonia canescens* Stein (Dipt., Muscidae), a species new to Britain. *Entomologist's mon. Mag.* 85: 133.
- , 1952, *Helina pubescens* Stein (Dipt., Muscidae) new to Britain. *J. Soc. Br. Ent.* 4: 83-84.
- , 1953, *Delia tarsifimbria* Pand. (Dipt. Muscidae) and other uncommon Muscids from Glamorgan. *Ibid.* 4: 124-5.
- , 1955, *Pseudophaonia steini* Ringd. (Dipt., Muscidae) in Suffolk. *Ibid.* 5: 100-101.
- , 1956, A review of the British subfamilies and genera of the family Muscidae (Diptera). *Trans. Soc. Br. Ent.* 12: 113-128.
- , 1957, Some interesting and uncommon Diptera from East Kent, including a new species of *Phaonia* (Muscidae). *Entomologist's Rec. J. Var.* 69: 14-18.
- , 1958, *Fannia vespertilionis* Ringd. (Dipt., Muscidae) from bat roosts. *Ibid.* 70: 106-107.
- , 1966, Eight undescribed species of Muscidae (Diptera) from Britain. *Entomologist's mon. Mag.* 101: 269-278.
- , 1967, The identification of the female and re-description of the male of *Fannia atripes* Stein, and the description of a new closely related species from Scotland. *Ibid.* 103: 137-140.
- BASDEN, E. B., 1934, *Hydrotaea nidicola* Malloch (Anthomyiidae), a new British dipteran. *Entomologist's mon. Mag.* 70: 14-15.
- CHILLCOTT, J. G., 1960, A revision of the Nearctic species of Fanniinae (Diptera: Muscidae). *Can. Ent.* 92, Suppl. 14: 5-295.
- COLLIN, J. E., 1921, The British species of the Anthomyiid genus *Limnophora* Desv. (Diptera). *Entomologist's mon. Mag.* 57: 94-100, 162-175, 238-246, 265-268.
- , 1930, A revision of the Greenland species of the Anthomyiid genus *Limnophora* sens. lat. (Diptera), with figures of the male genitalia of these and many other Palaearctic species. *Trans. ent. Soc. Lond.* 78: 255-281, Plates XV-XXVII.
- , 1933, Notes on Perthshire Anthomyiidae. *Scott. Nat.* 1933: 119-121.
- , 1939, On various new or little known British Diptera, including several species bred from the nests of birds and mammals. *Entomologist's mon. Mag.* 75: 134-154.
- , 1948, On the classification of the genera allied to *Musca* L. (Diptera). *Proc. R. ent. Soc. Lond.* (B) 17: 125-127.
- , 1951, *Phaonia laetabilis* sp.n. with notes on some other related Anthomyiidae (Diptera). *Entomologist's Rec. J. Var.* 63: 1-5.
- , 1953, Some additional British Anthomyiidae (Diptera). *J. Soc. Br. Ent.* 4: 169-177.
- , 1958, Notes on some British species of *Fannia* (Dipt., Muscidae), with the description of a new species. *Entomologist's mon. Mag.* 94: 86-92.
- , 1963, The British species of *Lispocephala* (Diptera, Anthomyiidae). *Entomologist* 96: 277-283.
- HENNIG, W., 1955-1964, in Lindner, *Die Fliegen der Palaearktischen Region*, 63b, Muscidae: 1-1110.
- HINTON, H. E., 1960, The chorionic plastron and its role in the eggs of the Muscinae (Diptera). *Q. Jl. microsc. Sci.* 101: 313-332.

- KARL, O., 1928, Zweiflügler oder Diptera 3, Muscidae. In Dahl, *Die Tierwelt Deutschlands* 13: 1-112.
- LYNEBORG, L., 1965, Muscidae (Diptera) from Greece, collected by E. Janssens and R. Tollet, with descriptions of four new species. *Bull. Inst. r. Sci. nat. Belg.* 41: 1-14.
- PONT, A. C., 1964, A new British species of *Fannia* (Dipt., Muscidae). *Entomologist's mon. Mag.* 100: 234-237.
- , 1964, The *mollissima* subgroup of *Fannia* Desvoidy, with the description of a new species from Burma and a revised key to species (Diptera: Muscidae). *Ann. Mag. nat. Hist.* (13) 7: 757-767.
- , in press, The identity of *Anthomyia melania* Dufour, 1839 (Diptera: Fanniidae). *Beitr. Ent.*
- RINGDAHL, O., 1934, Översikt av svenska *Fannia*-arter (Muscidae). *Ent. Tidskr.* 55: 105-121.
- , 1954, *Svensk Insektfauna* 11 (1), pp. 1-91.
- , 1956, *Svensk Insektfauna* 11 (2), pp. 93-195.
- (Transl. E. C. M. d'Assis Fonseca), 1952, A survey of the Swedish species of the subfamily Coenosuinae (Dipt., Muscidae). *J. Soc. Br. Ent.* 4: 47-59.
- , 1952, A survey of the Swedish species of the genera *Mydaea* R.-D. and *Helina* R.-D. (Dipt., Muscidae). *Ibid.* 4: 95-111.
- , 1953, A survey of the Swedish species of *Lasiops* (Dipt., Muscidae). *Ibid.* 4: 161-167.
- , 1954, A survey of the Swedish species of *Hydrotaea* (Dipt., Muscidae). *Ibid.* 4: 193-203.
- , 1954, A survey of the Swedish species of *Phaomia* R.-D. (Dipt., Muscidae). *Ibid.* 5: 1-17.
- SÉGUY, E., 1923, Diptères Anthomyides. *Faune de France* 6: 44-64, 179-366.
- SKIDMORE, P., 1961, *Helina annosa* (Zett.) (Dipt., Muscidae) a fly new to the British list. *Entomologist's mon. Mag.* 97: 253.
- , 1962, Some recent additions to the Lancashire and Cheshire Diptera list. *Ibid.* 98: 182-186.
- , 1963, Some Muscid flies (Dipt.) of Lancashire and Cheshire. *Ibid.* 99: 9-19.
- SMITH, K. G. V., 1960, *Helina pulchella* (Ringdahl) (Dipt., Muscidae) new to Britain. *Entomologist's mon. Mag.* 96: 96.
- STEIN, P., 1914, Versuch, die Gattungen und Arten unserer Anthomyiden nur nach dem weiblichen Geschlecht zu bestimmen, nebst Beschreibung einiger neuen Arten. *Arch. Naturgesch.* 8: 1-13, 41-50.
- , 1916, Die Anthomyiden Europas. *Ibid.* 10: 1-118, 202-221.
- VAN EMDEN, F. I., 1954, Diptera, Cyclorrhapha, Calyptrata (I), Section (a), Tachinidae and Calliphoridae, *Handbk. ident. Br. Insects* 10 (4), pp. 1-2. *R. ent. Soc. Lond.*
- VERRALL, G. H., 1901, *British Flies*. 8: 14.

PLATE I.

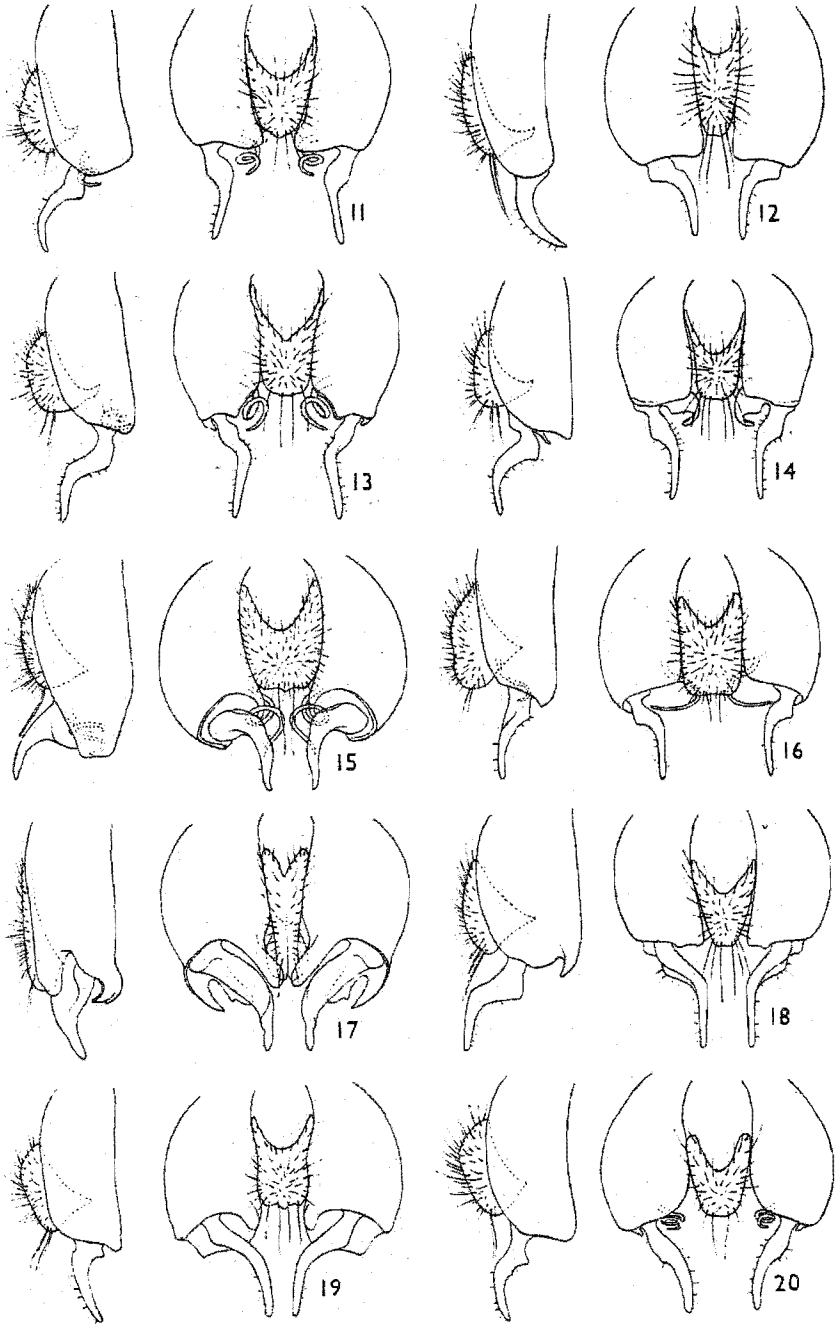
Hypopygia of *Fannia* species: (1) *canicularis* Linné; (2) *hirundinis* Ringdahl; (3) *subpubescens* Collin; (4) *difficilis* Stein; (5) *clara* Collin; (6) *speciosa* Villeneuve; (7) *glaucescens* Zetterstedt; (8) *aequilineata* Ringdahl; (9) *latipalpis* Stein; (10) *vespertilionis* Ringdahl.



Hypopygia of *Fannia* species

PLATE II.

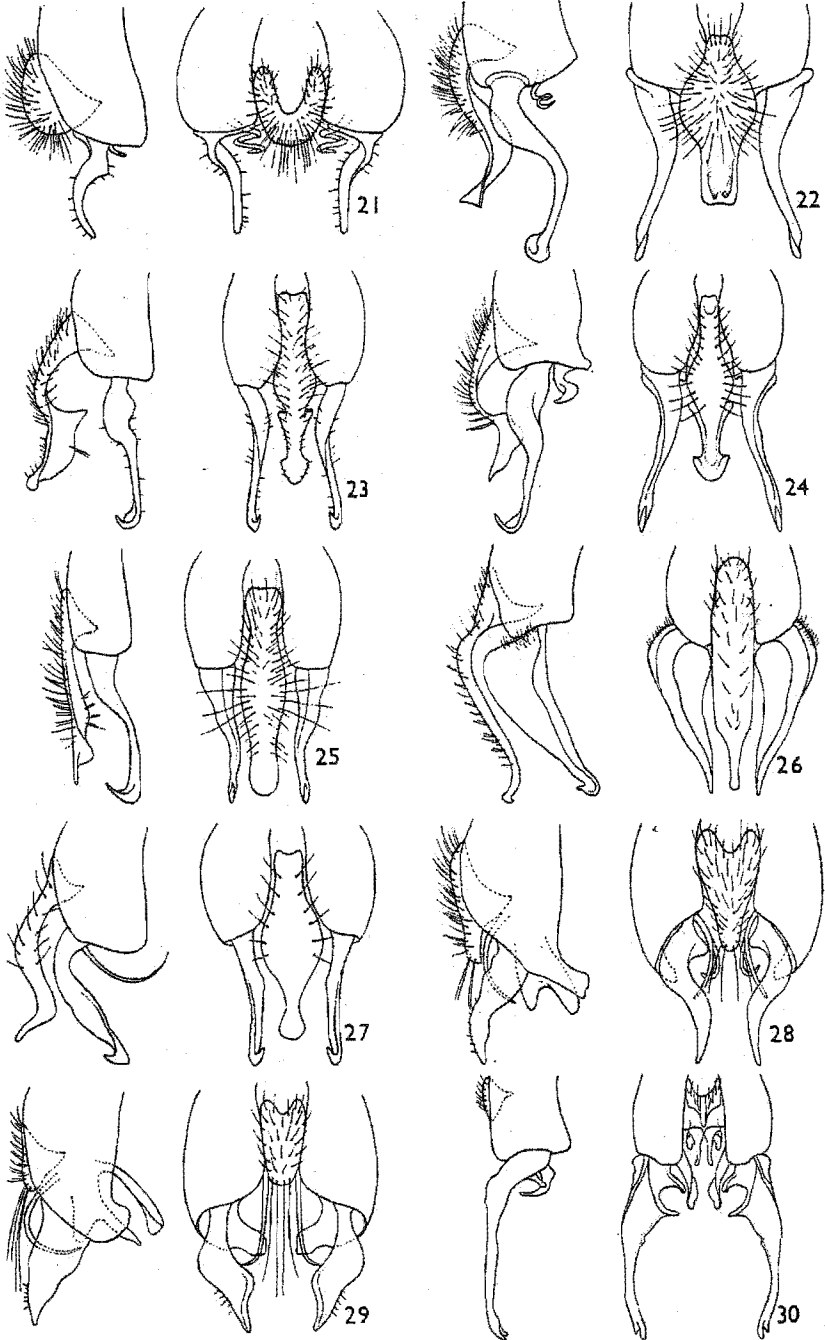
Hypopygia of *Fannia* species: (11) *scalaris* Fabricius; (12) *incisurata* Zetterstedt; (13) *manicata* Meigen; (14) *monilis* Haliday; (15) *hamata* Macquart; (16) *vesparia* Meade; (17) *fuscula* Fallén; (18) *melania* Dufour; (19) *coracina* Loew; (20) *subatripes* Fonseca.



Hypopygia of *Fannia* species

PLATE III.

Hypopygia of *Fannia* species: (21) *atripes* Stein; (22) *ringdahlana* Collin; (23) *umbrosa* Stein; (24) *postica* Stein; (25) *gotlandica* Ringdahl; (26) *ridica* Collin; (27) *umbratica* Collin; (28) *immutica* Collin; (29) *mutica* Zetterstedt; (30) *armata* Meigen.



Hypopygia of *Fannia* species

- 3 (4) Thorax and abdomen metallic green without distinct markings. Rounded knob beneath base of wing distinctly hairy..... 2. *Orthellia* (p. 10).
- 4 (3) Thorax and abdomen not metallic green, densely gray-dusted, former with 4 conspicuous black stripes, or latter extensively orange-yellow (except in *tempestiva*). 1. *Musca* (p. 9).
- 5 (2) Bend of discal vein broadly rounded in a smooth curve (text-fig. 6b).
- 6 (9) Species with at least the abdomen metallic green or blue.
- 7 (8) Thorax with 2 well developed postsutural intra-alar bristles. Costa hairy along whole length beneath (hairs quite or almost on ventral surface, below the normal anteroventral row of setulae and well separated from them). 3. *Dasyphora* (p. 10).
- 8 (7) Only the posterior intra-alar distinctly developed. Costa bare beneath except at base. 5.5-6 mm. (= *serena* Mg., 1826 nec Fall., 1825 = *aenea* Zett.).
Camb. (*Wicken Fen, Upware, Devil's Ditch and Kirtling*); *Essex* (*West Mersea*); *Glamorgan*. (*Porthcawl*); *Bucks.* (*Wormsley Park*); *Somerset* (*Edington and Sharpham*); *Dorset* (*Swanage*); *Hants* (*Christchurch*) and *Sussex* (*Pagham*). *Uncommon.* v-viii.... 4. *Pyrellia ignita* Desvoidy.
- 9 (6) Species without metallic colouring anywhere, either undusted shining black, or somewhat bluish-black with more or less conspicuous dusting.
- 10 (11) Large shining black species without stripes on thorax and with conspicuously yellow wing-base. Facial orbits and jowls glistening orange-yellow. Only one (posterior) sternopleural bristle. (NOTE: specimens occur in which the scutellum shows a faint reddish tinge towards tip). 10.5-12 mm.
Breeds in cow-dung. Generally distributed. Very common. iv-ix.
6. *Mesembrina meridiana* Linné.
- 11 (10) Smaller, somewhat bluish-black species with (seen from behind) conspicuous white-dusted stripes on thorax and without noticeably yellow wing-base. Facial orbits and jowls dusted whitish. Sternopleurals 1:2.
5. *Morellia* (p. 11).
- 12 (1) Discal vein practically straight in apical section, or somewhat curved rearwards (text-fig. 6E). ♀: frontalia with a distinct pair of crossed bristles.
7. *Poietes* (p. 11).

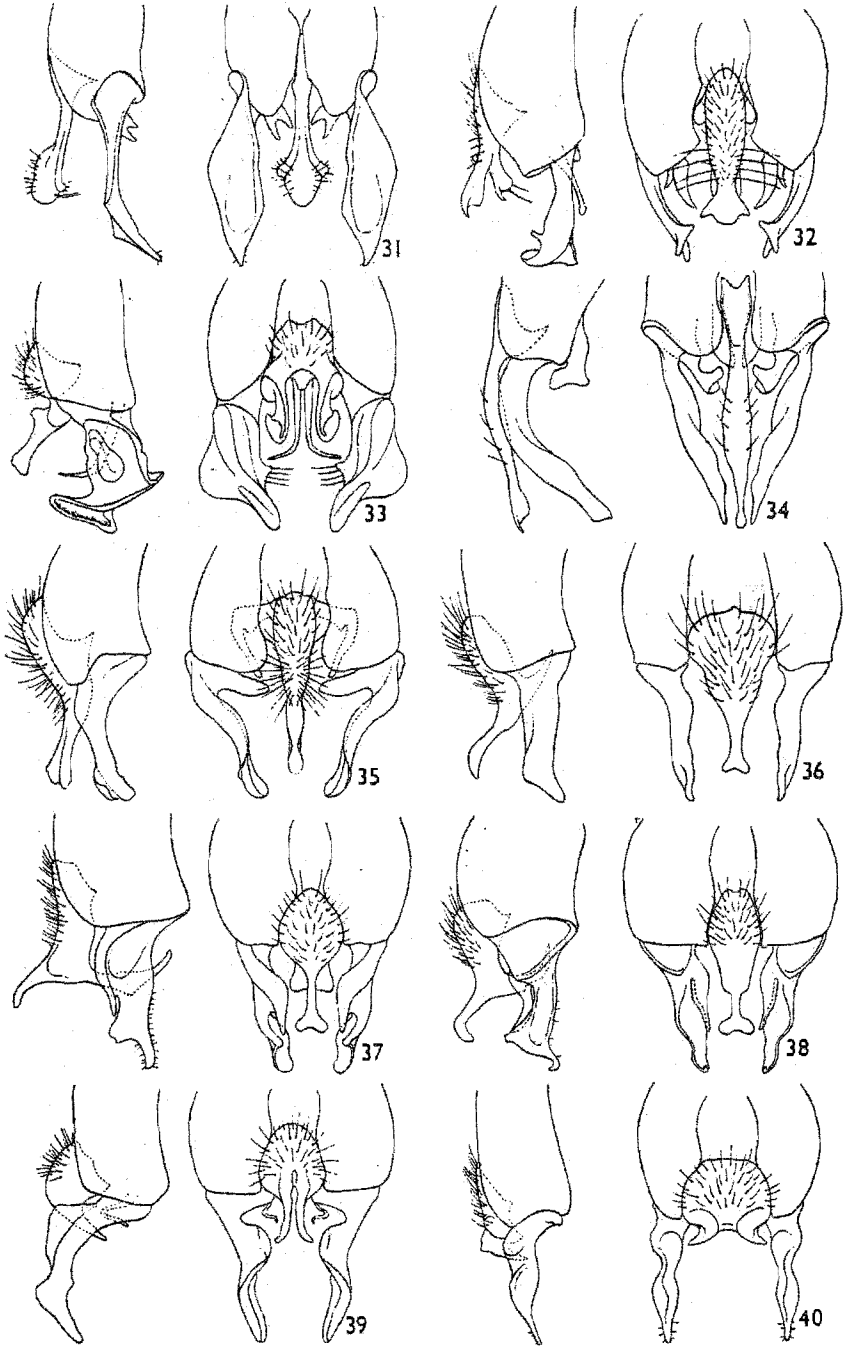
Genus *Musca* Linné, 1758.

KEY TO SPECIES.

- 1 (6) Eyes bare.
- 2 (3) Propleural depression (in front of and somewhat below anterior spiracle) with some short black hairs (text-fig. 6F). ♂: eyes separated by more than twice the width of third antennal segment; abdomen pale brownish at sides towards base. ♀: frontalia at middle quite three times as wide as a frontal orbit. 5-7.5 mm.
Breeds in excrement and decaying vegetable matter, especially in refuse dumps. Generally distributed. Very common. iv-xi.
1. *domestica* Linné.
- 3 (2) Propleural depression bare. ♂: eyes separated by less than width of third antennal segment. ♀: frontalia at middle at most twice as wide as an orbit (except in *tempestiva*, in which the frons is similar to that of *domestica*).
- 4 (5) Suprasquamal ridge with a patch of coarse black hairs towards front (text-fig. 6G). ♂: intermediate abdominal tergites orange-yellow with a conspicuous black median stripe. ♀: frontalia at middle less than twice as wide as an orbit. 6.25-7.75 mm. (= *corvina* F.)
Breeds in cow- and horse-dung. Generally distributed. Very common. i-ix. 2. *autumnalis* Degeer.
- 5 (4) Suprasquamal ridge bare. ♂: abdomen entirely black. ♀: frontalia much more than twice as wide as an orbit. 3.75-4.25 mm.
Only British locality: Alderney, Channel Is. vi-viii.
3. *tempestiva* Fallén.
- 6 (1) Eyes densely haired, less so in female. 5.5-6 mm.
Only British record known, 1 ♂, Seaford (Sussex), 25. viii. 75 (G. H. Verrall). 4. *vitripennis* Meigen.

PLATE IV.

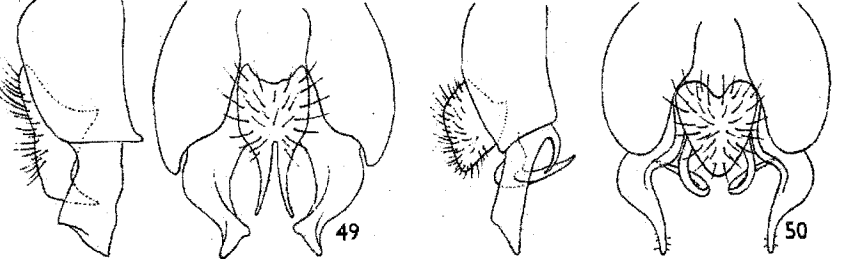
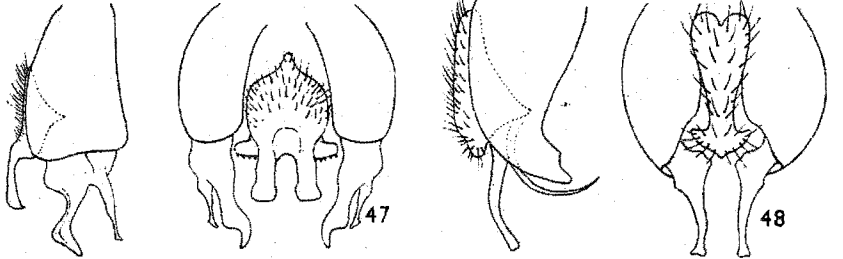
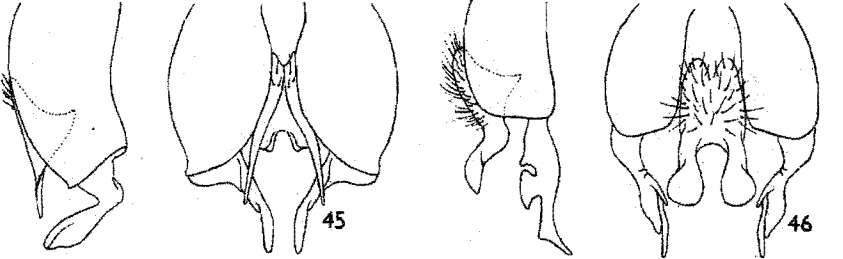
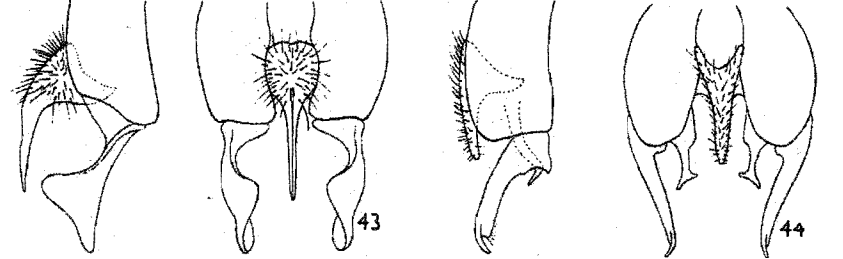
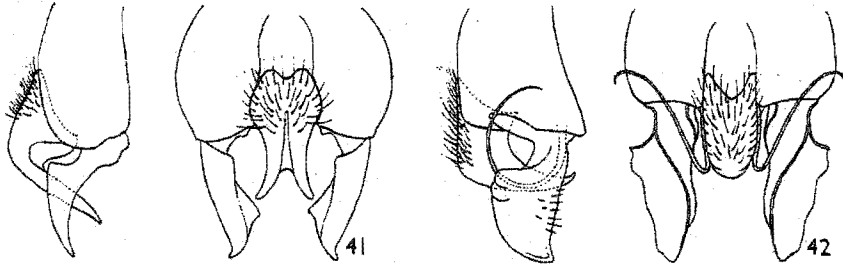
Hypopygia of *Fannia* species: (31) *tuberculata* Zetterstedt; (32) *genualis* Stein; (33) *metallipennis* Zetterstedt; (34) *hirticeps* Stein; (35) *novalis* Pont; (36) *carbonaria* Meigen; (37) *norvegica* Ringdahl; (38) *pseudonorvegica* Fonseca; (39) *coracula* Collin; (40) *corvina* Verrall.



Hypopygia of *Fannia* species

PLATE V.

Hypopygia of *Fannia* species: (41) *polychaeta* Stein; (42) *minutipalpis* Stein; (43) *nitida* Stein; (44) *atra* Stein; (45) *rondanii* Strobl; (46) *parva* Stein; (47) *verralli* Stein; (48) *pretiosa* Schiner; (49) *mollissima* Haliday; (50) *sociella* Zetterstedt.

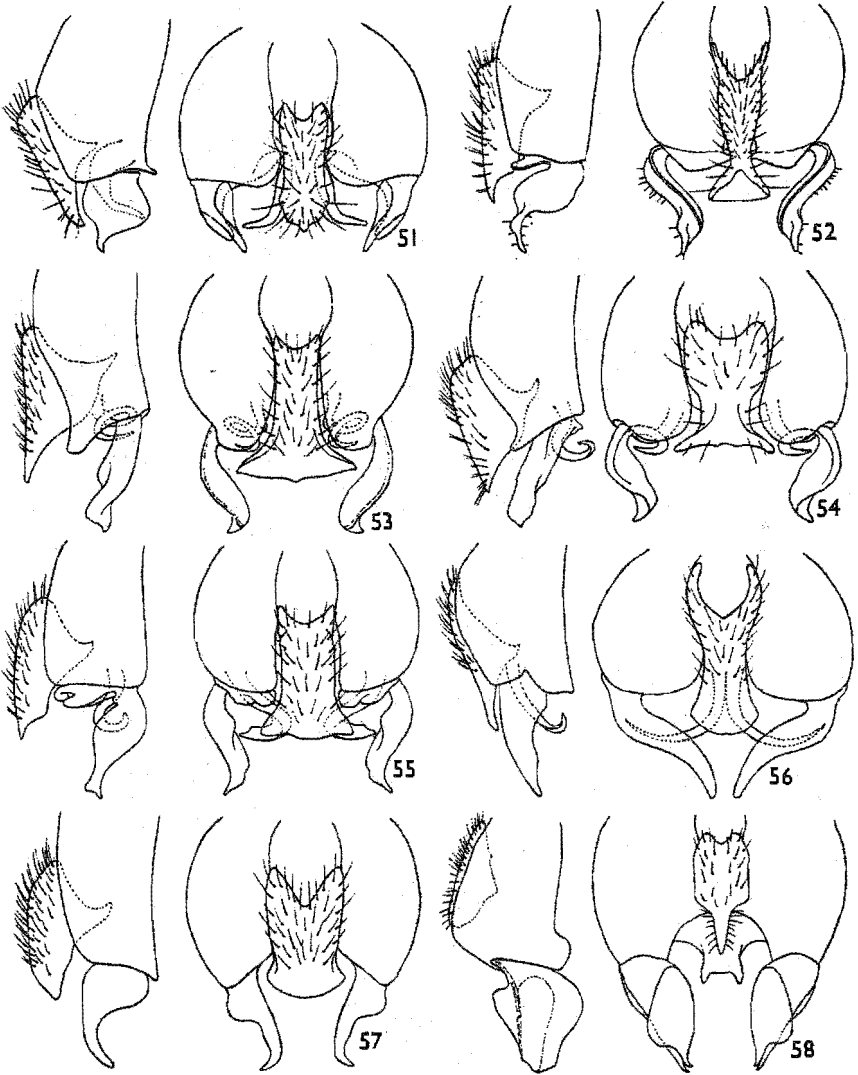


Hypopygia of *Fannia* species

PLATE VI.

Hypopygia of *Fannia* species: (51) *ornata* Meigen; (52) *pallitibia* Rondani; (53) *serena* Fallén; (54) *subsimilis* Ringdahl; (55) *similis* Stein; (56) *collini* Fonseca; (57) *nigra* Malloch.

Hypopygium of *Piezura* species: (58) *graminicola* Zetterstedt.



Hypopygia of *Fannia* species (figs 51-57)

Hypopygium of *Piezura* species (fig. 58)

INDEX

Numbers refer to pages. Principal reference is given first. Synonyms and variations in italics.

abdominalis (Helina), 48, 53
 abnormis (Pseudocoenosia), 69
 Achantiptera, 12
 aculeipes (Thricops), 36
 aenea (Pyrellia), 9
 aenescens (Morellia), 11
 aequilineata (Fannia), 85, 93; 84
 aerea (Fannia), 82
 aerea (Spilogona), 62, 63
 aestuum (Spilogona), 58, 62
 affinis (Hebecnema), 54
 agromyzina (Allognota), 67
 albatella (Coenosia), 75
 albibasalis (Allocoestylus), 38
 albifrons (Limnospila), 66
 albipuncta (Hydrotaea), 29, 34
 albolineatus (Polietes), 12
 alleni (Coenosia), 74
 Allocoestylus, 38; 13
 Allognota, 67
 allotalla (Helina), 45, 52
 alma (Lispocephala), 69
 alpica (Spilogona), 59, 63
 anceps (Helina), 45, 50
 ancilla (Mydaea), 42, 43
 angelicae (Phaonia), 17
 anicula (Mydaea), 42, 43
 annosa (Helina), 43, 50
 antennata (Coenosia), 75; 67
Anthomyia, 46
 anthrax (Ophyræ), 28
 apicalis (Phaonia), 19, 24
 apicalis (Thricops), 36
 arctata (Helina), 46, 51
 armata (Fannia), 81, 98
 armipes (Hydrotaea), 31, 35
 armipes (Spilogona), 59
 assimilis (Muscina), 16
 aterrima (Azelia), 39, 40
 atra (Caricea), 76
 atra (Fannia), 89, 98
 atriceps (Dialytina), 13
 atripes (Fannia), 80, 99
 atripes (Helina), 44, 50
 autumnalis (Musca), 9
 Azelia, 38; 13

baltica (Spilogona), 60, 64
 basalis (Phaonia), 16, 23
 basdeni (Hydrotaea), 31, 35
 bengtssoni (Mydaea), 42, 43
 bilineella (Coenosia), 71
 bimaculata (Hydrotaea), 29, 33
 biocellata (Coenosia), 71
 biseriata (Spilogona), 62, 65
 bitincta (Phaonia), 20, 25
 borussica (Hydrotaea), 29, 33, 34
 brachialis (Lispocephala), 68
 brevisquama (Coenosia), 71
 brumalis (Pogonomyia), 28
 brunneisquama (Spilogona), 59, 63

caesarion (Orthellia), 10
 caesia (Lispe), 76
 calcata (Helina), 46, 51
 calcitrans (Stomoxys), 12
 Calliophrys, 55
canalicans (Neolimnophora), 58
 canescens (Phaonia), 22, 26
 canicularis (Fannia), 84, 85, 93
 capensis (Ophyræ), 28
 carbonaria (Fannia), 90, 94
 Caricea, 76; 67
 carteri (Fannia), 89
 ciliata (Fannia), 80
 ciliata (Hydrotaea), 29
 ciliatocosta (Helina), 44, 50
 cilipes (Azelia), 39, 40
 cilipes (Helina), 44, 50
 cincta (Phaonia), 22, 27; 21
 cinerea (Hydrotaea), 30, 31, 34
 cinereiventris (Lophosceles), 28
 clara (Fannia), 84, 92
Coelomyia, 86
 Coensia, 70; 67
 COENOSIINAE 65; 8
Coenosiosoma, 69
 colbrani (Phaonia), 19
 collini (Fannia), 89
 communis (Helina), 46, 52; 43
 compuncta (Spilogona), 60, 64
 concolor (Helina), 48, 53
confluens (Phaonia), 19
 consanguinea (Lispe), 78

consimilis (Helina), 44, 50
consobrina (Phaonia), 17, 23
contractifrons (Spilogona), 59, 63
coracina (Fannia), 87, 99
coracula (Fannia), 90
cornicina (Orthellia), 10
corvina (Fannia), 90, 94; 78
corvina (Musca), 9
costata (Orchisia), 65
cothurnata (Helina), 49, 53
crinipes (Phaonia), 19, 25
crinita (Helina), 45, 50
cristatus (Lophosceles), 28
Cryptolucilia, 10
curvata (Spilogona), 61
curvipes (Hydrotaea), 29
cyanella (Dasyphora), 10
cyanicolor (Dasyphora), 11
Cyrtoneura, 16
cyrtoneurina (Hydrotaea), 32, 35

Dasyphora, 10; 9
decepiens (Coenosia), 72
decolor (Pogonomyia), 28
Dendrophaonia, 27; 14
denigrata (Spilogona), 58, 63
dentipes (Hydrotaea), 32, 35
denudata (Helina), 48, 53
depressiuscula (Spilogona), 60, 63, 64
depuncta (Helina), 49, 53
deserta (Mydaea), 41, 42
detrita (Mydaea), 41, 42
Dexiopsis, 69; 67
Dialytina, 13
diaphanus (Allocoestylus), 38
difficilis (Fannia), 84, 92
discimana (Mydaea), 41, 42
dispar (Helina), 49
distinguens (Coenosia), 71
domestica (Musca), 9
dorsalis (Spanochaeta), 67
Drymeia, 13
dubia (Coenosia), 74
dubiosa (Coenosia), 74
duplaris (Helina), 46
duplicata (Helina), 46, 51; 43

electa (Mydaea), 41, 43
Enoplopteryx, 44
errans (Phaonia), 17, 24
erratica (Phaonia), 17
erronea (Phaonia), 17, 19, 24, 25
erythrocerca (Lispocephala), 68
exoleta (Phaonia), 21, 26
exsurda (Limnophora), 56
exuta (Limnophora), 55, 56

falculata (Lispocephala), 69
Fannia, 78
FANNINIÆ, 78; 8
femorialis (Coenosia), 72
femorata (Fannia), 89
flagripes (Helina), 45, 48, 51, 52

flavicauda (Coenosia), 73
foveolatus (Thricops), 38
fratercula (Helina), 44, 50
fumipennis (Spilogona), 59
fumosa (Hebecnema), 54
fusca (Phaonia), 23, 27
fuscata (Phaonia), 18, 24, 25
fuscula (Fannia), 79, 92

geniculata (Coenosia), 72
genualis (Fannia), 91, 96
gibbera (Azelia), 39, 40
glabricula (Hydrotaea), 33, 35
glaucescens (Fannia), 82, 92; 78
goberti (Phaonia), 22, 26
gotlandica (Fannia), 85, 94
gracilis (Phaonia), 21, 26
graminicola (Piezura), 100
Graphomya, 54; 15
griseola (Spilogona), 60, 64
Gymnodia, 15

Haematobia, 12
halterata (Fannia), 90
halterata (Phaonia), 23, 27
hamata (Drymeia), 13
hamata (Fannia), 79, 92
Hebecnema, 54; 15
Helina, 43; 15
Hera, 37
hirtulus (Thricops), 37
hirticeps (Fannia), 81, 97
hirticeps (Hydrotaea), 36
hirticrura (Polietes), 11
hirticus (Polietes), 11
hirtulus (Thricops), 37
hirundinis (Fannia), 83, 93
hortorum (Morcellia), 11
humerala (Phaonia), 20
humilis (Caricea), 76
humilis (Gymnodia), 15
hybrida (Phaonia), 16
hydromyzina (Lispe), 77
Hydrotaea, 29; 14, 36
Hyetodesia, 16

ignita (Pyrellia), 9
immutica (Fannia), 91, 98
impuncta (Helina), 47, 52, 53
inanis (Achantiptera), 12
incana (Phaonia), 16, 23
incisurata (Fannia), 84, 99
infantula (Coenosia), 74
innocuus (Thricops), 37
insignis (Fannia), 79
insularis (Spilogona), 61
intermedia (Coenosia), 70
intermedia (Helina), 46, 51
irritans (Hydrotaea), 30, 34
irritans (Lyperosia), 12

keilini (Phaonia), 21
kowarzi (Fannia), 88

- lacteipennis* (Dexiopsis), 70
lacustris (Dexiopsis), 70
laeta (Phaonia), 22
laetabilis (Phaonia), 22
laetifica (Helina), 43, 50
Lamprocoenosia, 76
lardarius (Polietes), 11
lasiophthalma (Helina), 48, 53
Lasiops, 36
latipalpis (Fannia), 84, 93
latitarsis (Helina), 49, 53
leucostoma (Ophyra), 28
Limnophora, 55; 15
Limnospila, 66
lineatipes (Coenosia), 73
Lispe, 76
 LISPIINAE, 76; 8
Lispocephala, 67; 66
litoralis (Dexiopsis), 70
litorea (Lispe), 77
litorea (Spilogona), 58, 63
litorella (Schoenomyza), 67
loewi (Lispe), 77
longicauda (Pseudocoenosia), 69
longipes (Spilogona), 59, 61, 63, 64
longipes (Thricops), 37
longisquama (Pseudocoenosia), 69
longitarsis (Phaonia), 17
Lophosceles, 27; 13
lucorum (Helina), 43
lugubris (Phaonia), 22, 26
Lyperosia, 12

macquarti (Azelia), 39, 40
Macrorchis, 67
maculata (Graphomya), 55
maculipennis (Helina), 49, 53
maculosa (Limnophora), 56, 57
magnicornis (Wahlgrenia), 14
manicata (Fannia), 79, 99
marina (Spilogona), 62, 65
maritima (Neolimnophora), 58
marmorata (Helina), 43
meadei (Spilogona), 61, 62, 63, 64
means (Coenosia), 71
meditabunda (Myospila), 15
meditata (Macrorchis), 67
melania (Fannia), 80, 99
memnonipes (Helina), 43
meridiana (Mesembrina), 9
meridionalis (Hydrotaea), 29, 33
Mesembrina, 9
metallipennis (Fannia), 88, 97
meteorica (Hydrotaea), 31, 35
miki (Piezura), 100
militaris (Hydrotaea), 30, 34
minutalis (Dexiopsis), 70
minutipalpis (Fannia), 91, 97; 78
mirabilis (Phaonia), 21
mollicula (Coenosia), 71
mollissima (Fannia), 86, 96
monilis (Fannia), 79, 99
Morellia, 11; 9

morio (Phaonia), 16, 23
mundula (Spilogona), 61
Musca, 9
Muscina, 16; 12
 MUSCINAE, 8; 7
mutatus (Lophosceles), 28
mutica (Fannia), 91, 95
Mydaea, 40; 15
Myospila, 15
mystica (Phaonia), 19, 25

nana (Lispe), 78
nebulosa (Mydaea), 42, 43
Neolimnophora, 57; 16
nicida (Fannia), 81, 97
nicicola (Hydrotaea), 29, 34
nicicola (Hydrotaea), 29
nigra (Fannia), 89, 98
nigricolor (Hebecnema), 54
nigrifrons (Thricops), 37
nigripes (Limnophora), 55, 57
nigritellus (Thricops), 37
nitida (Fannia), 90, 95
nitida (Phaonia), 23, 27
norvegica (Fannia), 89, 95; 78
notata (Limnophora), 56
novalis (Fannia), 81, 97
nupta (Spilogona), 61

obscurata (Helina), 46, 52
obscuripes (Helina), 49
occulta (Hydrotaea), 31, 35
olympiae (Limnophora), 56, 57
Ophyra, 28; 14
Oplogaster, 71
Orchisia, 65
ornata (Fannia), 86, 93
Orthellia, 10; 9

pabulorum (Muscina), 16
pagana (Mydaea), 40
palaestrica (Hydrotaea), 32, 34
pallida (Phaonia), 20, 25
pallipalpis (Lispocephala), 69
pallitibia (Fannia), 86, 94
palpata (Phaonia), 18, 22, 23
paludis (Coenosia), 73
pandellei (Hydrotaea), 31, 35
Paracoenosia, 69
parapostica (Fannia), 88
parcepilosa (Helina), 45, 51
pardalina (Piezura), 99
parva (Fannia), 87, 96
parva (Hydrotaea), 33, 34
pedella (Coenosia), 72
pellucens (Hydrotaea), 29, 33
perdita (Phaonia), 17, 24
perpendicularis (Thricops), 38
perpusilla (Coenosia), 72
pertusa (Helina), 47, 52
Phaonia, 16; 14
 PHAONINAE, 12; 7
picta (Graphomya), 54, 55

- Piezura*, 99; 78
pilipes (Hydrotaea), 31, 34
pilitibia (Hydrotaea), 33, 34
pilosa (Lispe), 77
Platycoenosia, 100
Pogonomyia, 28; 13
Polietes, 11; 9
polychaeta (Fannia), 90, 95
populi (Phaonia), 20, 25
populi (Phaonia), 20
postica (Fannia), 91, 98
postica (Fannia), 88
posticaria (Fannia), 88
pratensis (Phaonia), 22, 27
pretiosa (Fannia), 86, 94
protuberans (Helina), 45, 51
Pseudocoenosia, 89; 66
Pseudolimnophora, 55
pseudonorvegica (Fannia), 81
Pseudopyrellia, 10
pubescens (Helina), 48, 53
pubiseta (Helina), 48, 53
pudorosa (Coenosia), 74
pulchella (Helina), 47, 52
pulchella (Lispe), 78
pulcher (Lophosceles), 28
pulicaria (Coenosia), 75
pullata (Phaonia), 21, 26
pumila (Coenosia), 73
punctata (Helina), 49, 53
pygmaea (Coenosia), 76
pygmaea (Lispe), 77
Pyrellia, 9
- quadrinaculata* (Helina), 49
quadrinaculella (Helina), 49, 53
quadrinotata (Helina), 47, 52
quadrum (Helina), 46, 51
querceti (Dendrophaonia), 27
- Rhynchotrichops*, 36
ringdahiana (Fannia), 82
ringdahl (Hydrotaea), 29
riparia (Limnophora), 55, 56
rohrelliformis (Achanthiptera), 12
rondanii (Fannia), 82, 96
rostratus (Thricops), 36
rothi (Helina), 48, 52
rubricornis (Lispocephala), 68
rufipalpis (Coenosia), 73
rufipalpis (Phaonia), 21, 27
rufiseta (Phaonia), 19, 24
- salinarum* (Coenosia), 75
scalaris (Fannia), 79, 99
Schoenomyza, 67
seropulosa (Limnophora), 56, 57
scutellaris (Mydaea), 40, 42
scutellaris (Phaonia), 20
scutellata (Phaonia), 17, 24
scutulata (Spilogona), 62, 65
semicinereus (Thricops), 38; 36
semipellucidus (Lophosceles), 28
separ (Thricops), 37
septemnotata (Gymnodia), 15
septemnotata (Spilogona), 61, 64
serena (Fannia), 87, 96
serena (Lispocephala), 68
serena (Pyrellia), 9
serva (Phaonia), 21, 26
servaeformis (Phaonia), 21, 26
setifemur (Dendrophaonia), 27
setifemur (Mydaea), 41, 42
setiventris (Helina), 46, 51
sexnotata (Coenosia), 73
siebecki (Phaonia), 19, 25
signata (Phaonia), 17, 24
signata (Spilogona), 62
similis (Fannia), 87, 97
similis (Hydrotaea), 31, 35
simplex (Alloeostylus), 38
simplex (Morellia), 11
smolandica (Fannia), 89
sociella (Fannia), 86, 96
solitaria (Pseudocoenosia), 69; 65
solitaria (Spilogona), 62
solitaria (Spilogona), 62, 65
Spanochaeta, 67
speciosa (Fannia), 83, 92
Spilogona, 58; 16
spinipes (Hydrotaea), 29
spinipes (Mydaea), 40, 42
spuria (Lispocephala), 68
stabulans (Muscina), 16
steini (Coenosia), 75
steini (Polietes), 11
stigmatica (Coenosia), 74
stimulans (Haematobia), 12
STOMOXYNÆ, 12; 7
Stomoxys, 12
subatrips (Fannia), 81, 99
subfuscineris (Phaonia), 17, 23; 16
subpubescens (Fannia), 85, 93; 78
subrostratus (Thricops), 37
subsiniilis (Fannia), 86, 97
subumbrosa (Fannia), 82
sudeticus (Alloeostylus), 38
suecica (Helina), 44
sundewalli (Alloeostylus), 38
supera (Helina), 46
surda (Spilogona), 59, 61, 63, 64
- tempesta* (Musca), 9
tentaculata (Lispe), 77
Thricops, 36; 13, 37
tigrina (Caricea), 76
tigrina (Limnophora), 56
tincta (Mydaea), 41, 42
tinctipennis (Phaonia), 17
triangula (Limnophora), 55, 57
triangulifera (Spilogona), 59, 63
trianguligera (Spilogona), 61, 64
trianguligera (Spilogona), 61
Trichopticoidea, 28
tricolor (Coenosia), 74

ISBN 0 901546 07 0

Printing Administration Limited, 20-26 Purley Way, Croydon, Surrey 2C/6.96

The Royal Entomological Society of London is a scientific Society founded in 1833 and incorporated by Royal Charter in 1885 for the improvement and diffusion of Entomological Science exclusively.

The principal Publications of the Society are the following :

TRANSACTIONS. Papers published in the Transactions are issued separately and separately priced. One volume is issued every year at a subscription price of £10 10s. 0d.

PROCEEDINGS: Series A. Contains short papers on general entomology. Four parts are issued annually at a subscription price of £4 0s. 0d.

PROCEEDINGS: Series B. Consists exclusively of short papers on systematic entomology. Six parts are issued each year at a subscription price of £4 0s. 0d.

PROCEEDINGS: Series C. Contains the minutes of meetings, Presidential Addresses, etc. A part is issued before each meeting as an agenda paper. The annual subscription price is £1 4s. 0d.

The above are supplied free to Fellows. Further copies can be obtained by Fellows on special terms.

Other publications issued by the Society, in addition to the *Handbooks* (for particulars of which see pp. ii and iv of cover), are the following :

The Generic Names of British Insects. Nine parts so far published, covering the Rhopalocera, Odonata, Neuroptera, Hymenoptera Aculeata, Carabidae, Hydradephaga, Hemiptera-Heteroptera, and Staphylinidae.

Stylops: A Journal of Taxonomic Entomology. 1932-1935, Vols. 1-4 (all issued). £2 3s. 0d. per Vol.

Hübner: A biographical and systematic account of the entomological works of Jacob Hübner and the supplements thereto. By Francis Hemming, 2 Vols., £2 10s. 0d.

The Centenary History of the Society. 10s. 6d.

Symposia of the Royal Entomological Society

No. 1.	Insect Polymorphism, 1961	£1 0 0
No. 2.	Insect Reproduction, 1964	£2 0 0
No. 3.	Insect Behaviour, 1966	£2 5 0

Communications offered to the Society for publication should be addressed to the Registrar at the Society's Rooms. Those intended for the Transactions must be communicated by a Fellow of the Society.

Meetings are held at the Society's Rooms on the first Wednesday in each month, except January and February (third Wednesday) and August (no meeting).

Particulars concerning the Fellowship can be obtained on application to the Registrar, 41, Queen's Gate, London, S.W.7.

HANDBOOKS FOR THE IDENTIFICATION OF BRITISH INSECTS.

PARTS NOW AVAILABLE

I.	Part 2	<i>Thysanura and Diplura.</i> By M. J. Delany	8 pp.	3s. 6d.
	" 5	<i>Dermoptera and Orthoptera.</i> By W. D. Hincks. (Second edition).	24 pp.	8s. 0d.
	" 6	<i>Plecoptera.</i> By D. E. Kimmins.	18 pp.	4s. 6d.
	" 9	<i>Ephemeroptera.</i> By D. E. Kimmins.	18 pp.	4s. 6d.
	" 10	<i>Odonata.</i> By F. C. Fraser. (Second edition).	49 pp.	13s. 6d.
	" 12-13	<i>Mecoptera, Megaloptera, Neuroptera.</i> By F. C. Fraser.	40 pp.	13s. 6d.
	" 16	<i>Siphonaptera.</i> By F. G. A. M. Smit.	94 pp.	26s. 6d.
II.	" 2(a)	<i>Hemiptera-Homoptera : Cicadomorpha.</i> By W. J. Le Quesne.	64 pp.	20s. 0d.
	" 3	<i>Hemiptera-Homoptera : Fulgoromorpha.</i> By W. J. Le Quesne.	68 pp.	17s. 6d.
IV.	" 1	<i>Coleoptera : Introduction and Key to Families.</i> By R. A. Crowson.	59 pp.	13s. 6d.
	" 3	<i>Coleoptera : Hydradephaga.</i> By F. Balfour-Browne.	34 pp.	8s. 0d.
	" 6(a)	<i>Coleoptera : Clambidae.</i> By C. Johnson.	13 pp.	5s. 0d.
	" 8(a)	<i>Coleoptera : Staphylinidae (part).</i> By C. E. Tottenham.	79 pp.	20s. 0d.
	" 9	<i>Coleoptera : Pselaphidae.</i> By E. J. Pearce.	32 pp.	8s. 0d.
	" 10	<i>Coleoptera : Sphaeritidae and Histeridae.</i> By D. G. H. Halstead.	16 pp.	4s. 6d.
V.	" 5(b)	<i>Coleoptera : Phalacridae.</i> By R. T. Thompson.	17 pp.	4s. 6d.
	" 7	<i>Coleoptera : Coccinellidae and Sphindidae.</i> By R. D. Pope.	12 pp.	3s. 6d.
	" 9	<i>Coleoptera : Lagriidae to Meloidae.</i> By F. D. Buck.	30 pp.	8s. 0d.
	" 11	<i>Coleoptera : Scarabaeoidea.</i> By E. B. Britton.	29 pp.	10s. 0d.
	" 12	<i>Coleoptera : Cerambycidae.</i> By E. A. J. Duffy.	18 pp.	4s. 6d.
	" 15	<i>Coleoptera : Scolytidae and Platypodidae.</i> By E. A. J. Duffy.	18 pp.	4s. 6d.
VI.	" 1	<i>Hymenoptera : Introduction and Key to Families.</i> By O. W. Richards.	94 pp.	26s. 6d.
	" 2(a)	<i>Hymenoptera : Symphyta (part).</i> By R. B. Benson.	47 pp.	13s. 6d.
	" 2(b)	<i>Hymenoptera : Symphyta (cont.).</i> By R. B. Benson.	88 pp.	20s. 0d.
	" 2(c)	<i>Hymenoptera : Symphyta (concl.).</i> By R. B. Benson.	114 pp.	26s. 6d.
VII.	" 2(ai)	<i>Hymenoptera : Ichneumonoidea (part).</i> By J. F. Perkins.	116 pp.	32s. 6d.
	" 2(aii)	<i>Hymenoptera : Ichneumonoidea (contd.).</i> By J. F. Perkins.	96 pp.	25s. 0d.
VIII.	" 1(a)	<i>Hymenoptera : Cynipoidea (part).</i> By R. D. Eady and J. Quinlan.	81 pp.	20s. 0d.
	" 2(a)	<i>Hymenoptera : Chalcidoidea (part).</i> By Ch. Ferrière, G. J. Kerrich.	40 pp.	11s. 0d.
	" 2(b)	<i>Hymenoptera : Chalcidoidea (contd.)</i> By R. R. Askew	39 pp.	15s. 0d.
	" 3(d)	<i>Hymenoptera : Proctotrupoidea (part).</i> By G. E. J. Nixon.	107 pp.	26s. 6d.
IX.	" 1	<i>Diptera : Introduction and Key to Families.</i> By H. Oldroyd. (Second edition.)	49 pp.	10s. 0d.
	" 2	<i>Diptera : Nematocera (part).</i> By R. L. Coe, Paul Freeman, P. F. Mattingly.	216 pp.	26s. 6d.
X.	" 1	<i>Diptera : Syrphidae.</i> By R. L. Coe.	98 pp.	23s. 6d.
	" 2(c)	<i>Diptera : Pipunculidae.</i> By R. L. Coe.	83 pp.	27s. 6d.
	" 4(a)	<i>Diptera : Cyclorrhapha (Tachinidae, Calliphoridae).</i> By F. I. van Emden.	134 pp.	26s. 6d.
	" 4(b)	<i>Diptera : Cyclorrhapha (Muscidae).</i> By E. C. M. d'Assis Fonseca.	119 pp.	32s. 6d.
XI.	" 1	<i>Check List of British Insects.</i> By G. S. Kloet and W. D. Hincks. Second edition (revised). Small Orders and Hemiptera.	119 pp.	30s. 0d.

Sole agent : E. W. Classey, 353, Hanworth Road, Hampton, Middlesex.