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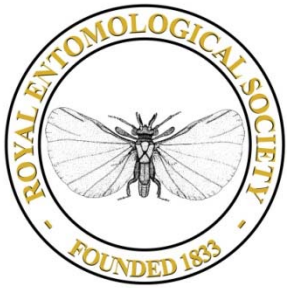

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Handbooks for the Identification of British Insects
Vol. 10, Part 8

SCUTTLE FLIES

DIPTERA, PHORIDAE
Genus *Megaselia*

R.H.L. Disney

ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

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Identification of British Insects

Vol. 10, Part 8

Editors: W. R. Dolling & R. R. Askew

SCUTTLE FLIES
DIPTERA: PHORIDAE
Genus *Megaselia*

By

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1989
ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

The aim of the *Handbooks* is to provide illustrated identification keys to the insects of Britain, together with concise morphological, biological and distributional information.

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Contents

Introduction

This *Handbook* constitutes the second part of a two-part introduction to the British scuttle flies. Volume 10, Part 6 (Disney, 1983a) covered all except the giant genus *Megaselia*. The present part covers only males of *Megaselia*. In the present state of knowledge, keys to females cannot be constructed. It is intended to present provisional keys to females in a future publication. Part 6 should be consulted for introductory comments on morphology and biology and for techniques of preparation and examination. Since its publication a reinterpretation of phorid wing-venation has been published (Disney, 1985a).

In preparing this work, considerable revision has been necessary. Fifteen per cent of the species names on the previous British list have been removed by synonymy or as a result of reappraisal of identifications. A quarter of the 220 *Megaselia* species in the present list are additions. More than half of the known Palaearctic species have now been recorded from the British Isles.

A discussion of the complex of species including *Megaselia pulicaria* is included in Appendix 2, together with an assessment of the taxonomic value of the number of rectal papillae in British Phoridae. In this Appendix, *Megaselia hybrida* Schmitz is reduced to synonymy with *Megaselia dimidia* Schmitz; four nominal species are reduced to synonymy with *Megaselia pulicaria* (Fallén): *Aphiochaeta longifurca* Lundbeck, *Megaselia eupygis* Schmitz, *Megaselia angustina* Schmitz and *Megaselia clementsi* Disney; and *Megaselia spinolabella* sp. nov. is described.

Since the publication of Part 6, a new genus and species of Phoridae have been described from Britain (Disney, 1986a) and a further species of *Phora* has been reported (Disney, 1984c). Notes on these taxa and some other amendments to Part 6 are given in Appendix 1. The inclusion of these brings the total of Phoridae recorded from the British Isles to 315 species.

It is hoped that the publication of these two handbooks will provide the basis for much-needed investigations of scuttle fly natural histories.

Acknowledgements

I am grateful to J. W. Rodford for his drawing of a *Megaselia scalaris* male for the cover.

I am much indebted to Dr H. Ulrich (Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn) for the loan of many specimens from the Schmitz collection, to K. G. V. Smith and A. C. Pont for the loan of specimens from the Wood and Colyer collections, and to Dr L. Lyneborg (Zoologische Museum, Copenhagen) for loans from the Lundbeck collection.

The following have also lent valuable specimens in their care: Dr G. Morge (Kiefenweg, East Germany); Dr P. I. Persson (Naturhistoriska Riksmuseet, Stockholm); and Dr W. W. Wirth (c/o U.S. National Museum, Washington).

I am grateful once again to the collectors listed in Part 6, with the addition of Dr P. Ashmole, Dr M. Baez, J. Biglin, C. Bruce, L. Clemons, J. P. Dear, Dr C. M. Drake, E. Durska, R. E. Evans, G. Forrester, R. S. George, D. Horsfield, C. Kampichler, Prof J. A. Owen, D. M. Robertson, Dr D. A. Sheppard and D. Weber. All have sent valuable specimens of *Megaselia*.

I thank Prof G. Horn, F.R.S. and Dr K. A. Joysey for facilities in the Cambridge Department of Zoology and Zoology Museum.

Check List

The following list replaces that in Kloet & Hincks (1976), which included 189 species of *Megaselia* (including *Plastophora*). Smith (1977), allowing for subsequent revisions of opinion, added two species. As a result of revisionary studies during the preparation of this volume 25 species have been removed, by synonymy or revisions of opinion regarding the identity of specimens, and 54 species added, including 23 new to science (Disney, 1977, 1979, 1980a, 1983b–e, 1984a–c, 1985b–d, 1986b–c, 1987b–g, 1988a–c). The removal of three species requires comment. *M. flammula* was reported by Schmitz (1941) from Ireland. It is only known in the female sex, and yet belongs to a group in which the females are poorly known. Until the male is described the species must remain of doubtful validity. Schmitz (1938) reported *M. similifrons* Schmitz from Ireland on the basis of a single female. It also belongs to a group whose females cannot be named with certainty in the present state of knowledge. Until a male is reported from the British Isles its British provenance must remain highly suspect. The presence of *M. basitumida* Schmitz on the previous list seems to be unsupported by either publication or specimen.

MEGASELIA Rondani, 1856
  PLASTOPHORA Brues, 1905
abdita Schmitz, 1959
  bovista auctt. nec (Gimmerthal, 1848)
abernethae Disney, 1988
aculeata (Schmitz, 1919)
aequalis (Wood, 1909)
  subciliata (Malloch, 1913)
  confulgens Borgmeier, 1964
affinis (Wood, 1909)
  proxima (Lundbeck, 1920)
  ornatipes Schmitz, 1926
albicans (Wood, 1908)
albicaudata (Wood, 1910)
albiclava Schmitz, 1926
  variabilis (p.p. Lundbeck, 1922) nec (Wood, 1909)
alticolella (Wood, 1909)
altifrons (Wood, 1909)
  variabilis partim nec (Wood, 1909)

variana auctt. nec Schmitz, 1926
furva auctt. nec Schmitz, 1929
analis (Lundbeck, 1920)
acutangula Schmitz, 1938
angelicae (Wood, 1910)
aquilonia Schmitz, 1958
armata (Wood, 1909)
riedeli Schmitz, 1934
atrosericea Schmitz, 1927
badia Schmitz, 1938
septentrionalis auctt. nec (Schmitz, 1919)
barbulata (Wood, 1909)
depilata (Lundbeck, 1921)
basispinata (Lundbeck, 1920)
vulgata (Malloch, 1912)
beckeri (Wood, 1909)
laticrus Schmitz, 1927
berndseni (Schmitz, 1919)
divergens auctt. nec (Malloch, 1912)
fenestralis auctt. nec (Schmitz, 1919)
pygmaeoides (Lundbeck, 1921)
rieli Schmitz, 1937
beyeri Schmitz, 1965
beckeri (Dampf, 1924) nec (Wood, 1909)
bifida Disney, 1983
bifurcata Disney, 1983
bovista (Gimmerthal, 1848)
exigua (Wood, 1910)
cinerella (Lundbeck, 1920)
brevicostalis (Wood, 1910)
fuscopedunculata (Malloch, 1912)
frequens Borgmeier, 1962
brevior (Schmitz, 1924)
berndseni auctt. nec (Schmitz, 1919)
breviseta (Wood, 1912)
breviterga (Lundbeck, 1920)
similata (Lundbeck, 1921)
brunneipennis Costa, 1857
costata (Zetterstedt, 1860)
axillaris (Zetterstedt, 1860)
costalis (Becker, 1901) nec (von Roser, 1840)
rubicunda (Lundbeck, 1920)
campestris (Wood, 1908)
capronata Schmitz, 1940
ciliata (Zetterstedt, 1848)
confulgens Borgmeier, 1964 partim nec Borgmeier, 1964 (♀ only, misidentification)
cinerea Schmitz, 1938
cinereifrons (Strobl, 1910)
anisodactyla (Schmitz, 1919)
griseifrons (Lundbeck, 1920)
clemonsi Disney, 1984
coacta (Lundbeck, 1920)
coccyx Schmitz, 1965
coei Schmitz, 1938
collini (Wood, 1909)
communiformis (Schmitz, 1918)
armipes Schmitz, 1933
ericaria Schmitz, 1942
conformis (Wood, 1909)
carpalis (Schmitz, 1919)

hyalipennis auctt. nec (Wood, 1912)
consetigera (Schmitz, 1925)
correlata (Schmitz, 1918)
giraudii auctt. nec (Egger, 1862)
costalis (von Roser, 1840)
crassineura Rondani, 1856
axillaris (Strobl, 1892) nec (Zetterstedt, 1860)
cothurnata (Schmitz, 1919)
coulsoni Disney, 1987
crassicosta (Strobl, 1892)
denotata (Wood, 1909)
crassipes (Wood, 1909)
dactylata (Lundbeck, 1920)
exclusa (Lundbeck, 1921)
curvicapilla Schmitz, 1947
hirsuta Schmitz ante 1938 nec (Wood, 1910)
dahli (Becker, 1901)
humilis (Wood, 1909)
hibernica Schmitz, 1938
hyalipennis auctt. nec (Wood, 1912)
densior Schmitz, 1927
nigrescens auctt. nec (Wood, 1910)
badia auctt. nec Schmitz, 1938
devia Schmitz, 1936
differens Schmitz, 1948
dimidia Schmitz, 1926
hybrida Schmitz, 1939
pulicaria auctt. nec (Fallén, 1823)
dipsacosa Smith, 1977
discreta (Wood, 1909)
nudiventris (Wood, 1909)
aperta (Schmitz, 1921)
collini auctt. nec (Wood, 1909)
diversa (Wood, 1909)
pollex auctt. nec Schmitz, 1937
drakei Disney, 1984
dubitalis (Wood, 1908)
eccoptomera Schmitz, 1927
eisfelderae Schmitz, 1948
lutea auctt. nec (Meigen, 1830)
elongata (Wood, 1914)
cuspidata (Schmitz, 1919)
pungens (Lundbeck, 1920)
emarginata (Wood, 1908)
erecta (Wood, 1910)
borealis (Malloch, 1912)
errata (Wood, 1912)
cilipes (Wood, 1909) nec (Brues, 1907)
decipiens (Wood, 1912) nec (de Meijere, 1910)
feshiensis Disney, 1987
flava (Fallén, 1823)
matsutakei (Sasaki, 1935)
flavescens (Wood, 1909)
flavicans Schmitz, 1935
flavicoxa (Zetterstedt, 1848)
sexspinosa (Collin, 1908)
frameata Schmitz, 1927
fungivora (Wood, 1912) nec (Wood, 1909)
imberbis Schmitz, 1934
buxtoni Colyer, 1954

frontalis (Wood, 1909)
fumata (Malloch, 1909)
fungivora (Wood, 1909)
fuscipennis (Lundbeck, 1920)
pullifrons Borgmeier, 1964 nec Beyer, 1958
morenifrons Borgmeier, 1967
limburgensis Borgmeier, 1964 nec (Schmitz, 1918)
fusca (Wood, 1909)
fusciclava Schmitz, 1935
fuscinervis (Wood, 1908)
fuscipalpis (Lundbeck, 1920)
fuscovariana Schmitz, 1933
variabilis (Wood, 1909) partim
gartensis Disney, 1985
eccoptomera auctt. nec Schmitz, 1927
giraudii (Egger, 1862)
rata (Collin, 1908)
dyari (Malloch, 1912)
glabrifrons (Wood, 1909)
gregaria (Wood, 1910)
groenlandica (Lundbeck, 1901)
platychira (Malloch, 1919)
halterata (Wood, 1910)
plurispinosa (Lundbeck, 1920)
dakotensis Borgmeier, 1966
bovista Borgmeier, 1966 nec (Gimmerthal, 1848)
hartfordensis Disney, 1983
serrata auctt. nec (Wood, 1910)
hayleyensis Disney, 1987
septentrionalis auctt. nec (Schmitz, 1919)
hendersoni Disney, 1979
collini auctt. partim nec (Wood, 1909)
nigrescens auctt. partim nec (Wood, 1910)
hibernans Schmitz, 1934
hilaris Schmitz, 1927
hirsuta (Wood, 1910)
atrimana (Wood, 1912)
egregia (Lundbeck, 1922)
pusilla var. *pumila* (Santos Abreu, 1921) nec (Meigen, 1830)
hastata (Schmitz, 1922)
hirticaudata (Wood, 1910)
hirticrus (Schmitz, 1918)
luisieri Schmitz, 1939
ismayi Disney, 1978
hirtiventris (Wood, 1909)
horsfieldi Disney, 1986
hortensis (Wood, 1909)
brevimana (Schmitz, 1924)
humeralis (Zetterstedt, 1838)
cubitalis (Becker, 1901)
hyalipennis (Wood, 1912)
ignobilis (Schmitz, 1919)
indifferens (Lundbeck, 1920)
longiciliata (Lundbeck, 1920) nec (Strobl, 1899)
perciliata (Lundbeck, 1920)
infraposita (Wood, 1909)
insons (Lundbeck, 1920)
irwini Disney, 1979
intercostata (Lundbeck, 1921)
invernessae Disney, 1988

involuta (Wood, 1910)
killarneyensis Disney, 1988
largifrontalis Schmitz, 1939
lata (Wood, 1910)
latifemorata (Becker, 1901)
latifrons (Wood, 1910)
latior Schmitz, 1936
  sylvatica auctt. nec (Wood, 1910)
latipalpis (Schmitz, 1921)
  longipalpis auctt. nec (Wood, 1910)
limburgensis (Schmitz, 1918)
longicostalis (Wood, 1912)
  brevipennis (Lundbeck, 1922)
longipalpis (Wood, 1910)
longiseta (Wood, 1909)
lucifrons (Schmitz, 1918)
  subnitida (Lundbeck, 1920)
lutea (Meigen, 1830)
  straminea (Malloch, 1912)
  sulphuripes (Lundbeck, 1922) nec (Meigen, 1830)
lutescens (Wood, 1910)
major (Wood, 1912)
malhamensis Disney, 1986
mallochi (Wood, 1909)
  melanosoma (Schmitz, 1926)
manicata (Wood, 1910)
  hirsuta Schmitz, 1929 nec (Wood, 1910)
  evecta Schmitz, 1957
maura (Wood, 1910)
mcleani Disney, 1987
meconicera (Speiser, 1925)
  albipennis (Wood, 1909) nec (Meigen, 1830)
meigeni (Becker, 1901)
  bicolor (Macquart, 1835) nec (Meigen, 1830)
melanocephala (von Roser, 1840)
  lutea (Schiner, 1864) nec (Meigen, 1830)
melanostola Schmitz, 1942
minor (Zetterstedt, 1848)
  angustifrons (Wood, 1912)
minuta (Aldrich, 1892)
  minor auctt. nec (Zetterstedt, 1848)
  minor subsp. *politifrons* Schmitz, 1952 nec Brues, 1936
  luminosa Schmitz, 1952
mixta (Schmitz, 1918)
nasoni (Malloch, 1914)
  ciliata (Malloch, 1912) nec (Zetterstedt, 1848)
  coaequalis (Schmitz, 1919)
  gratiosa Schmitz, 1939
nigra (Meigen, 1830)
  albidihalteris (Felt, 1897)
  derasa (Wood, 1909)
  smithii (Brues, 1909)
  armata (Santos Abreu, 1921) nec (Wood, 1909)
  deflexa Schmitz, 1940 nec Brues, 1936
nigrescens (Wood, 1910)
nigriceps (Loew, 1866)
  rufipes (Zetterstedt, 1848) nec (Meigen, 1804)
  bicolor (Zetterstedt, 1848) nec (Meigen, 1830)
  projecta (Becker, 1901)
  flavipalpis (Malloch, 1913)

submanicata (Malloch, 1914)
projecta ab. *funesta* Schmitz, 1935
tulliolana Schmitz, 1938
projecta ab. *dissimulans* Schmitz, 1957
obscuripennis (Wood, 1909)
protenta Schmitz, 1935
oligoseta Disney, 1987
hilaris Parmenter, 1966 nec Schmitz, 1927
oweni Disney, 1988
pallidizona (Lundbeck, 1920)
palmeni (Becker, 1901)
exemta (Becker, 1901)
formicarum (Strobl, 1910) nec (Verrall, 1877)
paludosa (Wood, 1908)
parnassia Disney, 1986
giraudii Disney, 1980 nec (Egger, 1862)
parva (Wood, 1909)
pectoralis (Wood, 1910)
perdistans (Schmitz, 1924)
picta (Lehmann, 1822)
interrupta (Zetterstedt, 1838)
subquadrifasciata (Zetterstedt, 1855)
atlantica (Brues, 1904)
fasciiventris (Brues, 1919)
calianensis Brues, 1936
equivocata Brues, 1936
infuscata Bridarolli, 1940
pictorufa (Colyer, 1957)
pleuralis (Wood, 1909)
vulgata (Malloch, 1912)
approximata (Malloch, 1912)
secunda (Brues, 1915)
pulicaria var. *luteimana* (Santos Abreu, 1921)
plurispinulosa (Zetterstedt, 1860)
giraudii (Becker, 1901), nec (Egger, 1862)
submeigeni (Wood, 1914)
nigrans Schmitz, 1935
posticata (Strobl, 1898)
flavicauda (Wood, 1908)
propinqua (Wood, 1909)
protarsalis Schmitz, 1927
alticolella (Lundbeck, 1922) nec (Wood, 1909)
pseudogiraudii (Schmitz, 1920)
pseudopicta (Lundbeck, 1922)
pulicaria (Fallén, 1823)
nigra (Strobl, 1892) nec (Meigen, 1830)
luctuosa (Strobl, 1892) nec (Meigen, 1838)
monochaeta (Strobl, 1892)
angusta (Wood, 1909)
peregrina (Malloch, 1912)
longifurca (Lundbeck, 1921)
sinuata auctt. nec Schmitz, 1926
eupygis Schmitz, 1929
tenebricola auctt. nec Schmitz, 1934
angustina Schmitz, 1936
setulifera Smith, 1977
clementsi Disney, 1978
pumila (Meigen, 1830)
nigripes (Wood, 1909)
atripes (Brues, 1915)

pusilla (Meigen, 1830)
clavipes (Wood, 1910)
pygmaea (Zetterstedt, 1848)
brachyneura (Egger, 1862)
rivalis (Wood, 1909)
ebenina (Schmitz, 1920)
robusta Schmitz, 1928
rubella (Schmitz, 1920)
collini auctt. nec (Wood, 1909)
rubescens (Wood, 1912)
rudis (Wood, 1909)
rufa (Wood, 1908)
pallens (Wood, 1910)
rubra (Schmitz, 1918)
ruficornis (Meigen, 1830)
rufifrons (Wood, 1910)
popula (Winnertz, unpubl., Schmitz, 1921)
rufipes (Meigen, 1804)
annulata (Meigen, 1804)
pallipes (Latreille, 1809)
vulgaris (Fallén, 1823)
heracleellae (Bouché, 1834)
sphigicides (Bouché, 1834)
semiflava (Hartig, 1838)
coleopterorum (Brischke, 1868)
omnivora (Hudson, 1892)
juanfernandezica (Enderlein, 1938)
rupestris Schmitz, 1934
scalaris (Loew, 1866)
xanthina (Speiser, 1908)
conjuncta (Becker, 1908)
fissa (Becker, 1908)
banksi (Brues, 1909)
circumsetosa (de Meijere, 1911)
ferruginea (Brunetti, 1912)
repicta (Schmitz, 1915)
plusiivorax (Enderlein, 1929)
forticapilla Beyer, 1959
scutellaris (Wood, 1909)
pulicaria var. *luteicornis* (Strobl, 1910)
scutellariformis (Schmitz, 1926)
septentrionalis (Schmitz, 1919)
sepulchralis (Lundbeck, 1920)
pumila (Zetterstedt, 1848) nec (Meigen, 1830)
fischeri Schmitz, 1942
serrata (Wood, 1910)
setulipalpis Schmitz, 1938
limburgensis (Schmitz, 1919) nec (Schmitz, 1918)
armata (Speiser, 1925) nec (Wood, 1909)
sheppardi Disney, 1988
simplex (Wood, 1910)
simulans (Wood, 1912)
sinuata Schmitz, 1926
longifurca auctt. nec (Lundbeck, 1921)
pulicaria auctt. nec (Fallén, 1823)
sordescens Schmitz, 1927
sordida (Zetterstedt, 1838)
carbonaria (Zetterstedt, 1848)
alaskensis (Malloch, 1919)
scaura (Schmitz, 1921)

semiscaura Schmitz, 1927
eminens Schmitz, 1953
speiseri Schmitz, 1929
spinata (Wood, 1910)
gemina Schmitz, 1958
spinicincta (Wood, 1910)
spinigera (Wood, 1908)
spinolabella Disney, 1989
stichata (Lundbeck, 1920)
stigmatica (Schmitz, 1920)
styloprocta (Schmitz, 1921)
subcarpalis (Lundbeck, 1920)
manicatella (Lundbeck, 1920)
submanicata (Lundbeck, 1920) nec (Malloch, 1914)
crassipes auctt. nec (Wood, 1909)
subconvexa (Lundbeck, 1920)
dubiosa (Lundbeck, 1921)
subfraudulenta Schmitz, 1933
subfuscipes Schmitz, 1935
subnudipennis (Schmitz, 1919)
subpalpalis (Lundbeck, 1920)
subpleuralis (Wood, 1909)
subtumida (Wood, 1909)
sulphuripes (Meigen, 1830)
minutissima (Wood, 1910) nec (Brues, 1905)
ledburiensis (Brues, 1915)
fuscohalterata (Schmitz, 1919)
xanthogastra Schmitz, 1940
superciliata (Wood, 1910)
consimilis (Lundbeck, 1920)
angustipennis (Lundbeck, 1920)
surdifrons (Wood, 1909)
fumipennis (Lundbeck, 1920) nec (Brues, 1907)
fumicolor (Lundbeck, 1920)
irregularifrons (Schmitz, 1921)
sylvatica (Wood, 1910)
impolluta (Schmitz, 1920)
engelberti Schmitz, 1936
tarsalis (Wood, 1910)
tarsella (Lundbeck, 1921)
vernalis (Lundbeck, 1922) nec (Wood, 1909)
tenebricola Schmitz, 1934
tergata (Lundbeck, 1920)
testacea Schmitz, 1938
tonyirwini Disney, 1988
tumida (Wood, 1909)
uliginosa (Wood, 1909)
unguicularis (Wood, 1909)
unicolor (Schmitz, 1919)
unwini Disney, 1987
valvata Schmitz, 1935
nigripalpis Schmitz ante 1965 nec (Lundbeck, 1920)
variana Schmitz, 1926
variabilis (Wood, 1909) partim nec (Brues, 1908)
altifrons auctt. nec (Wood, 1909)
verna Schmitz, 1932
vernalis (Lundbeck, 1922) partim nec (Wood, 1909)
vernalis (Wood, 1909)
verralli (Wood, 1910)
pygmaea var. *albocingulata* (Santos Abreu, 1921) nec (Strobl, 1906)

pygmaea var. *aterrima* (Santos Abreu, 1921) nec (Strobl, 1906)
vestita (Wood, 1914)
villicauda Schmitz, 1927
woodi (Lundbeck, 1922)
sordida (Becker, 1901) nec (Zetterstedt, 1838)
zonata (Zetterstedt, 1838)

Genus **Megaselia** Rondani
(Figs 1–2, 4–5, 7, 9, 197–525)

This genus includes around 1,400 described species, but estimates (Disney, 1983b) suggest the true figure lies between 5,000 and 20,000 species. The genus occurs throughout the world. More than 400 species are known from the Palaearctic Region, of which more than half occur in the British Isles. A synopsis of larval natural histories was given in Volume 10, Part 6 (page 6).

During the preparation of this volume 54 species have been added to the British List, including 23 new to science. It is highly probable, therefore, that further species await discovery in the British Isles. The literature is covered by the works cited in Part 6 (pages 11 and 39), the recent Palaearctic Catalogue (Disney, 1989) and herein.

The keys below represent a radical departure from all previous keys for species in this giant genus. The traditional Groups I–VIII have been rejected. They are certainly not monophyletic groups and as phenetic groups they are insufficiently circumscribed. The latter is evidenced not only by males and females frequently ending up in different groups, but by different variants of one species ending up in two or more groups. A consequence of the rejection of these groups is that any species not keying out below will need to be taken to the start of the keys in previous works, and not to the group including the species closest to the specimen in question when taken through the key below.

The key below deals with males only. The females of many species are still unknown or inadequately characterised in the literature. It is hoped to attempt a preliminary key to females in a future publication. This project will be greatly assisted by preservation in fluid of females caught *in copula* or in reared series.

The key below is based on specimens mounted on slides as detailed in Part 6 (pages 8–9). Many species will key out when examined whole in a watch-glass of fluid. However, if a character cannot be seen when examined thus, at least the relevant part should be examined as a slide-mount.

While some additional characters are given in brackets for some species the principal confirmatory characters are provided by the drawings of the hypopygia. Allowance must be made for slight differences in orientation from the specimen drawn and for the degree of extrusion or withdrawal of the penis complex. The majority of the figures depict the left face of the hypopygium. In most species the hypopygium is highly asymmetrical (e.g. figs 215 and 216). In a few cases there is no figure of the hypopygium because the author lacked a good specimen properly slide-mounted.

While the key is dichotomous in form it is anastomosing in construction. The principal consequence is that many couplets can be reached by more than one route, including a return from a later couplet. Such a construction allows for both variation and excusable error. It does not allow for incompetent observation or navigation errors! The only consequence of the anastomosing construction that may surprise the uninitiated is that the same choice may be encountered more than once. What is the second time by one route will be only the first time by another.

Some users of Part 6 have reported difficulties in seeing certain characters using simple, student-model, compound microscopes. The fault does not lie with the optics of such instruments. The problem is entirely the result of poor lighting. Where an instru-

ment lacks a transmitted light source that can be controlled so as to light up an opaque structure (such as the detached head of a fly) like a chinese lantern then the specimen should be viewed with a spotlight from above. With a good spotlight (such as a fibre optic) the character employed in the key can be satisfactorily viewed with a X10 or a X20 objective.

Information on distribution and phenology is derived primarily from the author's own observations. Data from published works have been included only when there was judged to be no possibility of misidentification. The author has erred on the side of caution. It should be noted that 'British Isles' includes Ireland but 'Great Britain' excludes Ireland.

The author would welcome notifications of errors and suggestions for improvements in this key. He would also be pleased to examine specimens that will not key out.

The author's reference collection of British Phoridae, mounted on slides, is now the property of Cambridge University Zoology Museum.

Key to Species

Males

(Note. *M. pictorufa* is omitted as it is still known only in the female sex)

1 Vein 3 greatly thickened (fig. 200). (Anterior pair of bristles on scutellum almost as strong as posterior pair. Mesopleuron bare. Hairs below basal half of hind femur weaker than antero-ventral row of outer half. Haltere knob yellow. Hypopygium as fig. 199) ..... **humeralis** (Zetterstedt)
Cornwall, N. Yorks. Scotland: Wigtown. Ireland: Kerry. vi–viii.

— Vein 3 little, if any, broader than costa (e.g. figs 302 and 303) 2

2 Abdominal spiracles greatly enlarged on segments 5–7 at least (figs 201 and 202) 3

— Abdominal spiracles not enlarged (e.g. figs 208 and 209) 4

3 Abdominal spiracles less strongly enlarged (fig. 201). Hairs below basal half of hind femur normally developed (fig. 203). Legs yellowish to yellow brown ..... **coacta** (Lundbeck)
Cambs, Surrey, Warwicks. Ireland: Offaly. vi–viii.

— Abdominal spiracles more strongly enlarged (fig. 202). Hairs below basal half of hind femur reduced to a few minute ones at extreme base (fig. 204). Legs dark grey to black ..... **stigmatica** (Schmitz)
Widespread in England. Ireland: Dublin. vi–ix.

4 Hairs at tip of anal tube developed as robust feathered bristles (figs 205 and 206) 5

— Hairs at tip of anal tube normal (i.e. they may be stronger than those on cerci, e.g. fig. 229, but are never as robust or as feathered as in figs 205 and 206) 7

5 Hind tibia with a clearly differentiated longitudinal row of stout, spine-like, antero-dorsal hairs (these are shorter than the postero-dorsals, from which they are separated by the dorsal hair palisade) ..... Genus ***PHALACROTOPHORA*** (Part 6, p. 28)

— Hind tibia without a clearly differentiated row of spine-like antero-dorsal hairs 6

6 Hairs below basal half of hind femur longer than those of antero-ventral row in distal half. Proboscis with enlarged labella bearing dense fields of pale, short spines beneath. Hypopygium as fig. 205. The bristles at tip of anal tube are shorter than longest hairs of cerci. The longest hair of left side of epandrium not so strongly differentiated from rest of hairs ..... **testacea** Schmitz
N. Yorks., Gwynedd. Merioneth. Scotland: Inverness, Ross. Ireland: Offaly. v–vii.

— Hairs below basal half of hind femur shorter than those of antero-ventral row in distal half. Proboscis with simple labella with only a few scattered pale spines beneath. Hypopygium as fig. 206. The bristles at tip of anal tube are longer than longest hairs of cerci. The longest hair of left side of epandrium almost bristle-like, and clearly differentiated from rest of hairs ..... **scalaris** (Loew)
An exotic species repeatedly introduced in ship cargoes. London, Merseyside, Oxford. Scotland: Lanark. vi, xi.

7 Each cercus with a strong, down-curved spine (fig. 207). (Anterior pair of bristles on scutellum almost as strong as posterior pair. Mesopleuron bare. Hairs below basal half of hind femur clearly longer and stronger than antero-ventral hairs of distal half) **meigeni** (Becker)
Hants, Surrey, Merioneth. Scotland: Argyll. Ireland: Kerry, Offaly. v–viii.

— Cerci with hairs only. . . . 8

8 Proctiger bilobed, the terminal hairs being on the dorsal lobe (fig. 208). (A dark species with dark halteres and palps. Mesopleuron with hairs and bristles) . . . . . **atrosericea** Schmitz
Scotland: Perths, W. Ross. vi–vii.

— Proctiger not bilobed 9

9 Abdominal venter with a pair of hairy lobes projecting from posterior margin of segment 6 (fig. 209). (Anterior pair of bristles on scutellum as strong as posterior pair. Mesopleuron bare. Knob of haltere dark. Third antennal segment somewhat longer than broad . . . . . **fuscinervis** (Wood)
Widespread in British Isles. iv–viii.

— No such lobes on abdominal segment 6 10

10 Metatarsus of front leg with a hairless, yellow flange along external, ventral face (fig. 210). (Hypopygium as fig. 413. Mesopleuron with hairs. Hairs below basal half of hind femur almost spine-like. A generally dark species) . . . . . **cothurnata** (Schmitz)
N. Yorks. Scotland: Inverness. vi, viii.

— No such flange on metatarsus of front leg. . . . 11

11 Tarsal segment 5 of middle leg about twice length of segment 4 (fig. 211) 12

— Tarsal segment 5 of middle leg approximately same length as segment 4 (e.g. fig. 212) or shorter 13

12 Thorax, abdominal tergites and antennae dark brown. Hypopygium as fig. 414 . . . . . **scutellaris** (Wood)
Widespread in British Isles. v–xi.

— Thorax, antennae and usually also the basal and apical abdominal tergites yellowish or somewhat orange. Hypopygium as fig. 415 . . . . . **lutea** (Meigen)
Widespread in British Isles. iv–x.

13 A row of short, robust, hooked spines below the second fifth of hind femur (figs 213 and 214) 14

— When spines are present below hind femur they are longer, or if short they are never hooked, and they are below first and (usually) second fifth as well 15

14 With 6–8 hooked spines below hind femur and adjacent hairs shorter (fig. 213). A long hooked process protrudes from the right side of penis complex (figs 215 and 216) . . . . . **hartfordensis** Disney
Cambs, London, Warwicks. vii, xi.

— With 3–5 hooked spines below hind femur and adjacent hairs longer (fig. 214). No such process from penis complex (fig. 217) . . . . . **serrata** (Wood)
Hereford, Suffolk. vii–viii.

15 Hairs below basal half of hind femur no longer than adjacent hairs of anterior face, whereas the antero-ventral hairs of distal half are strongly developed and at least twice as long (fig. 218). (Mesopleuron with hairs and a bristle. Legs somewhat yellowish. Haltere with somewhat dusky knob) . . . . . **barbulata** (Wood)
Hereford. vii.

— Hairs below basal half of hind femur usually clearly longer than adjacent hairs of anterior face. If the antero-ventral row of hairs of distal half are strongly developed they are always less than twice length of basal hairs 16

16 Base of hind femur conspicuously narrowed by excavation of the ventral edge and with comb of spines not beginning until second quarter (figs 219 and 220). Dark species with hairs on mesopleuron 17

— Base of hind femur never as strongly narrowed and comb of spines, when present, begins in first quarter. Dark or paler species with or without hairs on mesopleuron 18

17 Epandrium not inflated postero-dorsally (fig. 222) and species a little smaller . . . . . **gartensis** Disney
N. Yorks. Scotland: Inverness. v–vii.

— Epandrium inflated postero-dorsally (fig. 223) and species a little larger . . . . . **eccoptomera** Schmitz
Cumbria, N. Yorks. Scotland:Inverness. v–vi.

18 Epandrium relatively short and high and with conspicuous long, robust hairs (fig. 224). Base

of hind femur a little narrowed and with spines somewhat longer in distal half of comb (fig. 221). (Mesopleuron with hairs. Labella of proboscis somewhat enlarged and with fields of short pale spines below. Haltere with yellow knob) ..... **woodi** (Lundbeck)
Widespread in England. Brecon. Scotland: Inverness. Ireland: Wicklow. viii–xi.

— Hypopygium otherwise. If a similar comb is present below hind femur then the hairs at tip of proctiger curve upwards (and not down as in fig. 224) 19

19 The apical third of hind tibia appears deformed, associated with the strong deflection of the hair palisade onto the anterior face (figs 225 and 226) 20

— The apical third of hind tibia not modified in this way, or only slightly so (fig. 394) 21

20 Median posterior process of hypandrium (p in fig. 227) with a hooked tip. Abdominal tergites without long marginal hairs, apart from sixth ..... **nigra** (Meigen)
Widespread in British Isles. v–x.

— Median process of hypandrium is a little bent but never forming a proper hook (fig. 228). Abdominal tergites usually, but not always, with strong hairs on margins, these hairs usually being as long as (or longer than) bristles on epandrium ..... **hirtiventris** (Wood)
Widespread in England. v–x.

21 The apical comb of the posterior face of hind tibia with at least two bifurcated spines (figs 232, 235, 236 and 238) 22

— This comb at most with a single bifurcated spine (figs 230 and 231) 27

22 Mesopleuron with hairs 23

— Mesopleuron bare 24

23 Hairs at tip of anal tube clearly longer and more robust than hairs of cerci (fig. 233). The spines of the apical comb of hind tibia which are situated below the postero-ventral spur (pvs in fig. 236) are not bifurcated (fig. 232). (Labella somewhat expanded and with dense fields of pale spines below. Legs mainly yellowish. Knob of haltere yellow) ..... **variana** Schmitz
Widespread in England, Wales and Ireland. iv–xi.

— Hairs at tip of anal tube clearly shorter and weaker than hairs of cerci (fig. 234). The spines of the apical comb of hind tibia situated below the postero-ventral spur are bifurcated like those above it (fig. 235). (Labella somewhat expanded and with dense fields of pale spines below. Legs mainly greyish brown. Knob of haltere yellow) ..... **bifurcata** Disney
Scotland: Inverness. vi.

24 Legs, apart from fore coxae, largely dark brown to black. Halteres dark brown. Wings brownish and usually darker just beyond middle. Left side of hypandrium with posterior lobe not developed (fig. 239) ..... **glabrifrons** (Wood)
Widespread in British Isles. iii–x.

— Legs largely yellowish. Halteres yellowish to pale greyish brown. A well developed posterior lobe from left side of hypandrium (figs 237 and 240) 25

25 Hind tibia with a row of short, but clearly differentiated, antero-dorsal spines in addition to the longer posterior-dorsals (the two rows being separated by the dorsal hair palisade). Scutellum with two pairs of bristles. Scutum somewhat orange. Abdominal tergites may be poorly pigmented along a median band. Hypopygium as fig. 240 .... **picta** (Lehmann)
Cambs, Cornwall, Norfolk, Surrey. Scotland: Inverness, Perths, Wigtown. Ireland: (locality not recorded). vi–viii.

— Hind tibia without a row of antero-dorsal spines. Scutellum with a posterior pair of bristles and an anterior pair of short hairs. Scutum mainly dark. Abdominal tergites uniformly dark. Hypopygium otherwise (figs 237 and 243) 26

26 The bifurcated spines of the apical comb of hind tibia are less deeply divided and those below the postero-ventral spur (pvs in fig. 236) are simple (fig. 238). Vein Sc fades away just before reaching R1. Hypopygium as fig. 237 ..... **bifida** Disney
Berks, Essex, Hants, N. Yorks. Scotland: Perths. vi, viii–x.

— The bifurcated spines of the apical comb of hind tibia are more deeply divided and those below the postero-ventral spur are also bifurcated (fig. 236). Vein Sc is distinct throughout its length and its tip fuses with R1 (as in fig. 303). Hypopygium as fig. 243 ..... **sinuata** Schmitz

Note. Dissections have revealed variation in the number of rectal papillae (see fig. 198). Both males and females normally possess 4 rectal papillae, but individuals of both sexes are not uncommon with 3 or 2 papillae. In most Phoridae the rectal papilla number is constant for any particular species, although males sometimes have fewer papillae than

females. In these cases the number is constant for each sex for the species in question. In the case of the situation observed in *M. sinuata* there are two possible interpretations. Either the species is polymorphic for rectal papilla number or there are three sibling species with no apparent external morphological correlates of these differences in rectal papilla number. In the absence of further data I have opted for the first hypothesis. To test this hypothesis we need data on the rectal papilla number in reared series and pairs caught in copula.

Widespread in British Isles. iii–x.

27 Mesopleuron with hairs, and sometimes with bristles also 28

— Mesopleuron bare..... 144

Note. Variable species are keyed both ways.

28 Mesopleuron with at least one bristle near posterior border. This bristle (or bristles) is (are) clearly more robust and longer than hairs (e.g. fig. 9 in Part 6)..... 29

— Mesopleuron with hairs only. When these hairs are somewhat strong and bristle-like there is no clear division into two size classes (of 'hairs' and 'bristles') 60

Note. Borderline cases are keyed both ways.

29 Scutellum with 2 pairs of bristles. Halteres dark 30

— Scutellum with an anterior pair of short hairs and a posterior pair of long bristles. Halteres either dark or with yellow knob 33

30 Length of cerci at most 1·5 × breadth (fig. 244). Hairs beneath basal half of hind femur only as long as antero-ventral hairs of distal half, or shorter. All femora at least partly yellowish ..... **paludosa** (Wood)

Widespread in British Isles. v–x.

— Length of cerci at least 3 × breadth (figs 247–249). Hairs beneath basal half of hind femur usually clearly longer than antero-ventral hairs of distal half. All femora darkened, although fore femora may be a little paler ventro-distally..... 31

31 Vein Sc fades away before reaching R1. Wing membrane only lightly tinged with grey.. 32

— Vein Sc is distinct throughout its length and its tip fuses with R1 (as in fig. 303). Wing membrane distinctly grey or brownish grey 49

Note. If Sc reaches R1 and wing is only lightly tinged with grey try couplet 60.

32 Anal tube mainly dark, although tip of proctiger may be a little paler. Proctiger with only a single pair of terminal hairs (fig. 248). Scutellum with only 4 bristles. Fore coxae mainly dark..... **campestris** (Wood)

Cumbria, Hereford, Oxford, N. Yorks, Warwicks. Scotland: Inverness. Ireland: Offaly. vi–viii, x–xi.

— Distal half, or more, of anal tube yellowish. Proctiger normally with two pairs of terminal hairs (fig. 249). Scutellum normally with 6 bristles. Fore coxae mainly yellowish ..... **flavicoxa** (Zetterstedt)

Cumbria, Durham, Hants, Hereford, N. Yorks. Scotland: Nairn, Perths. vi–x.

33 A double row of 4–5 pairs of spines beneath the basal quarter of hind femur, these spines being clearly more robust than hairs below second quarter and each having a hooked tip (fig. 250). Hypopygium with a large, brown, bare posterior lobe from hypandrium (fig. 251). (All legs dark. Knob of haltere yellow) ..... **basispinata** (Lundbeck)

Widespread in England, Wales and Ireland. ii, iv–xi.

— Without such a double row of spines at base of hind femur. Hypopygium otherwise.... 34

34 The last tarsal segment of front leg is about twice length of segment 4 (fig. 242). (Hypopygium as fig. 241. A single, long mesopleural bristle — fig. 9 in Part 6. Middle and hind legs dark. Front legs yellowish) ..... **ciliata** (Zetterstedt)

Widespread in British Isles. i–xi.

— The last tarsal segment of front leg at most 1·5 × length of segment 4; usually the two segments are subequal..... 35

35 Knob of haltere largely or entirely yellow..... 36

— Knob of haltere somewhat darkened, being greyish to almost black in colour..... 43

Note. Variable cases are keyed both ways.

36 Epandrium with hairs only (which are little, if any, stronger than hairs of cerci) (figs 253, 257 and 258). Hind tibia with row of postero-dorsals spine-like, even in upper half..... 37

— Epandrium with bristles or bristle-like hairs. Hind tibia with weaker postero-dorsals, with at least those in upper half being hair-like (as opposed to spine-like)..... 39

37 All femora largely yellowish. Hairs beneath basal half of hind femur strongly developed (fig. 245). Anal tube relatively long and hairs at postero-distal extremity of epandrium a little

stronger than those on rest of epandrium (fig. 253)..... **flavescens** (Wood)
Hereford, I. of Wight. Ireland: Wicklow. vii, ix–x.

— At least hind femora largely brown or dark greyish. Hairs beneath basal half of hind femur weakly developed (fig. 246). Anal tube relatively short and hairs at postero-distal extremity of epandrium not differentiated from rest of hairs (figs 257 and 258)..... 38

38 Hind legs dark except for bases of hind femora. Middle legs yellowish brown. Front legs yellowish. Hypopygium as fig. 257..... **nasoni** (Malloch)
Widespread in East Anglia, Midlands and South of England. Dyfed. iii–x.

— Middle and hind legs entirely dark brown, only front legs yellowish. Hypopygium as fig. 258 ..... **aequalis** (Wood)
Widespread in British Isles. iii–xi.

Note. If hypopygium is obviously different try couplet 60.

39 Hairs below basal half of hind femur relatively short (fig. 261), or if a little longer not so crowded (fig. 254)..... 40

— Hairs below basal half of hind femur relatively long and somewhat crowded (figs 255 and 256)..... 42

40 The hairs below basal half of hind femur are arranged in two rows. Near the base there is a slightly postero-ventral row of 1–3 (usually 2) spine-like hairs; while ventrally, or slightly antero-ventrally, there is a series of progressively less robust hairs (fig. 261). Hypopygium as fig. 262 (the number of bristles on the epandrium being variable), with the posterior lobe from left side of hypandrium being broad, bare and usually somewhat deflected ventrally (tip of vein Sc usually fusing with R1)..... **insons** (Lundbeck)
Cambs, Essex, N. Yorks, Oxford, Suffolk, Warwicks. Scotland: Inverness, Nairn, Perths. v–viii.

— Hairs below basal half of hind femur in a single row (fig. 254). Hypopygium with posterior lobe from left side of hypandrium not of this form, and always bearing fine hairs distally (fig. 252)..... 41

41 Costal cilia at least 1·5 × length of R2+3 (inner branch of fork of vein 3). Vein Sc clearly fading out before vein R1. Posterior lobe from left side of hypandrium longer, more parallel-sided and only hairy at tip; and postero-lateral lobe of epandrium on left side with 2–5 small hairs (fig. 252) ..... **pleuralis** (Wood)
Widespread in British Isles. ii–xi.

— Costal cilia about as long as R2+3. Vein Sc reaches R1, or only fades at extreme tip close to R1. Posterior lobe from left side of hypandrium shorter, more tapered, and haired along entire length. The postero-lateral lobe of epandrium with more than 6 small hairs. (Base of hind femur as fig. 254) ..... **limburgensis** (Schmitz)
Warwicks. vi.

Note. If neither seems to apply try couplet 60.

42 Left side of epandrium with a strong bristle towards lower margin near half-way point and a vertical row (usually inclined anteriorly as it ascends) or 2–4 slightly weaker bristles in front (fig. 259). There are occasionally additional bristles above these. Wing membrane distinctly brownish grey (evident to naked eye when viewed against a white background). The tip of each hair below basal half of hind femur tends to touch the adjacent hair (fig. 255)..... **stichata** (Lundbeck)
Cambs, Norfolk, Oxford, Surrey. Ireland: Offaly. vi–xi.

— Left side of epandrium without this isolated bristle and vertical row of 3–4 stronger bristles is usually less inclined anteriorly (fig. 260). Wing membrane only slightly grey tinged. Tip of each hair beneath basal half of hind femur tends not to touch adjacent hair (fig. 256)..... **meconicera** (Speiser)
Widespread in British Isles. i, iii, v–xi.

Note. If neither seems to apply try couplet 60.

43 Terminal hairs of anal tube usually relatively strong and always curved upwards..... 44

— Terminal hairs of anal tube weak and down-curved (e.g. figs 288–290)..... 62

44 Abdominal venter with hairs (i.e. those of the same order of size as those on tergites) restricted to segments 5 and 6..... 45

— Abdominal venter with hairs on segments 3–6..... 48

Note. If the hairs are on segments 4–6 try couplet 60.

45 All legs brown to dark brown..... 46

— Legs yellowish brown, with front legs being mainly yellowish 48

46 Posterior border of epandrium below anal tube with more than three fine hairs on left side (figs 263 and 264). Rest of hairs on epandrium stronger but still mostly hair-like 47

— Posterior border of epandrium below anal tube with a single hair on left side (fig. 265). Rest of hairs on epandrium somewhat bristle-like ..... **hirsuta** (Wood)
Essex, Hereford, Suffolk, widespread in North of England. Scotland: Inverness. v–ix, xi.

Note. If hairs on epandrium are not bristle-like, try couplet 48.

47 The posterior, hairy, lobe from left side of hypandrium not recurved (fig. 263). Venter of abdominal segment 6 with a posterior pair of bristle clusters, with each bristle arising from a dark circular disc (fig. 263). These discs are frequently fused into a single platelet ..... **aculeata** (Schmitz)
Cambs, Suffolk. v–vi, viii–xi.

— The hypandrial lobe of left side is slightly, but distinctly, recurved (figs 264 and 336). Venter of abdominal segment 6 with weaker bristles, or hairs, which are not so numerous ventrally, where only a single hair stands either side of the mid-line and whose basal discs are less strongly pigmented. (Hind femur as fig. 334) ..... **pectoralis** (Wood)
Widespread in Great Britain, apart from S.W. England. iv–xi.

Note. If neither seems to apply try couplet 60.

48 The posterior lobe of left side of hypandrium large and bare (e.g. figs 262 and 267). Vein Sc runs into R1, even if a little obscure just before confluence 49

— The posterior lobe of left side of hypandrium narrower, usually shorter, and always with at least some hairs at tip if not actually pubescent all over (e.g. figs 270 and 271). Vein Sc frequently not reaching R1 51

Note. If neither seems to apply try couplet 60.

49 Epandrium with shortish hairs only (fig. 267). Long hairs beneath basal half of hind femur (fig. 266). Postero-dorsals of hind tibia relatively weak ..... **elongata** (Wood)
Cambs, Cumbria, Hants, Hereford, N. Yorks. Scotland: Midlothian. v–vii.

— Epandrium with longer hairs (fig. 247) or bristles (fig. 262). If hairs below basal half of hind femur are long then postero-dorsals of hind tibia, in lower half, are spine-like and clearly more robust than these hairs on femur 50

50 Epandrium with a few bristles (fig. 262). Postero-dorsals of hind tibia fine when compared with spine-like hairs below basal half of hind femur ..... return to 40

— Epandrium with more numerous hairs, with only the postero-ventral ones being almost bristle-like (fig. 247). Hairs below basal half of hind femur well developed but the postero-dorsals in lower half of hind tibia are spine-like and even more robust. **spinigera** (Wood)
Widespread in England, apart from E. Anglia. Widespread in Scotland. iv–vi.

Note. If neither seems to apply try couplet 60.

51 The postero-ventral spur of apical comb of hind tibia (pvs in fig. 236) little, if any, differentiated from the rest of the spines in this comb. The spines immediately above the strong ventral spur have down-curved tips (figs 268 and 269) 52

— The postero-ventral spur of hind tibia distinctly differentiated from rest of spines in comb and usually clearly more robust than adjacent spines, none of which have down-curved tips 53

52 Only the lower spines of apical comb of hind tibia have down-turned tips (fig. 268). Wings brownish-grey and distinctly dusky to naked eye. Vein Sc reaches R1, even if a little obscure at tip. Hypopygium as fig. 270, with hairs along entire length of posterior lobe of left side of hypandrium ..... **fungivora** (Wood)
Widespread in England. Scotland: Inverness, Midlothian. Ireland: Dublin, Offaly. v–xi.

— Fewer spines of apical comb of hind tibia have down-curved tips, but several hairs of pre-apical, postero-ventral region have such tips (fig. 269). Wings greyish and not obviously dusky to naked eye. Vein Sc clearly fades out before reaching R1. Hypopygium as fig. 271, with longish hairs on posterior lobe of left side of hypandrium developed as a distinct terminal tuft ..... **frameata** Schmitz
Widespread in England. Scotland: Inverness. Ireland: Offaly, Wicklow. v–xi.

53 The postero-dorsals of hind tibia strongly developed and spine-like (being at least as strong as the postero-ventral spur of apical comb). All legs very dark brown. Vein Sc runs to R1, even if a little pale at tip. Hypopygium as fig. 272, with only fine hairs on epandrium ..... **major** (Wood)
Widespread in British Isles. vi–x.

— The postero-dorsals of hind tibia usually more hair-like; but when more robust the legs are

pale brown, with the front pair being yellowish. Vein Sc not reaching R1, and usually fading out well before it. At least one strong hair on side of epandrium 54

54 Ventral face of fore metatarsus with at least two and a half longitudinal rows of hairs reduced to short, blunt spines (fig. 276). All legs darkened 55

— Ventral face of fore metatarsus at most with one and a half rows of hairs modified in this way. At least the front legs normally somewhat yellowish, even if dusky 57

55 Antial (an) and antero-lateral (al) bristles on frons situated at about the same level (fig. 274). Hypopygium as fig. 273, the anal tube not being embraced by a sclerotised collar at its base ..... **palmeni** (Becker)
Scotland: Cairngorm, Perths. vii–viii.

— Antials situated distinctly lower on frons than antero-laterals (fig. 275). Base of anal tube embraced by an encircling, sclerotised, collar-like, development of the epandrium (especially well developed ventrally) as in figs 277 and 278 56

56 The two hairs of the ventral edge of left cercus situated postero-ventrally so as to be almost as far back as lower hair of posterior edge of cercus. The most posterior of these ventral hairs is at least as strong as terminal hairs of proctiger, and usually stronger (fig. 277) ..... **curvicapilla** Schmitz
Cumbria, Hants, Surrey. viii, x–xi.

— These two hairs situated further forward, and thus clearly in front of lower hair of posterior edge of cercus. Neither hair is as strongly developed as terminal hairs of proctiger (fig. 278) ..... **manicata** (Wood)
Widespread in East Anglia, Midlands and North of England. Scotland: Inverness. iv–ix.

57 Antials (an) clearly closer to antero-laterals (al) than to upper supra-antennal bristles (us-a) on frons (e.g. fig. 279) 58

— Antials about equidistant from antero-laterals and upper supra-antennals, or closer to latter (e.g. fig. 280) 59

58 Legs and anal tube dark. Hairs below basal half of hind femur shorter (fig. 334). The postero-ventral hairs of left side of epandrium strong, in contrast to finer hairs of posterior margin (fig. 336) ..... return to 47

— Legs, especially front pair, and anal tube somewhat yellowish. Hairs below basal half of hind femur longer (fig. 281). No finer hairs on posterior margin of epandrium above the strongish hairs of postero-ventral region (fig. 337) ..... **rudis** (Wood)
Hereford. viii–ix.
Note. If neither seems to apply try couplet 92.

59 Hairs below basal half of hind femur shorter and twice as numerous (fig. 283). Hypopygium as fig. 284 ..... **setulipalpis** Schmitz
N. Yorks. Scotland: Inverness. Ireland: Offaly. vi–vii.

— Hairs below basal half of hind femur longer, and half as numerous (fig. 282). Hypopygium otherwise ..... **spinata** (Wood)
Hereford. ix.
Note. If neither seems to apply try couplet 92.

60 Metatarsus of front leg with an antero-ventral triangular expansion beneath distal half, bearing hook-shaped hairs on its posterior face (fig. 285). Hairs below basal half of hind femur robust and closely crowded, but rapidly diminishing in size (fig. 286). Hypopygium as fig. 287 ..... **groenlandica** (Lundbeck)
Scotland: Inverness, W. Ross. vi–viii.

— Metatarsus of front leg without such an expansion. Hind femur and hypopygium otherwise 61

61 Terminal hairs of proctiger weakly developed and down-curved (figs 288–290, 292–293 and 338) 62

— Terminal hairs of proctiger usually more strongly developed and always up-curved 67
Note. *M. diversa* is keyed both ways as in some specimens the end hairs are straight or even down-curved at tips.

62 Cerci relatively short and rounded, and with relatively short hairs (fig. 338). (A variable number of stout blunt spines, as well as hairs, beneath basal half of hind femur. Fore tibia and knob of haltere yellowish) ..... **killarneyensis** Disney
Ireland: Kerry. v.

— Cerci more elongate and with relatively longer hairs (figs 288–290 and 292–293) 63

63 Postero-dorsal region of epandrium somewhat (figs 289 and 290) to conspicuously (fig. 288) inflated 64

— Postero-dorsal region of epandrium not inflated 66

64 Postero-dorsal region of epandrium strongly inflated (fig. 288). (Hind femur as fig. 291, thus contrasting with *M. gartensis* — fig. 220, which also has a strongly inflated epandrium — fig. 223) ..... **coccyx** Schmitz
Scotland: Inverness. vi.

— Postero-dorsal region of epandrium less strongly inflated (figs 289–290) 65

65 Anal tube relatively long and with narrower cerci (fig. 289). Vein Sc fading out well before reaching Ri ..... **sordescens** Schmitz
Norfolk, N. Yorks, Anglesey. Scotland: Dumfries, Selkirk. v–ix.

— Anal tube relatively short and with broader cerci (fig. 290). Vein Sc almost reaches R1 ..... **sordida** (Zetterstedt)
Cambs, Cumbria. Widespread in Scotland. v–ix.

66 Knob of haltere yellow. Hypopygium as fig. 292 ..... **diversa** (Wood)
Widespread in British Isles. v–xi.

— Knob of haltere very dark. Hypopygium as fig. 293 ..... **sepulchralis** (Lundbeck)
Cumbria. Scotland: Cairngorm, W. Ross. v–vii.

67 Palps somewhat inflated (in relation to size of third antennal segment) and with relatively short bristles (figs 295 and 296) 68

— Palps little, if any, inflated (viewed from above) and bristles usually much longer relative to greatest width of palp (e.g. fig. 294) 69

68 Palps more cylindrical (fig. 295). Scutellum with two pairs of bristles. Hairs below basal half of hind femur clearly longer than adjacent hairs of anterior face. Hairs of epandrium shorter (fig. 297). Knob of haltere yellowish. (The legs and palps are normally yellowish; but in the variety *funesta* Schmitz they are dark) ..... **nigriceps** (Loew)
Widespread in British Isles. v–xi.

— Palps more ovoid, with narrowed apex (fig. 296). Scutellum with an anterior pair of fine hairs and a posterior pair of bristles. Hairs below half of hind femur little, if any, longer than adjacent hairs of anterior face. Hairs of epandrium longer (fig. 298). Knob of haltere dark ..... **obscuripennis** (Wood)
Cambs, Hants, Hereford, Norfolk, N. Yorks. Scotland: Dunbarton. Ireland: Offaly. vi–ix.

69 Postero-ventral corners of epandrium extended posteriorly to form a tapered, beak-like, process (fig. 299). (Knob of haltere largely yellowish. Hairs beneath basal half of hind femur only a little longer than adjacent hairs of anterior face. Wing membrane greyish to naked eye) ..... **dubitalis** (Wood)
Widespread in British Isles. v–vi.

— Postero-ventral corners of epandrium at most only moderately extended posteriorly, and not forming such a beak-like process 70

70 The lower margin of right side of epandrium greatly extended downwards and curving under the hairless hypandrium (fig. 300). Postero-ventral deflection line of mid-femur (see fig. 196) conspicuous and indicated by a sharp line in basal half, lying well clear of lower margin (fig. 197). (A dark species with costa clearly less than half length of wing) ..... **verralli** (Wood)
Cambs, Dorset, Hants, Norfolk, Sussex. vi–x.

— Epandrium not modified in this way. Deflection line of mid-femur usually obscure, and convergent with lower margin in basal half 71

71 Ventral face of metatarsus of front leg with at least two complete longitudinal rows of hairs reduced to short blunt spines (fig. 276) 72

— Ventral face of fore metatarsus at most with only one complete row of hairs modified in this way 92

Note. Variable species are keyed both ways.

72 Scutellum with two pairs of strong bristles. Labella of proboscis with dense fields of short, blunt, pale spines ventro-laterally. Hypopygium as fig. 301. (Knob of haltere dusky yellow. Legs largely yellowish. Wing membrane clearly greyish to naked eye) ..... **simulans** (Wood)
Cambs, Essex, Gloucs, Hereford, Kent, Surrey. Scotland: Inverness. Ireland: Offaly. vi–xi.

— Scutellum with a posterior pair of bristles and an anterior pair of reduced bristles or hairs. Labella with few, if any, short blunt spines below. Hypopygium otherwise 73

73 Hairs below basal two-thirds of hind femur somewhat bristle-like towards middle and in part arranged in 2–3 rows (the supplementary rows being on the anterior face) (figs 304 and 305) 74

— Hairs below hind femur either fine (and little differentiated from those of adjacent anterior face) or if bristle-like they are arranged in a single row (e.g. figs 306 and 307) 75

74 Bristle-like hairs beneath hind femur half as numerous (fig. 304). Length of fore metatarsus only about 3 × breadth. Last segment of fore tarsus not obviously darker than preceding segments. Axillary ridge of wing with 3 or fewer bristles ..... **pilifemur** (Lundbeck)
This species has been recorded only from Denmark and Holland. It has been included to avoid it being overlooked by confusion with M. dahli.

— Bristle-like hairs beneath hind femur twice as numerous (fig. 305). Length of fore metatarsus about 4·5–5 × breadth. Last segment of fore tarsus darker than preceding segments. Axillary ridge of wing with 4 or more bristles. (Hypopygium as fig. 309) .. **dahli** (Becker)
Widespread in England and Wales. Scotland: Selkirk. Ireland: Offaly. vi–x.

75 Hairs below basal half of hind femur clearly longer than antero-ventral row of distal third (figs 306 and 307) 76

— Hairs below basal half of hind femur at most only slightly longer than antero-ventral hairs of distal third, but usually shorter (e.g. fig. 308); when a little longer they are not obviously thicker than these antero-ventrals 77

76 Left side of hypandrium without a posteriorly-directed hairy lobe. Anal tube clearly shorter than length of dorsal face of epandrium. Bristles on left side of epandrium clearly thicker than hairs on cerci. Palps pale brown. With 3 or fewer bristles on axillary ridge of wing. Hind femur as fig. 306 ..... **subcarpalis** (Lundbeck)
N. Yorks. vi.

— Left side of hypandrium with a large hairy lobe directed posteriorly. Anal tube longer than length of dorsal face of epandrium. Hairs on left side of epandrium are little, if any, thicker than hairs on cerci. Palps yellowish. With 4 or more bristles on axillary ridge of wing. Hind femur as fig. 307 ..... **intercostata** (Lundbeck)
Cambs. vi.

77 Lower margin of left side of epandrium without a continuous palisade of strong hairs as in fig. 313 78

— Lower margin of left side of epandrium with a continuous palisade of strong hairs (e.g. fig. 313). (Anal tube dusky, palps yellowish, the 2–3 bristles on axillary ridge of wing progressively increase in size away from base) 291

78 Left side of epandrium with hairs or fine bristles which are little, if any, stronger than hairs of cerci (figs 312, 314, 316 and 317) 79

— Left side of epandrium with one or more bristles, which are clearly thicker than hairs of cerci (figs 318–324, 327 and 329) 82

79 Hypopygium as fig. 314, notably with more than 14 hairs on left cercus. Posterior margin of wing somewhat straighter than usual (fig. 302). (Fore and mid femora and basal half of hind femur yellowish) ..... **hortensis** (Wood)
Widespread in Midlands, East Anglia and South of England. Ireland: Dublin. vii–ix.

— Hypopygium otherwise, notably with less than 14 hairs on left cercus. Posterior margin of wing more curved (as in fig. 303) 80

80 Tarsal segment 5 of front leg relatively short and without the postero-dorsal palisade of short spines characteristic of the first four segments (fig. 310). Hypopygium as fig. 312. (The posterior process of left side of hypandrium frequently longer than in figure. Only 2 bristles on axillary ridge of wing. Palps yellowish) ..... **fenestralis** (Schmitz)
No authenticated British record is known for this species. It is included to avoid it being overlooked through misidentification.

— Tarsal segment 5 of front leg relatively long and with a postero-dorsal spine-palisade, as on preceding segments (fig. 311). Hypopygium otherwise (figs 316–317) 81

81 Hypandrium without a posteriorly directed lobe from left side (fig. 316). Axillary ridge of wing with 4 or more bristles. Anal tube and abdominal venter somewhat darkened..... ..... **alticolella** (Wood)
Cornwall, Cumbria, Durham, Hants, Hereford, Suffolk. Scotland: Inverness. Ireland: Wicklow. vii–x.

— Hypandrium with a posteriorly-directed lobe from left side (viewed from below it is broad, and bare towards posterior and inner margins) (fig. 317). Axillary ridge of wing with 3 or fewer bristles. Anal tube and venter are normally yellowish, but are occasionally somewhat darkened..... **crassipes** (Wood)
Widespread in England. Scotland: Inverness. Ireland: Offaly. vi–ix.

Note. If neither seems to apply, and labella are enlarged and spinose below, proceed to couplet 182.

82 Base of anal tube embraced by a posterior extension of upper part of epandrium (fig. 322). (Abdominal venter with no hairs on segments 1–4. Wing as fig. 303). . . . . **subconvexa** (Lundbeck)
Cambs. v–vi, viii–ix.

— Such an epandrial "collar" absent or only slightly developed (fig. 319). 83

83 Left cercus with more than 9 hairs (fig. 318). Hairs beneath hind femur directed somewhat posteriorly and the most ventral row of anterior face are directed ventrally (fig. 315). . . . . **speiseri** Schmitz
Leics, Scotland: Inverness. vii–viii.

— Left cercus with less than 9 hairs. Hairs beneath hind femur in a single row directed more or less ventrally (e.g. fig. 308). 84

84 Hypandrium with a (sometimes short) hairy lobe extending rearwards from left side (figs 319, 320 and 323) 85

— Such a lobe absent or very short and hairless (figs 321, 324, 327 and 329). 88

85 Abdominal venter with transverse rows of hairs (of the same order of size as hairs on tergites) restricted to segments 5 and 6. 86

— Abdominal venter with rows of hairs on segments 3–6, even if somewhat fine on segments 3 and 4 87

86 Abdominal venter with strong hairs on both segments 5 and 6 (those on 6 usually being conspicuous) as in fig. 319. Palps yellowish . . . . . **involuta** (Wood)
Cambs, Devon, Kent. iii–ix.

— Abdominal venter with somewhat fine hairs on segment 6 only (fig. 320). Palps brownish . . . . . **unicolor** (Schmitz)
Suffolk, N. Yorks, Caerns. Scotland: Inverness. Ireland: Mayo. vii–ix.

87 Fore tarsus uniformly dark and segment 5 about as long and wide as segment 4. Axillary ridge of wing with 3 or fewer bristles. (Hypopygium as fig. 323). . . . . **conformis** (Wood)
Hereford, Norfolk, N Yorks, Merioneth. Widespread in Scotland. iv–vi.

— Fore tarsus with segments 1–3 or 1–4 clearly paler than segment 5, which is clearly longer and wider than segment 4. Axillary ridge of wing with 4 or more bristles. . . . . **nigripalpis** (Lundbeck)
This species has not been recorded from Britain yet, but occurs both sides of the Baltic.

88 Palps pale brown to yellowish. Proctiger beyond cerci tends to be yellowish, while the rest of anal tube is dark 89

— Palps and anal tube uniformly brownish 90

89 Fore tarsus uniformly dark. Hypopygium as fig. 321 . . . . . **hyalipennis** (Wood)
Cumbria, Hereford, N. Yorks. Scotland: Inverness, Kirkcudbright, St Kilda. v, vii–viii, x.

— Fore tarsus with first four segments pale, and usually contrasting with a darkened segment 5. Hypopygium as fig. 329. 90

Note. If neither seems to apply and terminal hairs of proctiger are not stronger than hairs of cerci try couplet 195.

90 Fore tarsus dark, contrasting with pale fore tibia. Hind metatarsus with spine-like hairs of posterior face at base somewhat disordered in arrangement and inclination (fig. 325). Hypopygium as fig. 324. . . . . **valvata** Schmitz
Norfolk. x.

— Fore tarsus either yellowish (apart from contrasting darkened segment 5) or else if somewhat darkened then about as dark as ventral face of fore tibia. Hind metatarsus with basal spine-like hairs of posterior face more ordered and with a more uniform inclination (fig. 326). Hypopygium otherwise (figs 327 and 329) 91

91 All fore tarsus segments more or less the same colour. Hairs of basal section of ventral hair palisade of hind metatarsus with recurved tips (fig. 328). Hypopygium as fig. 327 . . . . . **horsfieldi** Disney
N. Yorks. Scotland: Perths, W. Ross. vi–vii.

— Segment 5 of fore tarsus usually clearly darker than preceding segments. Ventral hair palisade of hind metatarsus with basal hairs no different from the rest. Hypopygium as fig. 329. . . . . **protarsalis** Schmitz
Cambs, Cornwall, I. of Wight, Oxford, N. Yorks. Merioneth. Scotland: Moray. Ireland: Offaly. vi–viii.

92 Mid-femur with 2–7 spines below basal quarter (fig. 331). Hypopygium as fig. 330 . . . . . **affinis** (Wood)
Cambs, Essex, Hereford, Oxford, Salop, Suffolk. vii–ix.

— Mid-femur with no such spines, at most with finer hairs. Hypopygium otherwise..... 93

93 Scutellum with four bristles and knob of haltere yellow (contrasting with dark stem). Hairs beneath basal quarter of hind femur shorter and blunter than those in second quarter (fig. 340). Hypopygium as fig. 332..... **robusta** Schmitz
N. Yorks. Scotland: Inverness. v–vi.

— If scutellum has four bristles (as opposed to a posterior pair of bristles and an anterior pair of shorter, finer, hairs) then knob of haltere is dark. Hairs beneath base of hind femur and hypopygium otherwise..... 94

94 Hairs beneath basal quarter of hind femur densely crowded (figs 341 and 342)..... 95

— Hairs beneath basal quarter of hind femur never as crowded as this 96

95 Hairs beneath basal quarter of hind femur thicker and more spine-like (fig. 341). Wing membrane distinctly brownish, with thin veins brown and plainly visible at low magnification. Hypopygium as fig. 344 ..... **beckeri** (Wood)
Widespread in England. Merioneth. vi–x.

— Hairs beneath basal quarter of hind femur not so robust (fig. 342). Wing membrane pale greyish and thin veins pale brownish Hypopygium as fig. 343 ..... **hirticrus** (Schmitz)
Widespread in British Isles. iv, vi–xi.

96 The first few hairs beneath hind femur are crowded to form a tuft, but the rest are spaced out (fig. 333). Hairs beneath lobe from rear of left side of hypandrium are restricted to a terminal tuft (fig. 345) ..... **armata** (Wood)
Cambs, Hereford. Scotland: Inverness. vii–viii.

— Hairs beneath basal half of hind femur not forming a tuft near base. Hairing of left hypandrial lobe otherwise 97

97 Labella of proboscis somewhat (fig. 339) to conspicuously enlarged and their lower faces with dense fields of short, blunt, pale spines (which are visible at edges of lobes when viewed from above — 's' in fig. 339) 98

— Labella little, if any, enlarged and lower faces with few or no short pale spines..... 121
Note. Doubtful cases are keyed both ways.

98 Knob of haltere yellow, or at least dusky yellowish, in contrast to dark stem; at the same time the palps are yellow or dusky yellow, or rarely pale greyish brown 99

— Halteres and palps uniformly darkened 108
Note. Variable cases are keyed both ways.

99 Third antennal segment paler in basal third at least. hind femur yellowish with dark brown apex. Cerci distinctly longer than dorsal face of epandrium (fig. 347)..... **rufa** (Wood)
Berks, Cumbria, Hereford, Kent, Oxford. Scotland: Dunbarton. Ireland: Offaly. v–vi.
Note. The unknown male of *M. pictorufa* (Colyer) probably keys out here also.

— Third antennal segment uniformly brown. Hind femur with distal third, at least, brownish. Cerci at most as long as dorsal face of epandrium, usually clearly shorter (e.g. 229, 260, 348–353)..... 100

100 Hairs below basal half of hind femur fine and little, if any, longer than antero-ventral hairs of distal third 101

— Hairs below hind femur more strongly developed (e.g. figs 256 and 350) 103
Note. Variable species are keyed both ways.

101 End hairs of proctiger at most only as strong as hairs on cerci (figs 348 and 349) 102

— End hairs of proctiger a little to considerably more robust than hairs on cerci (figs 229, 351 and 352) 103
Note. *M. furva* Schmitz, not yet recorded from Britain, will run to this couplet. It can be recognised by the marked deflection of the dorsal hair palisade of the mid-tibia onto the posterior face (fig. 335) and the presence of a hair palisade on the posterior face of all the fore tarsal segments (as opposed to on the first four segments only).

102 Bristles on side of epandrium clearly stronger than hairs on cerci (fig. 348). Knob of haltere yellow, in contrast to brown stem ..... **oweni** Disney
Scotland: Inverness. viii.

— Hairs on side of epandrium scarcely any stronger than those on cerci (fig. 349). Knob of haltere brownish, not contrasting so much with the darker brown stem..... **hibernans** Schmitz
Cambs, Herts, Oxon, Scotland: Inverness. iv–v, vii–ix.
Note. If the hairs below posterior lobe of left side of hypandrium form a distinct terminal tuft (fig. 271) return to 52.

103 Vein Sc well developed for its entire length and its tip reaching R1 104

— Vein Sc fades away apically, and therefore fails to reach R1 105

104 Three options:—

— With 3 (or sometimes 4) bristles on axillary ridge of wing, and the shortest of these is subequal in length to costal cilia on section 3 of costa. Hypopygium as fig. 351 ..... **lucifrons** (Schmitz)
Widespread in British Isles. iv–x.

— With 6 (or sometimes 5, or very rarely only 4) bristles on axillary ridge of wing, and the shortest of these is clearly shorter than costal cilia on section 3. Hypopygium as fig. 229..... **altifrons** (Wood)
Widespread in England. Scotland: Banff. Ireland: Dublin. iii, v–viii, x.

— With at least 7 bristles on axillary ridge, and the shortest of these is clearly shorter than costal cilia on section 3. Hypopygium as fig. 352 ..... **subpalpalis** (Lundbeck)
Hants. x.

Note. If none seem to fit try couplet 111 and see note in couplet 101.

105 Bristles in lower half of left side of epandrium in a single vertical row (e.g. fig. 260).... 106

— Bristles in lower half of left side of epandrium not in a single vertical row 107

Note. If neither seems to apply and hairs below basal quarter of hind femur are somewhat spine-like return to 66.

106 All legs dark. Wing membrane pale grey..... return to 33

— At least fore legs and basal halves of hind femora are somewhat yellowish. Wing membrane plainly grey to naked eye (when viewed against a white background)..... 107

107 Palps dusky yellowish. Fore legs and basal half of hind femur somewhat yellowish. Hypopygium as fig. 353 (the proctiger bearing 2 or 4 terminal hairs). (Base of hind femur as fig. 350)..... **consetigera** (Schmitz)
Cambs. Scotland: Inverness. vi–vii.

— Palps greyish brown. Typically all legs dark, apart from fore tibia and tip of fore femur in some specimens. Hypopygium otherwise..... 108

108 Hairs below basal half of hind femur only about as long and strong as adjacent hairs of anterior face..... 109

— Hairs below basal half of hind femur distinctly longer and usually more robust than adjacent hairs of anterior face 110

109 Fore legs largely yellowish and palps yellowish to dusky yellowish ..... return to 101

— All legs, apart from fore tibiae, and palps brown to blackish 110

110 Vein Sc well developed for its entire length and its tip fusing with R1 111

— Vein Sc fades away before reaching R1..... 112

Note. Variable species are keyed both ways.

111 Scutellum with four nearly equal bristles, the anterior pair being a little more slender than posterior pair..... 112

— Scutellum with a posterior pair of bristles and an anterior pair of short hairs (no longer than those at rear of scutum)..... return to 104

112 Hairs below basal quarter of hind femur robust (at least as strong as postero-dorsal row of spine-like hairs on hind tibia) and with somewhat blunt tips (figs 346 and 354)..... 113

— Hairs below basal half of hind femur not so robust, and when as long they have finely tapered tips 115

113 Postero-ventral extremity of left side of epandrium somewhat square-ended (fig. 355). (Hind femur as fig. 346)..... **aquilonia** Schmitz
Scotland: Cairngorm, Inverness, W. Ross. v–vii.

— Postero-ventral extremity of left side of epandrium tapers to a rounded point (figs 356 and 357)..... 114

114 More than 8 bristles on left side of epandrium (fig. 356). Length of costa (measured from basal bristle — BB in fig. 8, Part 6) just over 0·5 × wing length. (Hind femur as fig. 354).. ..... **beyeri** Schmitz
Cumbria. ix.

— Less than 8 bristles on left side of epandrium (fig. 357). Length of costa just under 0·5 × wing length ..... **differens** Schmitz
N. Yorks. vi.

115 Hairs below basal half of hind femur distinctly longer than adjacent hairs of anterior face.. 116

— These hairs at most only slightly longer than adjacent hairs of anterior face, usually subequal 119

116 At least the tip of proctiger (i.e. part beyond end of cerci) somewhat yellowish 117
— Anal tube uniformly greyish or greyish brown 118
Note. Doubtful cases are keyed both ways.
117 Anterior pair of bristles on scutellum clearly shorter and finer than posterior pair. Apart from the lowest bristle, the left side of epandrium with weaker hairs (fig. 358) ..... **posticata** (Strobl)
Gloucs, Hants, Hereford, Somerset, Sussex. vi–vii, ix.
— Bristles on scutellum subequal, the anterior pair being only slightly shorter and finer. All hairs on left side of epandrium, in anterior half, are stronger (fig. 359) ..... **communiformis** (Schmitz)
Cambs, Lincs, Sussex. vi, viii.
Note. If anterior scutellars are reduced to fine hairs and bristles on epandrium are strong, proceed to couplet 118.
118 Wing membrane clearly smokey grey to naked eye. The scutellum with 4 bristles, but anterior pair only about half length of posterior pair. Hypopygium as fig. 360. . **fumata** (Malloch)
Cheshire, Cumbria, N. Yorks. Scotland: Dunbarton, Inverness. iii–vi.
— Wing membrane paler, and not smokey to naked eye. Scutellum with a posterior pair of bristles and an anterior pair of fine hairs which are at most a third of their length ... 119
119 Left side of epandrium with several long bristles which are subequal in length, even if variable in thickness (figs 362 and 363) 120
— Left side of epandrium with a single long bristle, the rest being clearly shorter (fig. 367) 121
120 Left side of epandrium with scattered bristles (fig. 362). Thin veins of wing yellowish grey and less sharply defined ..... **fuscipalpis** (Lundbeck)
Widespread in Great Britain. iv–viii.
— Left side of epandrium with a single vertical row of strong bristles and a single finer bristle immediately behind the most ventral of these bristles (fig. 363). Thin veins brown and more sharply defined ..... **tonyirwini** Disney
Hants. Scotland: Colonsay. vi, x.
Note. If dorsal hair palisade of mid-tibia is deflected onto posterior face (fig. 335) see note to couplet 101. If lobe from rear of left side of hypandrium is of different form try couplet 121.
121 Anal tube clearly longer than length of dorsal face of epandrium (figs 361 and 368).... 122
— Anal tube subequal or (usually) clearly shorter than length of dorsal face of epandrium (figs 366, 367, 369–371) 124
122 Dorsal face of epandrium very much shorter than length of ventral margin of left side (fig. 368) ..... **styloprocta** (Schmitz)
Cambs. Scotland: Inverness. Ireland: Offaly. v–vi.
— Dorsal face of epandrium relatively longer (figs 361 and 378) 123
123 Posterior lobe of left side of hypandrium tapered to a sharp point (fig. 361) ..... **albiclava** (Schmitz)
Cumbria, Dorset, Essex, Warwicks. Scotland: Inverness. vi–ix.
— Posterior lobe of left side of hypandrium not tapered in this way and with a rounded tip (figs 375–383) 124
124 Haltere with stem and knob largely dark 125
— Haltere with knob mainly yellow or yellowish 137
Note. Variable species are keyed both ways.
125 Posterior lobe of left side of hypandrium vestigial (figs 366 and 367) 126
— Posterior lobe of left side of hypandrium well developed 127
126 Anal tube relatively long and left side of epandrium with fewer than 10 bristles (fig. 367). Segment 3 of antenna with scattered short hairs (fig. 365) ..... **feshiensis** Disney
Scotland: Inverness. vii.
— Anal tube relatively short and left side of epandrium with more than 10 bristles (fig. 366). Segment 3 of antenna with dense pile of short hairs (fig. 364) ..... **unguicularis** (Wood)
Hereford, Leics, Norfolk, N. Yorks, Somerset. iii–v, viii.
Note. If not agreeing with either, try couplet 77.
127 Posterior lobe of left side of hypandrium long, narrow, and hairy in distal half at least (figs 369–371). Wing membrane colourless 128
— Posterior lobe of left side of hypandrium otherwise (figs 312, 313, 372–379). Wing membrane usually somewhat greyish to brownish grey 132

128 Hairs of tergites and venter of abdominal segments 5 and 6 strongly developed (fig. 319) ... return to 86

— These hairs much finer (figs 369–371) ... 129

129 Ventral margin of left side of epandrium with pre-apical lobe strongly developed and situated distinctly anterior to the postero-ventral (apical) lobe (figs 369 and 370) ... 130

— This pre-apical lobe is either less strongly developed or absent (e.g. fig. 312). When present it is more posterior in position, lying almost below the postero-ventral lobe (e.g. figs 313 and 371) ... 131

130 Fore-coxa and -femur yellow brown, mid- and hind-femora grey brown. Hypopygium as fig. 369 ... **ignobilis** (Schmitz)
'Cambs, Essex, Oxford, Warwicks. Scotland: Inverness. v–ix.

— All coxae and femora dark grey to blackish. Hypopygium as fig. 370 ... **pusilla** (Meigen)
Widespread in England. Ireland: Offaly. iv–xi.

131 Posterior lobe of left side of hypandrium relatively long, narrow, and somewhat curved near base (fig. 371). (All coxae and femora dark grey to blackish) ... **drakei** Disney
Cambs, Cumbria, Suffolk, N. Yorks. viii–xi.

— Posterior lobe of left side of hypandrium otherwise ... 132

132 Lower margin of left side of epandrium without a continuous palisade of strong hairs extending around apex of pre-apical lobe (i.e. not like fig. 313) ... 133

— Lower margin of left side of epandrium with a palisade of strong hairs as in fig. 313 ... 291

133 Costa only about one-third of wing length. Wing membrane almost colourless and thin veins obscure. Hypopygium as fig. 312 ... return to 80

— Costa more than two-fifths of wing length. Wing membrane tinged greyish or brownish and thin veins distinct (easily observed at × 10 magnification). Hypopygium otherwise ... 134

134 All legs dark grey to black ... 135

— At least fore-tibia and -tarsus mainly yellowish ... 136

135 Left side of epandrium with the most posterior bristle near the lower margin clearly longer and more robust than rest of bristles (fig. 372) ... **pumila** (Meigen)
Widespread in British Isles. iii–xi.

— This bristle weaker than adjacent bristles (fig. 373) ... **vestita** (Wood)
Cumbria, Hereford, N. Yorks, Suffolk. iv–vi, viii.

136 Lower margin of left side of epandrium broadly extended ventrally well below level of postero-ventral extremity, with the result that the hind margin is distinctly concave (fig. 374) ... **indifferens** (Lundbeck)
Cambs. v.

— Epandrium otherwise ... 137

137 Vein Sc strongly developed throughout its length and its tip fused with R1. Hypopygium as fig. 375. (Anal tube brownish, wing distinctly brownish grey, all femora largely dirty yellowish) ... **tergata** (Lundbeck)
Cumbria, I. of Wight, Kent, N Yorks. Scotland: Inverness. v–vii.

— Vein Sc fades away before reaching R1. Hypopygium otherwise ... 138

138 Hairs on left side of epandrium distinctly somewhat more robust than those on cerci (figs 376 and 377) ... 139

— Hairs on left side of epandrium at most only as robust as those on cerci (figs 378–379, 381–383) ... 140

139 Terminal hairs of posterior lobe of left side of hypandrium obscure (fig. 376). Anal tube distinctly brown. All femora brown ... **fusciclava** Schmitz
Cambs, I. of Wight, N. Yorks, Oxford, Somerset. Widespread in Scotland. Ireland: Offaly. iv–viii, x.

— Terminal hairs of lobe of left side of hypandrium forming a distinct tuft (fig. 377). Anal tube distinctly somewhat yellowish. Fore- and mid-femora in part yellowish ... **subpleuralis** (Wood)
Widespread in E. Anglia, Midlands and S. of England. Scotland: Inverness. Ireland: Offaly, Wicklow. v–x.

140 Larger species (wing length >2 mm). Anal tube largely yellowish ... 141

— Smaller species (wing length <2 mm). Anal tube largely brownish ... 142

141 Hairs at hind margin of abdominal tergite 6 subequal to length of longest hair on cercus, and only a little more robust. Postero-ventral corner of left side of epandrium drawn out behind (fig. 378) ... **subfraudulenta** Schmitz
Cumbria. Scotland: Inverness. v–vi.

— Hairs at hind margin of tergite 6 at least 1·5 × length of longest hair on cercus, and clearly much more robust. Postero-ventral corner of left side of epandrium not drawn out in this way (fig. 379) ..... **fuscovariana** (Schmitz)
Widespread in British Isles. v–viii.

142 Posterior lobe of left side of hypandrium bare, but finely wrinkled (fig. 381) ..... **mcleani** Disney
Essex. ix.

— This lobe covered in short hairs below (figs 382 and 383) 143

143 Wing membrane distinctly tinged grey. Each antial bristle is clearly closer to an antero-lateral than to an upper supra-antennal bristle. Hypopygium as fig. 382 ..... **superciliata** (Wood)
Widespread in British Isles. iv–ix.

— Wing membrane almost colourless. Each antial bristle is about midway between an upper supra-antennal and an antero-lateral bristle. Hypopygium as fig. 383 .. **simplex** (Wood)
Cambs, Hereford. Ireland: Offaly. iii, ix–x.
Note. If not agreeing with either and there are fewer than 5 hairs on mesopleuron try couplet 161.

144 Abdominal tergites 1–6 with numerous long bristles (fig. 385) and epandrium also with bristles (fig. 386) ..... **rufipes** (Meigen)
Ubiquitous in British Isles. i–xii.

— Any long bristles on abdominal tergites restricted to hind margins of 5 and 6 and sides of tergite 2. Hypopygium otherwise 145

145 A short row of 4–5 spines (with bent tips) sharply contrasting with rest of hairs beneath base of hind femur (fig. 387). Hypopygium as fig. 388. ..... **longiseta** (Wood)
Hereford, Norfolk, N. Yorks, Suffolk. Merioneth. Scotland: Selkirk. Ireland: Galway, Offaly. v–x.

— No such spines beneath hind femur, but with hairs only (which when strong gradually diminish in size away from base). Hypopygium otherwise 146

146 Scutellum with two pairs of bristles 147

— Scutellum with a posterior pair of bristles and an anterior pair of hairs 161
Note. Variable species are keyed both ways.

147 Hind tibia with an antero-dorsal row of short black spines, clearly differentiated from adjacent hairs of anterior face, as well as the longer postero-dorsals (the dorsal hair palisade passes between these two rows of spines). Mid-tibia also with a row of differentiated antero-dorsals in addition to postero-dorsals 148

— Neither hind nor mid tibia with such spine-like antero-dorsals 149

148 Cerci bent near base (fig. 390). Only two notopleural bristles. Wing membrane almost clear ..... **plurispinulosa** (Zetterstedt)
Avon, Cambs, Hereford, Kent, Norfolk, Surrey. Scotland: Wigtown. vi–vii, ix.

— Cerci not bent in this way (fig. 391). Three bristles on notopleuron. Wing membrane distinctly greyish (evident to naked eye when viewed against white background) ..... **pseudogiraudii** (Schmitz)
Essex, Surrey. v–vi.

149 All femora dominantly yellowish, apart from contrasting dark apex to hind femur 150

— All femora dominantly brown or at least a dirty, greyish yellow if paler 153
Note. Variable species are keyed both ways.

150 Wing membrane brownish grey. Vein Sc strongly developed and its tip fuses with R1. Hairs of abdominal venter strong on segments 3–6. Hypopygium as fig. 389 **ruficornis** (Meigen)
Widespread in British Isles. v–x.

— Wing membrane pale grey to almost clear. Vein Sc obscure in distal half, fading away before reaching R1. Hairs of abdominal venter only strongly developed on segment 6 (those on segments 2–5 are clearly shorter) 151

151 Without a notopleural cleft 152

— A notopleural cleft present above and in front of anterior notopleural bristle (nc in fig. 401) 156
Note. Species with obscure cleft are keyed both ways.

152 Left side of epandrium with less than 18 hairs (fig. 392). Hairs of posterior lobe of left side of hypandrium down-curved and relatively long (fig. 392) ..... **densior** Schmitz
Cumbria, Essex, Norfolk, N. Yorks. Widespread in Scotland. v–viii.

— Left side of epandrium with more than 20 hairs (fig. 393). Hairs of posterior lobe of left side of hypandrium directed rearwards and relatively short (fig. 393) 156

Note. If anal tube is longer than in figs 392 and 393 and three notopleural bristles are present, try couplet 153.

153 Anal tube at least 1·5 × length of dorsal face of epandrium (figs 395 and 396). Notopleuron with 3 strong bristles. Vein Sc well developed and with tip fused to R1 154

— Anal tube subequal (figs 398–400) or shorter (figs 397, 402–403) than length of dorsal face of epandrium. Notopleuron with only two strong bristles. Vein Sc fades away before reaching R1 155

154 Hairs at rear of abdominal tergite 6 short (fig. 395) ..... **emarginata** (Wood)
Widespread in British Isles. v–ix.

— Hairs at rear of tergite 6 very long (fig. 396) ..... **latifemorata** (Becker)
Widespread in British Isles. iv–vii, ix.

155 A notopleural cleft present above and in front of anterior notopleural bristle (nc in fig. 401) 156

— No such cleft 159

156 Cerci relatively broad and each bearing more than 11 hairs (fig. 397) ..... **albicans** (Wood)
Cumbria, Hereford, Kent. iii–iv.

— Cerci relatively narrow and each bearing less than 11 hairs (figs 393, 399–400) 157

157 Left side of epandrium with at least one strong, bristle-like, hair near lower margin towards rear (figs 399 and 400). Hairs of posterior lobe of left side of hypandrium down-curved and relatively long (figs 399 and 400) 158

— Left side of epandrium with all hairs weaker than those on cerci (fig. 393). Hairs on posterior lobe of left side of hypandrium directed apically and relatively short (fig. 393) ..... **malhamensis** Disney
N. Yorks. viii.

Note. If neither fits try couplet 215.

158 Left side of epandrium with less than 20 hairs and with lower margin in rear half sloping gently up to base of anal tube (fig. 399) ..... **giraudii** (Egger)
Widespread in British Isles. iv–xi.

— Left side of epandrium with more than 24 hairs and with lower margin in rear half rising almost vertically from the postero-ventral bend near the bristle-like hair (fig. 400) ..... **parnassia** Disney
N. Yorks. ix.

159 Anal tube subequal to, or slightly longer than, length of dorsal face of epandrium (fig. 398). Wing membrane distinctly grey (evident to naked eye when viewed against a white background) ..... **septentrionalis** (Schmitz)
Scotland: Inverness, Perths. v.

— Anal tube a little, but distinctly shorter than length of dorsal face of epandrium (figs 402 and 403). Wing membrane almost clear 160

160 Middle third of terminal hairs of proctiger flattened and usually somewhat twisted (fig. 402). Hair at base of vein 3 vestigial or absent. Third antennal segment larger (diameter >0·14 mm, length >0·16 mm). (Hind femur as fig. 407) ..... **breviseta** (Wood)
Hereford. vi.

— Middle third of terminal hairs of anal tube not flattened (fig. 403). Hair at base of vein 3 well developed (being about as strong as costal cilia at level of humeral cross vein). Third antennal segment smaller (diameter <0·12 mm, length <0·13 mm) .. **correlata** (Schmitz)
Berks, Cambs, Hereford, Oxford. v–vii.

161 Left side of epandrium with at least one bristle or strong hair which is more robust than hairs of cerci 162

— Hairs of left side of epandrium at most only as robust as hairs of cerci, usually weaker. 185

Note. Variable species are keyed both ways.

162 Bristles at rear margin of abdominal tergite 6 conspicuously longer and stronger than most robust hairs or bristles on left side of epandrium, and the hairs of the venter of segment 6 also strong and bristle-like (fig. 404) ..... **spinicincta** (Wood)
Widespread in E.Anglia, Midlands and S.E. England. Scotland: Renfrew. v–x.

— Bristles at rear margin of abdominal tergite 6 subequal to or shorter than most robust hairs or bristles on left side of epandrium, and those on venter of segment 6 usually weaker 163

163 Anal tube subequal to or shorter than length of dorsal face of epandrium 164

— Anal tube distinctly longer than length of dorsal face of epandrium (fig. 313) 291

164 Longest bristle on palp at most as long as maximum width of palp 165
— Longest bristle on palp clearly longer than maximum width of palp 167
165 Palps shorter than proboscis and maximum width less than half diameter of third antennal segment. Notopleuron with only two strong bristles, the position of the missing anterior bristle being occupied by a notopleural cleft (nc in fig. 401) ..... return to 156
— Palps about as long as proboscis and maximum width clearly more than half the diameter of third antennal segment. Notopleuron with three strong bristles and no cleft 166
166 Tip of hind tibia with a distinct, largely bare, 'keel' projecting above the deflected tip of dorsal hair palisade (fig. 394). Posterior lobe of left side of hypandrium yellowish and distinctly hairy (a dark brown, hairless process of the penis complex lies just behind it and should not be confused with the hypandrial lobe — fig. 405) ..... **latipalpis** (Schmitz)
Cambs, Oxford, Suffolk. vi, viii.
— Tip of hind tibia not forming such a conspicuous 'keel'. Posterior lobe of left side of hypandrium brownish and completely bare (fig. 406) ..... **longipalpis** (Wood)
Hants, Hereford, N. Yorks. Scotland: Midlothian. v–vi, viii.
167 Strong bristles on epandrium distinctly feathered (fig. 384 — a ×20 objective at least will probably be required to see this feathering) 168
— No bristles on epandrium are obviously feathered 177
Note. Variable species are keyed both ways.
168 Hairs below basal half of hind femur clearly longer than those of antero-ventral row in distal half 169
— Hairs below basal half of hind femur subequal to or shorter than those of antero-ventral row in distal half 176
169 Anal tube subequal to, or slightly longer than, length of dorsal face of epandrium (figs 408 and 409). (Labella with few short spines below and posterior lobes of hypandrium greatly reduced) 170
— Anal tube clearly shorter than length of dorsal face of epandrium (e.g. figs 410–412, 416–419) 171
170 The strong bristles on left side of epandrium are more numerous (numbering at least seven), and at least half are in a palisade-like row along the lower margin (fig. 408). Apex of hind femur conspicuously darkened in contrast to rest of femur ..... **rubescens** (Wood)
Cambs, Hereford, Oxford, Warwicks. vi–viii.
— The strong bristles on left side of epandrium are less numerous (<7), and only isolated hairs are situated along lower margin (fig. 409). The apex of hind femur is only slightly and gradually darkened ..... **sulphuripes** (Meigen)
Widespread in England south of Birmingham. Ireland: Offaly. iv–ix.
171 At most only one bristle on left side of epandrium is longer than those at rear margin of abdominal tergite 6 172
— At least two (usually more) bristles on left side of epandrium are clearly longer than those at rear margin of abdominal tergite 6 173
172 Several strong bristles on left side of epandrium and left side of hypandrium with a long, slender, bare posterior process (fig. 411) ..... **hirticaudata** (Wood)
Cambs, Cumbria, Essex, Hants, Hereford. Ireland: Offaly. iii–x.
— Only one strong bristle on left side of epandrium, and left side of hypandrium with a broad posterior lobe bearing fine, microscopic hairs on its lower face (fig. 410) **sheppardi** Disney
England: Warwickshire. Scotland: Inverness. v–vii.
173 Hypandrium with a tapered posterior process from left side, or at least to left of mid-ventral line (figs 416–419). Notopleuron with three bristles 174
— Hypandrium without such a posterior process (fig. 412). Notopleuron with either two or three bristles (when the middle one is present it is less robust than the other two) ..... **devia** Schmitz
Cambs, Hants. vi–vii, ix.
174 Hairs of venter at least twice as numerous, thus segment 4 bears about 20 hairs. Hypopygium as fig. 419 ..... **halterata** (Wood)
Widespread in England and Ireland. iv–xi.
— Hairs of venter at most half as numerous, thus segment 4 bears 10 or fewer hairs. Hypopygium otherwise (figs 416–418) 175
175 Three options:—
— Hypandrial process longer and somewhat upcurved (fig. 416). Palps variable in colour, from

yellowish to brownish ..... **capronata** Schmitz
Scotland: Renfrew. vii.

— Hypandrial process shorter and not obviously upcurved (fig. 417). Palps largely brown .... **mortenseni** (Lundbeck)
Not yet recorded from Britain.

— Hypandrial process shorter than in fig. 416, and not obviously upcurved (fig. 418). Palps largely yellowish ..... **subfuscipes** Schmitz
Widespread in England south of a line from Birmingham to the Wash. vi–x.

Note. These three species all vary and further study could lead to revised conclusions regarding species recognition.

176 All legs brown to blackish. Length of anal tube subequal to length of dorsal face of epandrium 177

— At least the front and middle legs largely yellowish, even if latter are a little dusky. Anal tube conspicuously shorter than length of epandrium (fig. 420) ..... **discreta** (Wood)
Widespread in British Isles. v–viii, x.

177 Stronger, bristle-like, hairs on epandrium restricted to postero-lateral corners (fig. 380), there being 1–2 such hairs each side. (Notopleuron with two bristles and a notopleural cleft — cf. fig. 401; labella of proboscis somewhat enlarged and densely spinose on lower faces)..... **hendersoni** Disney
Widespread in E. Anglia, Midlands, N. and S.E. England. Scotland: Renfrew. v–vii.

— The hairs of postero-ventral corners of epandrium are weaker than those on sides in front of these hairs 178

178 At least one bristle-like hair on left side of epandrium longer and more robust than those at hind margin of abdominal tergite 6 179

— Bristle-like hairs at rear margin of abdominal tergite 6 longer and stronger than any hairs on left side of epandrium..... 185

Note. Variable species are keyed both ways.

179 Knob of haltere dark (brownish or greyish to almost black)..... 180

— Knob of haltere largely yellowish..... 184

Note. Variable species are keyed both ways.

180 All femora dark (largely brown to almost black)..... 181

— All femora largely yellowish 183

181 Posterior process of left side of hypandrium somewhat rod-like (fig. 371) .... return to 129

— Posterior process of left side of epandrium shovel-shaped or reduced to a short lobe... 182

182 With three well-developed notopleural bristles ..... return to 84

— With only two notopleural bristles, the position of the other being occupied by a notopleural cleft (nc in fig. 401) 184

183 Hypopygium as fig. 421, with bristle-like hairs on epandrium and a similar, but a little weaker, pair on hypandrium. Only two strong bristles on notopleuron . **rufifrons** (Wood)
Hants, Hereford, Oxford. vi–viii.

— Hypopygium otherwise. With three strong bristles on notopleuron..... 184

184 Hypopygium as fig. 422, with one strong bristle almost in middle of left side of epandrium and hypandrium with posterior process on left side narrow and sharply pointed .... **pallidizona** (Lundbeck)
Cambs. vii, x.

— Hypopygium otherwise 185

185 All femora dominantly yellow (apart from dark apex of hind femur in some species) .. 186

— At least hind femur, usually middle femur, and frequently front femur are darkened (being greyish or brownish to almost black in colour) 200

186 Basal (upper) half of mid-tibia with a row of clearly differentiated antero-dorsal spines as well as a postero-dorsal row (the two rows being separated by the dorsal hair palisade). Hind tibia with a single antero-dorsal spine near base as well as a postero-dorsal row of spines. Hypopygium as fig. 425 (with very short hairs on epandrium)..... ..... **melanocephala** (von Roser)
Widespread in England south of a line from River Severn to the Wash. v–x.

— Neither mid or hind tibia with clearly differentiated antero-dorsal spines. Hypopygium otherwise 187

187 Vein Sc well developed and its tip reaching R1 188

— Vein Sc obscure or clearly fading away well before reaching R1..... 200

Note. Variable species are keyed both ways.

188 Anal tube distinctly longer than length of dorsal face of epandrium 189
— Anal tube subequal to or shorter than length of dorsal face of epandrium 192
Note. Borderline species are keyed both ways.
189 Costal cilia subequal to or shorter than inner branch (R2+3) of fork of vein 3..... 190
— Costal cilia distinctly longer than inner branch of fork of vein 3 191
190 Labella of proboscis somewhat enlarged (each being at least as wide as third antennal segment) and densely spinose on lower faces. Hypopygium as fig. 429 ..... **flava** (Fallén)
Widespread in British Isles. vi–xi.
— Labella not enlarged (each being clearly not as wide as third antennal segment) and without fields of short pale spines below. Hypopygium as fig. 430 ..... **flavicans** Schmitz
Widespread in E. Anglia, Midlands (North to Lancs), south of England and Wales. Ireland: Galway. vi–xi.
191 Anal tube relatively long (fig. 426)..... **errata** (Wood)
Widespread in British Isles. iv–viii, x.
— Anal tube relatively short, it being long in relation to dorsal face of epandrium because the latter is abbreviated (fig. 428)..... **brunneipennis** (Costa)
Durham, Essex, Hants. Ireland: (locality not recorded). vii, ix–x.
192 Notopleuron with three strong bristles 193
— Notopleuron with only two strong bristles..... 197
193 Labella of proboscis somewhat enlarged (each being as wide as third antennal segment) and densely spinose (with short, pale spines) on lower faces. Costal cilia subequal to or shorter than inner branch (R2+3) of vein 3 ..... return to 190
— Labella little expanded (each is clearly not as wide as third antennal segment) and with only a few short, pale spines below. Costal cilia a little to clearly longer than inner branch of vein 3..... 194
194 Left side of epandrium with a robust, bristle-like hair towards middle of lower margin. This hair is longer and more robust than those at rear of abdominal tergite 6 (fig. 410) ..... return to 172
— All hairs on left side of epandrium are finer and are at most as long as those at rear of tergite 6 (figs 427, 433 and 434) 195
195 Costal cilia clearly as strong as bristles on axillary ridge and longer than section 3 of costa. hypopygium as fig. 427 ..... **tarsella** (Lundbeck)
Essex, Kent, Warwicks. Scotland: Inverness, Perths. v–vii.
— Costal cilia clearly not as robust as axillary bristles and shorter than costal section 3. Hypopygium otherwise..... 196
Note. If not agreeing and scutum is somewhat orange proceed to couplet 200.
196 Strong hairs at hind margin of abdominal tergite 6 are longer and more robust (fig. 433). Costal section 1 at most subequal to section 2, usually it is shorter ..... **mixta** (Schmitz)
Kent, Merioneth. Ireland: Offaly. vii–viii.
— Strong hairs at rear margin of tergite 6 relatively weak and short (fig. 434). Costal section 1 somewhat longer than section 2..... **rubella** (Schmitz)
Cambs, Cumbria, Hants, Hereford, Warwicks, Merioneth. Scotland: Inverness. v–vii.
197 Labella of proboscis with fields of densely-crowded, short, pale spines on their lower faces 198
— Labella with only a few scattered spines on lower faces 200
198 Wing membrane almost colourless. Hypopygium as fig. 435 ..... **pygmaea** (Zetterstedt)
Cambs, Hants, Surrey. Ireland: Offaly. vi–x.
— Wing membrane distinctly greyish, to brownish-grey, tinged (evident to naked eye when viewed against a white background). Hypopygium otherwise 199
199 Knob of haltere yellow. Antero-lateral and antial bristles close together at almost the same level on frons (fig. 423)..... **costalis** (von Roser)
Scotland: Argyll. vi.
— Knob of haltere largely brown. Antero-lateral and antial bristles further apart and at different levels on frons (fig. 424)..... 200
200 Antial bristles distinctly lower on frons than antero-laterals and positioned almost as close to eye margin, so that they lie almost directly below latter (figs 431–432) 201
— Antial bristles either little, if any, lower on frons than antero-laterals or if clearly lower they are well clear of eye margin and not situated nearly directly below the antero-laterals 204
Note. Variable species are keyed both ways.
201 Hairs below basal half of hind femur a little shorter than hairs of antero-ventral row of apical

half. Hypopygium as fig. 436. (Frons as fig. 431. Labella of proboscis somewhat enlarged and with fields of densely-crowded, short, pale spines on their lower faces. Notopleuron with only two strong bristles. Wing membrane distinctly smokey, when viewed with naked eye against a white background) ..... **infraposita** (Wood)
Widespread in British Isles. vi–vii, x–xi.

— Hairs below basal half of hind femur a little to clearly longer than those of antero-ventral row of apical half. Hypopygium otherwise 202

202 Wing membrane distinctly tinged brownish grey (evident when viewed against a white background). Knob of haltere yellowish. Upper supra-antennals clearly wider apart than pre-ocellars (fig. 432). Hypopygium as fig. 437. Notopleuron with only two strong bristles. (Labella small and with only a few short spines below) ..... **minuta** (Aldrich)
Essex, Suffolk, Wilts. Scotland: Inverness, Perths. vi, viii, x.

— Wing membrane only faintly tinged with grey (appearing almost clear when viewed against a white background with naked eye). Without other characters in combination 203

203 Upper supra-antennals at most as distant from each other as distance between pre-ocellar bristles. Notopleuron with three strong bristles. Hypopygium as fig. 438. (Labella simple with few short spines below) ..... **cinereifrons** (Strobl)
N. Yorks, Surrey, Warwicks. Scotland: Inverness. vii–viii.

— Upper supra-antennals a little to clearly further apart than pre-ocellars. Notopleuron with only two strong bristles. Hypopygium otherwise 204

Note. If notopleuron has three strong bristles but labella are densely spinose below proceed to couplet 236.

204 Knob of haltere dominantly yellowish 205

— Knob of haltere dominantly dark (brownish or greyish to almost black) 255

Note. Variable species are keyed both ways.

205 Notopleuron with only two strong bristles 206

— Notopleuron with three strong bristles 226

Note. In two species the middle bristle of the three strong bristles is shorter and weaker than the other two. These species are keyed both ways.

206 Vein Sc reaches R1, although last quarter may be a little faint 207

— Vein Sc clearly ending before reaching R1 (in some cases the whole of Sc is obscure)... 213

Note. Variable species are keyed both ways.

207 Dorsal face of epandrium conspicuously shortened (fig. 428). Wing membrane clearly brownish grey to naked eye (when viewed against a white background)..... return to 191

— Dorsal face of epandrium little, if any, shortened (figs 426, 439–441). Wing membrane frequently (but not always) only slightly greyish 208

208 Costa reaching about half the length of wing 209

— Costa only reaching about a third of length of wing (fig. 450)..... 216

209 Anal tube clearly longer than dorsal face of epandrium (fig. 426)..... return to 188

— Anal tube subequal to or shorter than dorsal face of epandrium 210

210 Tip of penis abruptly narrowed to form an up-curved hairy lobe opposed to the slightly down-curved posterior lobe of left side of hypandrium (fig. 439). Wing membrane usually clearly smokey to naked eye (when viewed against a white background) ..... **breviterga** (Lundbeck)
Widespread in British Isles. v–xi.

— Tip of penis not narrowed in this way. Wing membrane usually only very pale grey to almost colourless 211

211 Terminal hairs of proctiger a little, but distinctly, more robust than hairs of cerci (figs 440–441). A short bristle between the two strong bristles on notopleuron (even when quite short it is still longer and more robust than adjacent hairs of dorsum) 212

— Terminal hairs of proctiger at most as robust as those on cerci. Any hairs between two strong bristles on notopleuron are no stronger than adjacent hairs on dorsum 292

Note. If hairs below basal half of hind femur are clearly longer than those of antero-ventral row of apical half, and legs are predominantly yellow return to 193.

212 Postero-ventral extremity of left side of epandrium somewhat square-ended (fig. 440). All legs greyish brown throughout. Palps darkened ..... **tenebricola** Schmitz
Devon. Ireland: Kerry, Offaly. iii–iv, vi–x.

— Postero-ventral extremity of left side of epandrium more tapered (fig. 441). Legs brown to yellow-brown in part. Palps yellow to dirty yellow ..... **largifrontalis** Schmitz
Scotland: Inverness. vi.

213 A notopleural cleft present above and in front of the anterior notopleural bristle (nc in fig. 401) 214
— No notopleural cleft present 215
214 Legs dark to almost black. Palps dark. Hypopygium as fig. 446..... **brevicostalis** (Wood)
Widespread in British Isles. iii–xi.
— Legs brown to yellowish brown. Palps yellow. Hypopygium otherwise ..... return to 156
215 Pre-ocellar bristles clearly closer together than upper supra-antennals, and lower supra-antennals also well separated (fig. 445). Hypopygium as fig. 458 .... **perdistans** (Schmitz)
Suffolk. viii.
— Pre-ocellars as far apart or further apart than upper supra-antennals, and lower supra-antennals even closer together than latter. Hypopygium otherwise 216
216 Terminal hairs of proctiger at most as robust as hairs on cerci 217
— Terminal hairs of proctiger at least a little, but distinctly, more robust than hairs of cerci 219
217 Lower faces of labella with only a few scattered spines. Costa only about one-third of wing length and costal cilia relatively short (fig. 449). Hypopygium as fig. 447 ..... **brevior** (Schmitz)
Surrey. vii.
— Lower faces of labella with dense fields of short, pale spines. Costa at least two-fifths of wing length and costal cilia longer. Hypopygium otherwise (figs 442–444) 218
Note. If neither seems to apply proceed to couplet 219.
218 Three options:—
— Hypopygium as fig. 442 ..... **collini** (Wood)
Cambs, Hereford, Kent, Oxford. iv–v, vii–ix.
— Hypopygium as fig. 443 ..... **latior** Schmitz
Widespread in England. iii–ix.
— Hypopygium as fig. 444 ..... **sylvatica** (Wood)
Widespread in British Isles. iv–x.
Note. If none of these fits proceed to couplet 219.
219 Posterior lobes of hypandrium abbreviated (fig. 448)..... **abernethae** Disney
Scotland: Inverness. v.
— Posterior lobes of hypandrium well developed, especially that of left side (figs 451, 453–454)..... 220
220 Costa only about one-third of wing length (fig. 450), sometimes as much as two-fifths. Lower faces of labella with dense fields of short, pale spines. Hypopygium as fig. 451. (Hind femur as fig. 452)..... **berndseni** (Schmitz)
Widespread in England. iv–ix.
— Costa almost reaching middle of wing. Lower faces of labella usually (but not in all cases) with only sparsely scattered spines. Hypopygium otherwise..... 221
221 All femora dominantly yellowish, apart from tip of hind femur. Posterior lobe from right side of hypandrium clearly shorter than one from left side 222
— All femora dominantly brown or greyish brown, or if yellowish the two posterior lobes of hypandrium are subequal in length 225
222 Labella somewhat enlarged (the two together having a greater diameter than a third antennal segment) and with numerous short, pale spines on lower faces. Hypopygium as fig. 453..... **nigrescens** (Wood)
Hereford. ix.
— Labella smaller and with only a few scattered, short spines below. Hypopygium otherwise 223
223 Hairs of lower face of posterior lobe of left side of hypandrium relatively long and downcurved (fig. 392)..... return to 152
— Hairs of posterior lobe of left side of hypandrium are shorter and directed rearwards (fig. 454) and often sparse or absent at rear margin 224
224 Anterior pair of hairs on scutellum are clearly longer and more robust than hairs on scutum (even though clearly shorter and weaker than posterior pair of bristles on scutellum). Palps pale brown with only the terminal bristle long, and even this is shorter than maximum width of palp..... return to 157
— Anterior pair of hairs on scutellum are, at most, only as robust as hairs on scutum. Palps yellowish with three (or more) bristles which are a little longer than maximum width of palp. (Hypopygium as fig. 454)..... **hayleyensis** Disney
Cambs, Cheshire. vi–viii.

225 Left side of epandrium with less than twenty hairs (fig. 456) (Hind femur as fig. 455)..... **badia** Schmitz
Widespread in England. Merioneth. Scotland: Inverness. Ireland: Offaly. v–x.

— Left side of epandrium with more than twenty hairs (fig. 398) ..... return to 159

226 Hind femur largely yellow (apart from dark apex) 227

— Hind femur brown to almost black, even if paler in basal half (or more)..... 236

Note. Variable species are keyed both ways.

227 Dorsal face of epandrium only half length, or less, the length of the lower margin of left side (figs 459 and 462) 228

— Dorsal face of epandrium clearly not as short as this in relation to length of lower margin of left side 229

228 Anal tube clearly longer than dorsal face of epandrium (fig. 459)..... **lata** (Wood)
Widespread in British Isles. v–x.

— Anal tube subequal in length to dorsal face of epandrium..... 229

Note. If first lead applies but hypopygium resembles fig. 462 try couplet 238.

229 Anal tube shorter (with cerci being at most only three times their breadths) 230

— Anal tube longer (with cerci being more than three times their breadths), as in figs 460–461 234

230 Dorsal half of epandrium without hairs and left side with a somewhat broadly-rounded postero-ventral corner, which is pale and extended rearwards (fig. 457)... **hilaris** Schmitz
Cambs, Kent, Hants, Herts, Leics, Sussex, Warwicks. v–viii, x.

— Dorsal half of epandrium with hairs present and left side with postero-ventral corner narrower and less well developed (figs 237 and 442)..... 231

231 Labella with few, if any, short spines on lower faces..... 232

— Labella with numerous short, pale spines on lower faces..... 233

232 Wing membrane pale grey to almost colourless (viewed with naked eye, or hand lens, against a white background). Postero-ventral margin of right side of epandrium (visible from left side also) distinctly concave (fig. 434) ..... return to 194

— Wing membrane distinctly grey to brownish grey. Postero-ventral margin of right side of epandrium convex ..... return to 171

Note. If anterior third, or more, of epandrium is whitish, proceed to 254.

233 Hypopygium as fig. 237..... return to 26

— Hypopygium as fig. 442..... return to 218

234 Costal cilia at most as long as inner branch (R2+3) of fork of vein 3 ..... return to 190

— Costal cilia a little, but distinctly, longer than inner branch of fork of vein 3 235

235 Labella with few, if any, short pale spines on lower faces. Top of thorax and at least abdominal tergite 6 yellowish. Hypopygium as fig. 460 ..... **eisfelderae** Schmitz
N. Yorks. viii.

— Labella with dense fields of short, pale spines on lower faces. Top of thorax and all abdominal tergites dark brown to blackish. Hypopygium on fig. 461..... **lutescens** (Wood)
Cumbria, Hants, Hereford, Norfolk, Oxford, Suffolk. viii, x–xi.

Note. If thorax is dark and labella have very few spines below, try couplet 169.

236 Dorsal face of epandrium at most only half length of lower margin of left side (fig. 459).... return to 228

— Dorsal face of epandrium clearly more than half length of lower margin of left side.... 237

237 Dorsal half of epandrium without hairs (fig. 457)..... return to 230

— Dorsal half of epandrium with at least two hairs..... 238

238 Anal tube very long relative to length of epandrium (fig. 462). Antial bristles clearly more distant from antero-laterals than from upper supra-antennals fig. 463). (Labella large and with numerous short, pale spines on lower faces) ..... **minor** (Zetterstedt)
Widespread in England. Merioneth. Ireland: Offaly. v–ix.

— Anal tube shorter relative to length of epandrium. Antial bristles normally either plainly closer to antero-laterals than to upper supra-antennals or these bristles approximately equidistant..... 239

239 Vein Sc well developed and tip fuses with R1 (as in fig. 507)..... 240

— Vein Sc free, ending before reaching R1 (or at least so pale distally that it appears to be free)..... 243

240 Penis (viewed from left side) is tapered and more or less opposed to posterior lobe of left side of hypandrium (fig. 464) ..... **vernalis** (Wood)
Widespread in British Isles. iii–viii.

— Penis not tapered in this manner 241

241 The right side of hypandrium bears a posterior lobe almost as large as that from the left side, and the most ventral hairs of left side of epandrium are subequal to those of cerci (fig. 465) ..... **coulsoni** Disney
Cumbria. ix.

— Only the left side of hypandrium bears a large posterior lobe, and the hairs of the left side of epandrium are shorter (figs 381 and 441) 242

242 Posterior lobe of left side of hypandrium bare (but finely wrinkled) (fig. 381) . return to 142

— Posterior lobe of left side of hypandrium with fine pale hairs on lower face (e.g. fig. 441) ..... return to 211

Note. If lobe has hairs and there are three strong bristles on notopleuron proceed to 243.

243 Hairs of left side of epandrium more robust than those on cerci 244

— Hairs of left side of epandrium at most as strong as those on cerci 245

244 Wing membrane brownish grey (when viewed against a white background with naked eye or hand lens). Lower faces of labella with numerous short pale spines. Hypopygium as fig. 472 ..... **verna** Schmitz
Berks, Cambs, Kent, Surrey, Sussex. Merioneth. iv, vi–vii, ix–x.

— Wing membrane almost colourless. Lower faces of labella at most with a few scattered spines. Hypopygium as fig. 473 ..... **angelicae** (Wood)
Cumbria, Durham, Hants, Hereford. Caerns. vi–vii, ix–xi.

Note. If labella with few spines and wing is brownish grey proceed to 255.

245 The right side of hypandrium bears a posterior lobe almost as large as that from left side (fig. 465) ..... return to 241

— Only the left side of hypandrium bears a large posterior lobe, and even this lobe may be reduced 246

246 Lower faces of labella with numerous, crowded, short, pale spines 247

— Lower faces of labella with few, if any, scattered spines 248

247 Epandrium with more than eleven hairs on left side; and posterior lobe of left side of hypandrium developed as a broad, conspicuous plate, which is hairless in distal half at least (fig. 466) ..... **clemonsi** Disney
Widespread in England. Scotland: Renfrew. iv–ix.

— Epandrium with less than eleven hairs on left side; and posterior lobe of left side of hypandrium reduced to a pale, tapered, narrow spike, which may appear to be absent when viewed directly from the side (due to its somewhat median position and pale colour) (fig. 467) ..... **oligoseta** Disney
Cambs, Cumbria, Surrey. Merioneth. vi–ix.

Note. If neither seems to apply, it could be *M. diversa* without hairs on mesopleuron (see couplet 66).

248 Posterior lobe of left side of hypandrium apparently not developed (fig. 468). **unwini** Disney
Cambs. viii.

— Posterior lobe of left side of hypandrium clearly well developed (e.g. figs 381 and 471) . 249

249 Posterior lobe of left side of hypandrium bare on lower face (which, however, is finely wrinkled) (fig. 381) ..... return to 142

— Posterior lobe of left side of hypandrium with fine, usually pale, hairs on lower face ... 250

250 Palps brown. All legs dominantly brown or greyish brown 251

— Palps yellowish. At least front legs extensively yellowish 252

251 Anal tube relatively short and postero-ventral extremity of left side of epandrium more drawn out behind (fig. 469). The hairing of abdominal venter extends more up the sides, especially on segments 5 and 6 ..... **abdita** Schmitz
Tyne & Wear. Scotland: Midlothian. i, x.

— Anal tube relatively long and postero-ventral extremity of left side of epandrium less drawn out behind (fig. 470). The hairing of venter largely restricted to median ventral band ..... **bovista** (Gimmerthal)
Cambs, Norfolk, Surrey, Sussex, Warwicks. Ireland: Offaly. vii–viii, x.

252 Terminal hairs of proctiger distinctly stronger than hairs of cerci (fig. 471) . **tarsalis** (Wood)
Widespread in British Isles. iv–xi.

— Terminal hairs of proctiger only about as strong as hairs on cerci or finer (figs 474–475) 253

253 Fore metatarsus subequal in length to segments 2–4. Wing membrane almost clear, with thin veins pale grey. Hypopygium as fig. 474 ..... **uliginosa** (Wood)
Cambs, Hereford, Surrey. vii–x.

— Fore metatarsus only a little, if any, longer than segments 2–3. Wing membrane somewhat to clearly greyish or brownish grey (when viewed against a white background with naked eye or hand lens) and thin veins dark grey or brownish grey (being plainly visible with a × 10 hand lens) 254

254 Fore tarsal segments somewhat stout (segment 3 having its width about half its length). Hypopygium as fig. 427, and always dark (apart from yellowish anal tube). return to 194

— Fore tarsal segments more slender (segment 3 having its width only about one-third of its length). Hypopygium as fig. 475, and typically (but not always) having anterior half, or more, of epandrium whitish in colour ..... **albicaudata** (Wood)
Berks, Cumbria, Hants, Hereford, Suffolk, Brecon. Scotland: Inverness, Midlothian. v, vii–viii, x.

255 Terminal hairs of proctiger distinctly a little, to conspicuously, more robust than strongest hairs of cerci 256

— Terminal hairs of proctiger at most only indistinctly more robust than strongest hairs on cerci, usually weaker or subequal in thickness 264

Note. Borderline species are keyed both ways.

256 Cerci longer than length of dorsal face of epandrium (figs 462 and 476). (Costal cilia short, being subequal to or shorter than inner branch (R2+3) of vein 3. Labella somewhat enlarged and densely spinose on lower faces. Notopleuron with 3 bristles) 257

— Cerci subequal to or shorter than dorsal face of epandrium 258

257 Legs entirely very dark brown in colour. Palps brown. Hypopygium as fig. 476 ..... **melanostola** Schmitz
Cumbria, N. Yorks. Scotland: Perths. v–vi, ix–x.

— At least front legs in part yellowish grey. Palps yellow to dusky yellow. Hypopygium as fig. 462 ..... return to 238

258 All legs strongly pigmented, dark brown in colour. Wing clearly smokey to naked eye (when viewed against a white background). Palps dark brown. Notopleuron with three bristles. Hypopygium as fig. 477 ..... **mallochi** (Wood)
Widespread in Great Britain. iii–iv, vi–ix.

— Legs, at least in part, yellowish to yellowish grey-brown in most cases (but occasionally somewhat dark). Wing paler grey to almost colourless. Palps yellow to medium brown. Notopleuron with only two bristles. Hypopygium otherwise 259

Note. If neither seems to apply try couplet 264.

259 Hairs below basal half of hind femur longer than those of antero-ventral row of outer half 260

— Hairs below basal half of hind femur at most as long as those of antero-ventral row of outer half 264

260 Each cercus with more than ten hairs. A notopleural cleft present in front of anterior notopleural bristle (fig. 401) ..... return to 156

— Each cercus with less than ten hairs. No notopleural cleft present 261

261 Labella with dense fields of short, pale, spines on lower faces. Posterior lobes of hypandrium vestigial (figs 448 and 478) 262

— Labella with at most only a few scattered spines on lower faces. At least the posterior lobe of left side of hypandrium is well developed 263

262 Epandrium with fewer hairs on left side, and most of these are more robust than hairs of cerci (fig. 478) ..... **gregaria** (Wood)
Berks, Kent, Hereford, Surrey. Scotland: Inverness. vi–viii.

— Epandrium with more numerous hairs, all of which are finer and are at most only as robust as those of cerci (fig. 448) ..... return to 219

263 Legs dominantly yellowish. Hypopygium as fig. 392 ..... return to 152

— Legs dominantly brownish. Hypopygium as fig. 456 ..... return to 225

264 All femora dominantly yellowish, apart from dark apex of hind femur 265

— All femora somewhat pigmented, ranging from yellowish grey to blackish brown 268

265 Costal cilia of section 3 of costa clearly shorter and weaker than bristles on axillary ridge of wing 266

— Costal cilia of section 3 of costa at least as strong as bristles of axillary ridge 268

266 Labella simple with only a few isolated, short, pale spines below. Hypopygium as fig. 434 ..... return to 194

— Labella somewhat enlarged and with dense fields of short, pale, spines below 267

267 Anal tube shorter (fig. 479). Only two bristles on notopleuron. Vein Sc more or less straight, but weakly developed and fading in outer half. (the pair of submarginal hairs near hind margin of hypandrium are at least as robust as hairs of epandrium) . . **surdifrons** (Wood)
Cambs, Hants, Hereford, S. Yorks. Scotland: Perths. Ireland: Offaly. vi–ix.

— Anal tube longer (fig. 429). Notopleuron with three bristles. Vein Sc well developed and curving rearwards, towards R1, in outer half. . . . . return to 190

268 The hair at base of vein 3 clearly longer than costal cilia of sections 2 and 3 of costa. The costa somewhat swollen where it is joined by humeral cross vein. Hypopygium as fig. 480. . . . . **parva** (Wood)
Widespread in British Isles. iv–viii.

— The hair at base of vein 3 clearly shorter than costal cilia of sections 2 and 3, or else absent. The costa not swollen by humeral vein. Hypopygium otherwise 269

269 Vein Sc well developed throughout and tip fusing with R1 (as in fig. 303). Notopleuron normally with only two bristles 270

— Vein Sc fades away in outer half so that tip does not reach R1. Notopleuron with two or three bristles 278

Note. Borderline cases are keyed both ways.

270 Labella somewhat enlarged and lower faces with dense fields of short, pale, spines 271

— Labella little, if any, enlarged and at most with only a few scattered short spines below 272

Note. If in doubt proceed to 272.

271 Antero-lateral bristles clearly positioned higher on frons than antials (fig. 424). Costa tends to be a little thickened from base to junction with tip of R1 and then very gradually getting thinner again. Hypopygium as fig. 481. Legs in part dirty yellowish . . **crassicosta** (Strobl)
Hereford, Norfolk. Scotland: Perths. vi–vii.

— Antero-lateral and antial bristles situated at about the same level on frons. Costa not thickened. Hypopygium as fig. 482. Legs usually (but not always) almost uniformly blackish brown . . . . . **fusca** (Wood)
Cornwall, Devon, Hereford, N. Yorks. Scotland: Midlothian. vi, viii.

Note. If neither applies proceed to 272.

272 Tip of penis abruptly narrowed to form an up-curved, hairy lobe opposed to the slightly down-curved posterior lobe of left side of hypandrium (fig. 439) . . . . . return to 210

— Tip of penis otherwise 273

273 Cerci at most as long as they are high and lower edge of shortened proctiger is inclined upwards (fig. 483) . . . . . **villicauda** Schmitz
Widespread in England. viii–xi.

— Cerci a little, to clearly, longer than high. Proctiger typically longer and lower edge not inclined in this way (but sometimes a little inclined in *M. coei*) 274

274 A dense tuft of hairs (visible with a × 20 objective) on ascending part of hypandrium just above base of posterior lobe of left side (t in fig. 484): these hairs being at least as long as those on penis. (A very dark species with blackish brown legs) . . . . . **coei** Schmitz
N. Yorks. Scotland: Inverness, W. Ross. iv, vi–viii.

— Without such a tuft of hairs in this position on hypandrium (but occasionally with a few hairs which are clearly shorter than those on penis) 275

275 Hairs below basal fifth of hind femur a little crowded compared with rest of hairs below basal half (fig. 485). A brownish-grey, rectangular, process extends ventrally from penis complex (p in fig. 486). Posterior lobe of left side of hypandrium well developed and with microscopic hairs of lower face more or less lying flat against it (fig. 486). **cinerea** Schmitz
Cambs, Surrey. Scotland: Inverness, Moray. vi–ix.

— Without this combination of characters 276

276 A somewhat short, pale, posterior lobe from left side of hypandrium (fig. 488). Hairs below basal half of hind femur at most only as long as those of antero-ventral row of outer half; and at the same time these basal hairs are not only a little thicker but they have somewhat finely tapered (usually somewhat curved) tips (fig. 487). The dorsal hair palisade of hind tibia is deflected onto anterior face, starting well before mid-point of tibia. Labella simple, with only a few scattered short spines below . . . . . **rupestris** Schmitz
N. Yorks. Scotland: Inverness. v–vii.

— Without this combination of characters 277

277 Postero-ventral corner of left side of epandrium more produced behind, and at least one hair towards lower margin is as robust as those on cerci (fig. 375). Basal half of hind femur yellowish . . . . . return to 124

— Postero-ventral corner of left side of epandrium not so strongly developed. All hairs on left side of epandrium a little less robust than those on cerci. Basal half of hind femur yellowish or brown 292

278 Abdominal venter with hairs restricted to segments 5 and 6 279

— Abdominal venter with hairs present on segments 3–6 (even though reduced in number on 3, and sometimes on 4 also) 280

Note. Variable species are keyed both ways.

279 Cerci about as long as high (fig. 491). (Notopleuron with three bristles. Labella simple, with only a few isolated short spines below) ..... **propinqua** (Wood)
Widespread in England. Dyfed. v–xi.

— Cerci clearly longer than high 280

280 Notopleuron with only two strong bristles 281

— Notopleuron with three strong bristles 286

281 Costal cilia about as long and at least almost as strong as bristles on axillary ridge of wing 282

— Costal cilia plainly shorter and weaker than bristles (or at least the strongest bristle) of axillary ridge 285

282 Vein Sc obscure. Labella somewhat enlarged and with dense fields of short, almost colourless spines on lower faces 283

— Vein Sc well developed and almost reaching R1. Labella simple and with only a few scattered short spines below 284

283 Costa at least half length of wing. Fore metatarsus somewhat thickened (the length being less than 5 × breadth). Hypopygium as fig. 492, with posterior lobe of right side of hypandrium being clearly shorter than that from left side ..... **frontalis** (Wood)
Cambs, Essex, Hereford, Oxford, Surrey, Warwicks. Ireland: Galway. vi–x.

— Costa clearly less than half length of wing. Fore metatarsus slender (the length being more than 7 × breadth). Hypopygium as fig. 493, with posterior lobes of hypandrium subequal in length ..... **maura** (Wood)
Cambs, Hereford, N. Yorks. Scotland: Renfrew. Ireland: Dublin. vii–ix.

284 Anal tube shorter (relative to length of dorsal face of epandrium fig. 374) 286

— Anal tube longer (fig. 313) 291

285 A notopleural cleft in front of anterior notopleural bristle (fig. 401), in middle of region devoid of hairs. Antial bristles clearly situated lower on frons than antero-laterals. Hypopygium as fig. 494 ..... **subnudipennis** (Schmitz)
Cambs, Essex. v–viii.

— No notopleural cleft present, there being a number of short hairs in front of the anterior notopleural bristle. Antial and antero-lateral bristles almost at same level on frons. Hypopygium otherwise ..... **rivalis** (Wood)
Hereford. vii.

286 Wing membrane somewhat greyish to naked eye (when viewed against a white background) and thin veins plainly visible at low magnifications (e.g. × 10) 287

— Wing membrane almost colourless to naked eye and thin veins obscure at low magnifications 289

287 Labella somewhat enlarged and with numerous short, pale spines on lower faces ..... return to 243

— Labella simple with only a few spines (< 30 on each) on lower faces 288

288 Epandrium with at least 12 robust hairs on left side (fig. 497) ..... **invernessae** Disney
Scotland: Inverness. v.

— Epandrium with less than 10 robust hairs on left side (e.g. figs 376 and 377) or hypopygium otherwise, clearly differing from fig. 497 ..... return to 124

289 Hairs below basal half of hind femur clearly longer than those of antero-ventral row of outer half ..... return to 252

— Hairs below basal half of hind femur shorter than those of antero-ventral row of outer half 290

290 Posterior lobe of left side of hypandrium bare (fig. 496). On hind tibia some of the hairs of the postero-ventral region of distal half are more spine-like than adjacent hairs and they are oriented so that they are almost perpendicular to the main axis of the tibia (fig. 495) ..... **erecta** (Wood)
Hereford. Scotland: Perths. v–vi.

— The narrow posterior lobe of the left side of hypandrium is hairy in the distal half at least (figs 369 and 370). Hind tibia without these modified hairs ..... return to 128

291 Smaller species, with wing length less than 1·5 mm. Hypopygium as fig. 313, with tips of strong hairs along lower margin of left side of epandrium straight. (Note. The degree of development of the posterior lobe of left side of hypandrium varies — fig. 313. It is thin and poorly sclerotised and therefore fragile. I have treated this variation as being intraspecific. Reared series could support or refute this hypothesis) ..... **latifrons** (Wood)
Widespread in British Isles. vi–x.

— Larger species, with wing length exceeding 1·5 mm. The tips of strong hairs along lower margin of left side of epandrium with twice-curved (S-shaped) tips..... **dipsacosa** Smith
Herts. vii.

Note. If neither seems to apply return to couplet 185.

292 Posterior lobe of left side of hypandrium bare below, but slightly fluted and with a crenellate hind margin (fig. 498)..... **analis** (Lundbeck)
Ireland: Co. Clare. vii.

— Posterior lobe of left side of hypandrium with microscopic hairs on lower face (visible with a × 20 objective) 293

293 Labella somewhat spinose below, especially at tips so that the short spines are evident in profile when viewed from above (figs 499 and 500). (Hypopygium as fig. 501)..... **spinolabella** Disney
Widespread in England. Scotland: Inverness. v–x.

— At most with half as many short spines on labella as in fig. 499 294

Note. The following six species are readily separated in the female sex in most cases, but can be extremely difficult to separate in the male sex. A useful character is the number of rectal papillae. These can frequently be observed in slide-mounted specimens using critical lighting and focussing, but are best observed in dissections of freshly killed specimens (see fig. 198). (The same applies to Dufour's mechanism in neck of crop in females). See also Appendix 2 (p. 41).

294 Knob of haltere yellow, contrasting with dark stem 295

— Knob of haltere darkened, being greyish or pale brownish to almost black 297

Note. Variable species are keyed both ways.

295 Wing length typically less than 1·5 mm (but can extend to 1·8 mm). Angle of fork of vein 3 typically large (fig. 514). Hypopygium as fig. 505. Only two rectal papillae. (Females with wings generally somewhat abbreviated — figs 512 and 513. Dufour's crop mechanism without postero-lateral lobes — fig. 511. With four rectal papillae). **longicostalis** (Wood)
Ubiquitous in British Isles. i–xii.

— Wing length typically more than 1·5 mm (but can be as little as 1·2 mm). Ange of fork of vein 3 typically more acute. With 2, 3 or 4 rectal papillae..... 296

Note. Females of *M. spinolabella* have a similar Dufour's mechanism to that of *M. longicostalis*, as in figs 518 and 519, but the wings are larger (fig. 510) and the haltere knob greyish yellow to dark.

296 Knob of haltere clear yellow. Hypopygium as fig. 506. (Females with costa somewhat thickened, fig. 507, and hind margins of abdominal tergites 3 an 4 projecting rearwards in middle as in fig. 509. Both sexes have four rectal papillae)..... **subtumida** (Wood)
Widespread in British Isles. iv–xi.

— Knob of haltere usually somewhat dusky yellow. Hypopygium similar (figs 502 and 503) or a little more elongate (fig. 520). (Females have a simple costa or else if somewhat thickened then haltere is clearly dark and abdominal tergites 3 and 4 have straight hind margins — fig. 508) 297

Note. *M. curvivenia* Schmitz, only known in the female sex, probably keys out here. It has the apical third of vein 4 strongly deflected anteriorly (fig. 523). It has not yet been recorded from Britain.

297 Vein Sc reaches R1 but does not fuse with it (fig. 490). Haltere knob always completely dark. Hypopygium as fig. 489. (Both sexes with four rectal papillae. Females with costa thickened as in *M. subtumida* — fig. 507)..... **tumida** (Wood)
Widespread in British Isles. i, v–xii.

— Vein Sc not only reaches R1 but fuses with it. Haltere knob ranges from dark to dirty yellow. Hypopygium may be similar but somewhat smaller..... 298

298 With 4 or 3 rectal papillae. Wings (fig. 521) typically 1·7 mm or more in length (but may be as short as 1·4 mm). (Hypopygium as fig. 520. Females with costa simple and abdominal tergites similar to those of *M. tumida* — fig. 508) ..... **pulicaria** (Fallén)
Widespread in British Isles. ii–xi.

— With only 2 rectal papillae (and only 2 in female also). Wings (fig. 522) usually less than 1·7 mm in length (but may be up to 2·0 mm) 299
Note. Some *M. tumida* specimens have the Sc completely fused to R1. These can be very difficult to separate from large, dark specimens of *M. pulicaria*.

299 Halteres with greyish knob. Wing membrane clear. Legs all greyish, but front legs somewhat yellowish. Hypopygium as fig. 503. (Female with abdominal tergite 4 represented by hairs only — fig. 504) ..... **zonata** (Zetterstedt)
Scotland: Perths, Ross & Cromarty. v–vii.

— Haltere knob ranging from dirty yellow to almost black. Wing membrane ranges from clear to distinctly grey tinged. Legs greyish yellow to very dark. Hypopygium as fig. 502. (Female with abdominal tergite 4 pigmented as the rest of tergites) ..... **dimidia** Schmitz
Widespread in Great Britain. v–ix.

Appendix 1 — Additions and corrections to Volume 10, Part 6

Page 14 (check list)
Before PHALACROTOPHORA add:—
OBSCURIPHORA Disney, 1986
sheppardi Disney, 1986
and in PHORA, before *praepandens,* add:—
penicillata Schmitz, 1920

Page 17 (key to genera)
Line 6:— for "antero-dorsal" read "near-dorsal"
After line 24, convert couplet 25 to a triplet by adding:—
— Vein Sc extends to vein 1 but is obscure near tip. Veins 1 and 3 closely approximated and subparallel (fig. 190) in contrast to the divergent veins of *Gymnoptera* and *Conicera* (fig. 189). Hind tibial bristles as fig. 194. ♂, third antennal segment subspherical (as in ♀, fig. 193) ..... **OBSCURIPHORA** (Vol. 10, Part 8, p. 40)

Page 20
Lines 9–10 and 13:— for "postero-dorsal" read "near-dorsal"

Page 25
Line 25:— for "antero-dorsally" read "near dorsally"
Line 30:— for "antero-dorsal" read "near-dorsal"

Page 28
After line 3 add:—

Genus **Obscuriphora** Disney
(Figs 190–195)

Only one species is known in this genus. Its natural history is unknown.
— ♂, hypopygium as figs 191–192. Tarsal claws greatly reduced on front legs (fig. 195). ♀, proboscis somewhat elongated and frons prolongated below (fig. 193). Tarsal claws normal on front legs ..... **sheppardi** Disney
Oxford, Warwickshire. vi–ix.

Page 30
After line 19, convert couplet 13 to a triplet by adding:—
— Appendage of right side of epandrium with slightly convex distal margin and bearing conspicuous tuft of hairs dorsally near tip (figs 187–188) ..... **penicillata** Schmitz
Scotland: Inverness. vi.

Appendix 2 — The *Megaselia pulicaria* complex

The *Megaselia pulicaria* complex caused the greatest difficulties in the preparation of this Handbook (Disney, 1980a, 1983b). The keys above include two species new to Britain, *M. rupestris* and *M. dimidia*, and *M. spinolabella* new to science. In addition *M. curvivenia* is deleted from the British List and the following species are synonymised with other species:— *M. hybrida, M. longifurca, M. eupygis, M. angustina* and *M. clementsi*. This appendix not only justifies these conclusions but lays out the problems posed by this complex.

Preliminary characterisation of the complex

The *Megaselia pulicaria*-complex is essentially a residual dustbin after other species have been keyed out. Consequently it is mainly characterised by negative characters. Previous keys (e.g. Lundbeck, 1922) only really work for females when they are highly distinctive. What is required initially, therefore, is a preliminary characterisation of the male sex. This follows:—

Labella not enlarged and usually with only a few short, pale spines below; pre-ocellar bristles at least as far apart as upper supra-antennals and usually further apart; antials between antero-laterals and upper supra-antennals; mesopleuron bare; notopleuron with only two bristles and without a notopleural cleft (see fig. 401); scutellum with an anterior pair of fine hairs and a posterior pair of bristles; vein Sc strongly developed throughout its length and reaching R1, with which it normally fuses; costal index $>0{\cdot}42$; costal cilia $>0{\cdot}1$ mm long; hair at base of vein 3 weak or absent; epandrium with hairs which at most are as strong as hairs on cerci; terminal hairs of proctiger at most as strong as hairs on cerci; cerci longer than high; anal tube not as long as dorsal face of epandrium, which is not shortened; penis not abruptly narrowed before tip; spines of hind-tibial apical comb all simple.

This serves to eliminate the following species. *M. sinuata* Schmitz has bifid spines in the hind-tibial comb (fig. 236) as well as spinose labella. *M. apophysata* Schmitz, *M. crassicosta* (Strobl), *M. feronia* Schmitz, *M. furcatipennis* Schmitz and *M. fusca* (Wood) all have enlarged spinose labella. A newly recognised species, *M. spinolabella* sp. nov., is described below. It has somewhat spinose labella (figs 499–500) which, however, are not obviously enlarged. *M. breviterga* (Lundbeck) has a narrowed apical part of the penis (fig. 439); *M. villicauda* Schmitz has the cerci higher than long (fig. 483); *M. prodroma* (Lundbeck) has a notopleural cleft (fig. 401). *M. largifrontalis* Schmitz and *M. tenebricola* Schmitz have the hairs of the proctiger a little more robust than those on cerci (figs 440–441), and a short bristle between the longer anterior and posterior bristles on the notopleuron. Numerous specimens in museum collections have been found to be misidentified, having been assigned to other species of the *M. pulicaria*-complex in error or else having been assigned to one of the above species, despite lacking the characters indicated.

Removal of further species with distinctive males

Megaselia analis (Lundbeck) is a species that has been confused with others through over-reliance on the constancy of the angle of the fork of vein 3. It is now clear that the most reliable recognition character is the completely bare lower face of the posterior process of the left side of the hypandrium (fig. 498).

M. coei Schmitz is not only a very dark species but it has a distinct tuft of fine hairs on the left side of the hypandrium. These hairs (visible with a × 20 objective) are at least as long as those on the penis (fig. 484 t).

M. cinerea Schmitz not only has the hairs below the basal half of the hind femur somewhat crowded in the basal fifth (fig. 485); it also has a somewhat longer than normal, brownish-grey, rectangular process extending ventrally from the penis complex (fig. 486 p).

M. rupestris Schmitz has a very short posterior process from the left side of the hypandrium (fig. 488); and has somewhat robust hairs below the basal half of the hind femur, with finely tapered tips (fig. 487).

Having eliminated these four species it becomes apparent that all remaining species have very few short spines on the lower faces of the labella, at most half the density of those in fig. 499. This allows recognition of an undescribed species, *M. spinolabella* sp. nov., which is described in detail below. Its spinose labella serve to eliminate it at this stage.

Partial removal of species with distinctive females

M. tumida (Wood) and *M. subtumida* (Wood) have females with a somewhat thickened costal vein (fig. 507). The former has uniformly dark halteres and straight hind margins to abdominal tergites 3 and 4 (fig. 508). *M. subtumida* always has a yellow knob to the haltere and abdominal tergites 3 and 4 have hind margins with a median convexity (fig. 509). Most males of *M. tumida* (as well as females) have the subcosta reaching R1 but not fusing with it (fig. 490). This will serve to distinguish such males from the rest of the complex. Otherwise *M. tumida* males are very similar to large specimens of *M. pulicaria* with dark halteres (cf figs 489 and 520).

M. subtumida males resemble those of *M. longicostalis* (Wood) and specimens of the rest of the complex with unusually pale halteres. However, the wing length is typically more than 1·5 mm (but can be as little as 1·2 mm). In *M. longicostalis* the male wings are usually less than 1·5 mm (but can reach 1·8 mm). *M. longicostalis* females have the wings variably abbreviated (figs 512 and 513) and the angle of the fork of vein 3 large or, occasionally, this vein not forked (fig. 513).

M. zonata (Zetterstedt) females are immediately recognised by abdominal tergite 4 being unpigmented, represented by hairs only (fig. 504). The males are virtually indistinguishable from *M. dimidia* Schmitz (cf figs 502 and 503).

It is evident that *M. tumida* males with the Sc vein completely fused to R1, males of *M. subtumida*, larger males of *M. longicostalis* and *M. zonata* males can easily be confused with remaining members of the complex.

New data relating to the rest of the complex

The taxonomic value of Dufour's crop mechanism in the females of some Phoridae has been reported elsewhere (Disney, 1987a); including the simple mechanism in *M. longicostalis* (fig. 511) contrasting with those with postero-lateral lobes, such as in *M. subtumida* and *M. sinuata* (fig. 517). The only other species in the complex found to have a simple, rounded posterior end is *M. spinolabella* sp. nov. (figs 518 & 519). The females, however, are readily separated on wing size (cf figs 510 and 512 & 513).

Whilst dissecting flies in order to examine the crop it was noticed that the number of rectal papillae (fig. 198) was not always four. The possible taxonomic value of rectal papilla number was investigated. Table I presents the results for genera other than *Megaselia*. These data suggest that the normal number of rectal papillae is four, but in some of the smaller species the number is two, one and even possibly none in *Chonocephalus* spp., in which examination of numerous slide-mounted specimens revealed no evidence of papillae being present Table 2 presents data for species of *Megaselia*. Again four appears to be the normal number of papillae. However in some there are only 3 or 2 papillae. In *M. zonata* both sexes have only two papillae. In *M. brevicostalis, M. breviterga, M. ciliata, M. longicostalis* and *M. tarsalis* there is a sexual dimorphism, with the male having the fewer papillae in each case. In all species in which several specimens were dissected the number was found to be constant for the species and sex concerned, with the exception of *M. pulicaria* sensu lato, *M. sinuata* and *M. spinolabella*.

In the case of *M. sinuata* exhaustive studies and measurements have failed to reveal any external morphological correlates of these differences in papilla number. The

simplest interpretation, therefore, is that this species exhibits a polymorphism for papilla number.

In the case of *M. pulicaria* sensu lato the situation has proved to be different. Firstly a number of reared series are available from spider egg sacs (Disney & Evans, 1980, and unpublished data). These comprise 59 males and 84 females obtained from 33 separate batches. By re-mounting specimens from 13 of these batches it was found that both males and females consistently had four rectal papillae. By contrast, examination of specimens obtained in emergence traps set over raspberry stools (Disney & Gunn, 1980; Disney, 1980a) showed that both males and females consistently had only two rectal papillae. These biological data suggest that rectal papilla number could be of significance at the species level.

Detailed examination and measurements of external morphological features has revealed no correlates of specimens having three as opposed to four papillae. For example the mean wing length is 1·79 (SD ± 0·15) in 42 males with four papillae and 1·71 (SD ± 0·16) in 9 males with three papillae, the difference not being significant ($p > 0·05$). However a plot of wing length for 82 males whose rectal papilla number was known (fig. 526) is distinctly bimodal. Comparison of wing lengths between those with four papillae and those with two show that the latter have a mean length of 1·61 mm (SD ± 0·18). This difference is significant ($p < 0·01$). Typical wings are illustrated in figs 521 & 522. Also the hypopygia of the two segregates whilst very similar are a little different (cf. figs 502 and 520). The simplest interpretation is that specimens with four or three papillae (in both sexes) belong to one species and those with two papillae belong to a second species. The first of these species more closely resembles the lectotype female of *M. pulicaria* than do those specimens with only two papillae. However it is not possible to make a definitive decision without knowing the rectal papilla number of the lectotype.

The species with two papillae appears indistinguishable from a cotype male of *M. hybrida* Schmitz. However the present knowledge of variation in traditional characters (costal index, costal ratios, haltere colour, palp colour, etc.) used to distinguish species raises serious doubts about the status of various segregates named as species in the past (Disney, 1980a). Unless reliable characters can be discovered which distinguish at least one sex from related species then it would seem more sensible to sink dubious species as synonyms. For this reason *M. hybrida* is being treated as a synonym of *M. dimidia* Schmitz. Likewise *M. eupygis* Schmitz and *M. angustina* Schmitz are being treated, along with *M. clementsi* Disney, as synonyms of *M. pulicaria*.

Examination of the female cotype of *M. arquata* Schmitz, however, indicates a distinct species. It has a single, median, pigmented abdominal sternite 8 with several long hairs posteriorly (fig. 524). This contrasts with the paired, laterally situated, poorly-pigmented sternite patches (each bearing 3–4 longish hairs) found in *M. pulicaria* and *M. dimidia* (fig. 525). It has not been possible to examine a male of *M. arquata*. The female's wing length exceeds 2·5 mm.

The poorly characterised *M. curvivenia* Schmitz is only known in the female sex. It is probably a valid species, recognisable from the strong anterior deflection of the apical third of vein 4. The wing of a paratype is illustrated in fig. 523.

Notes on individual species

Megaselia curvivenia Schmitz
(Fig. 523)

Megaselia curvivenia Schmitz, 1928: 35. Holotype ♀, FINLAND. Paratype wing examined.

Colyer added this species to the British List (see Smith, 1977). His specimen from Nethy Bridge has a label attributing the identification to Schmitz in 1958. I have remounted this specimen on a slide and compared its wing with the wing of a paratype

of *M. curvivenia*. If the marked anterior deflection of vein 4 in its distal third (fig. 523) is diagnostic for *M. curvivenia* then Colyer's specimen is not this species. Due to its damaged state it is not possible to determine its true identity.

In the absence of authenticated specimens of *M. curvivenia* from Britain it is removed from the British List.

Megaselia dimidia Schmitz, 1926
(Figs 502, 522, 525)

Megaselia dimidia Schmitz, 1926: 134. Holotype ♂, SWITZERLAND. Not examined. Pragmatype ♂, SCOTLAND. Examined.
Megaselia hybrida Schmitz, 1939: 187. Holotype ♂, PORTUGAL. Cotype ♂ examined. **Syn. nov.**
Megaselia pulicaria auctt. nec (Fallén, 1823). Misidentifications.

This species is widely distributed in Britain but has been persistently misidentified as *M. pulicaria*. It represents an addition to the British List.

M. hybrida is synonymised with this species, not *M. pulicaria*, on the basis of size.

The species has previously been recorded from Switzerland, Spain, Poland and Portugal.

Certain identification depends on rectal papilla number. This cannot be determined for pinned material.

Megaselia longicostalis (Wood, 1912)
(Figs 505, 511–514)

Aphiochaeta longicostalis Wood, 1912: 171. Lectotype ♀, ENGLAND. Examined.
Aphiochaeta brevipennis Lundbeck, 1922: 388. Syntype ♀♀, DENMARK. Not examined.

I have remounted a female from Wood's series on a slide and designated it the lectotype. Despite having been on a pin for seventy years, by chance both Dufour's crop mechanism and the rectal papillae have survived intact and can be readily observed.

Megaselia pulicaria (Fallén, 1823)
(Figs 515–516, 521–522)

Trineura pulicaria Fallén, 1823: 6. Lectotype ♀, SWEDEN. Examined. Pragmatype ♂, ENGLAND. Examined.
Phora monochaeta Strobl, 1892: 202. Lectotype ♂, AUSTRIA. Examined.
Phora angusta Wood, 1909: 193. Lectotype ♂, ENGLAND. Examined.
Aphiochaeta peregrina Malloch, 1912: 492. Holotype ♂, U.S.A. Examined.
Aphiochaeta longifurca Lundbeck, 1921: 141. Holotype ♀, DENMARK. Examined. **Syn. nov.**
Megaselia sinuata auctt. nec Schmitz, 1926: Misidentifications.
Megaselia eupygis Schmitz, 1929: 125. Holotype ♂, GERMANY. Not examined (has been destroyed). **Syn. nov.**
Megaselia angustina Schmitz, 1936: 77. Holotype ♂, CANARY ISLANDS. Not examined. **Syn. nov.**
Megaselia setulifera Smith, 1977: 165. Holotype ♀, ENGLAND. Examined.
Megaselia clementsi Disney, 1978: 153. Holotype ♀, ENGLAND. Examined. **Syn. nov.**

This is the species that breeds in spider egg sacs (Disney & Evans, 1980). I also have specimens reared from a dead snail by Mr R. E. Evans. It is widespread in the British Isles.

The large fork of vein 3 of *M. longifurca* appears to be merely one extreme of a continuous variation in the size of the fork. Of particular interest is a specimen which has the fork of the right wing more than twice the size of that of the left wing. In the absence of any character by which *M. longifurca* can be distinguished from *M. pulicaria* the former name is synonymised with the latter.

Certain identification includes knowledge of rectal papilla number.

Megaselia rupestris Schmitz, 1934
(Figs 487–488)

Megaselia rupestris Schmitz, 1934: 30. Holotype ♂, AUSTRIA. Not examined.

This species was first collected in Britain on Malham Moor, North Yorkshire, when two males were reared from a piece of rotting wood. They were assigned to the "*M. angusta*-complex" and it was noted the "ventral plate is rather short" (Disney, 1980b). It has subsequently been collected at Aviemore and Loch Garten in Scotland. These specimens represent the first British records. The species has previously been recorded from Austria, Czechoslovakia and Spain.

Megaselia spinolabella **n. sp.**
(Figs 499–501, 510, 518–519)

Male. Frons dark and broader than high. Pre-ocellar bristles further apart than upper supra-antennals. Antial bristles about same level as upper supra-antennals and antero-laterals but a little closer to latter. Lower supra-antennals a little weaker and shorter than upper pair but still robust. Third antennal segment and arista brown. Palps dirty yellow to yellowish brown with 5–7 strong bristles. Labella a little enlarged and with numerous short pale spines below (fig. 499), which tend to be evident disto-laterally when viewed from above (fig. 500). Labrum pale greyish brown.

Thorax brown, being almost black on top. Mesopleuron bare. Notopleuron with only two bristles. Scutellum with an anterior pair of minute hairs and a posterior pair of bristles.

Abdomen with dark brown tergites and greyish venter. The latter with hairs on segments 3–6. Hypopygium as fig. 501, and largely brown with yellow brown anal tube. Rectum with 2 or 4 papillae.

Wing length 1·7–1·95 mm. Costal index 0·51–0·55. Costal ratios 2·1–3·3: 1·3–2·1: 1. Costal cilia 0·13–0·17 mm long. Sc strong and reaching R1. Base of vein 3 with or without a minute hair. Axillary ridge with 4 or 5 bristles. Membrane distinctly brownish grey tinged. All veins brownish. Haltere with greyish brown stem and dirty yellowish to brown or even greyish knob.

Legs greyish brown, with basal half of hind femur always paler and fore legs more yellowish, especially distal halves of coxae. Hairs beneath basal half of hind femur not as strong or as long as those of antero-ventral row in distal third. Postero-dorsals of hind tibia differentiated but not conspicuously so.

Female: A little larger but otherwise very similar to male except it has only a few pale spines on labella. Costal index up to 0·57. Wing as fig. 510 and up to 3 mm in length. Up to 6 axillary bristles. Abdominal segment 8 with sternum of *M. dimidia* type (fig. 525). Dufour's crop mechanism without postero-lateral lobes (figs 518–519).

Holotype ♂, England: Sike Wood, Ripon Parks, North Yorkshire (Grid reference 44/307744) 6/8 May 1981 (*Disney*) (in University Museum of Zoology, Cambridge).

Paratypes 1♀ same data as holotype. 10 ♂♂ 1♀ Malham Tarn Estate, North Yorkshire May, June, August and September 1975–1985. 3 ♂♂ Loch Garten, Inverness, August 1981. 3 ♂♂ Hayley Wood, Cambs. June and August 1980. 1 ♂ 1 ♀ Carrock Wood, Upper Teesdale (Grid ref. 35/867288) June 1981. 1 ♀ Durham, September 1976. 1 ♀ Moor House (Grid ref. 35/757328) August 1976. 1 ♂ Bolton, Lancashire, October 1984. 1 ♂ Upton Broad, Norfolk, May 1976. 1 ♂ New Forest (Grid ref. 41/399031) Aug./Sept. 1984.

Discussion

The use of rectal papilla number as a taxonomic character at the species level would appear to be novel. Diptera typically have 4 rectal papillae (Dufour, 1851; Richards & Davies, 1977), although Dufour reported 5 or 6 in some Nematocera and Brachycera,

only 3 in one dolichopodid, and only 2 in a scenopinid, an oestrid and a single tachinid species. Jobling (1987) depicts 6 in the female of *Chrysops caecutiens* L. (Tabanidae) and in the female of *Simulium* sp. (Simuliidae). Miall & Hammond (1900) reported only 2 in a chironomid and Perfil'ev (1968) reported 2 in phlebotomine psychodids. Christophers (1960) reported sexual dimorphism in the culicid *Aedes aegypti* (Linn.), with 6 in the female and 4 in the male. Apart from a few orders with numerous papillae most other insect orders generally have 6 papillae (Richards & Davies, 1977). Dufour (1851) reported 4 papillae in Phoridae. The observations above suggest that this is the norm for the family, but numbers can be reduced to 3, 2 or 1 (and possibly to 0 in *Chonocephalus*). Furthermore, sexual dimorphism occurs in some species with the male, as in mosquitoes, having the smaller number. The number of papillae is generally constant for any particular species and sex. However it seems to be polymorphic in *M. sinuata, M. spinolabella* and *M. pulicaria.*

The use of rectal papilla number along with the form of Dufour's crop mechanism (Disney, 1987a and above) highlights the value of the gut in the solving of taxonomic

Table 1 Rectal papilla number in various Phoridae other than *Megaselia* species

Species	Number of rectal papillae	
	Males	Females
Anevrina curvinervis (Becker)	4	4
Anevrina thoracica (Meigen)	4	–
Anevrina urbana (Meigen)	4	–
Beckerina umbrimargo (Becker)	–	4
Borophaga irregularis (Wood)	4	–
Chaetopleurophora erythronota (Strobl)	4	4
Conicera dauci (Meigen)	4	4
Conicera floricola Schmitz	4	–
Conicera tarsalis Schmitz	4	–
Conicera tibialis Schmitz	–	4
Diplonevra florea (Fabricius)	–	4
Diplonevra funebris (Meigen)	4	4
Diplonevra glabra Schmitz	4	4
Diplonevra nitidula (Meigen)	4	4
Diplonevra pilosella Schmitz	4	4
Gymnophora arcuata (Meigen)	4	–
Gymnophora integralis Schmitz	–	4
Metopina galeata (Haliday)	2	–
Metopina oligoneura (Mik)	2	2
Obscuriphora sheppardi Disney	–	4
Phora atra (Meigen)	4	4
Phora tincta Schmitz	4	4
Pseudacteon formicarum (Verrall)	–	2
Puliciphora boltoni Disney	–	1
Puliciphora collinsi Disney	–	2
Puliciphora exachatina Disney	–	2
Puliciphora pulex Dahl	–	2
Puliciphora togata Schmitz	–	2
Spiniphora bergenstammi (Mik)	–	4
Triphleba antricola (Schmitz)	–	4
Triphleba distinguenda (Strobl)	4	4
Triphleba nudipalpis (Becker)	–	4
Triphleba opaca (Meigen)	–	4

Table 2 Rectal papilla number in *Megaselia* species

Species	Number of rectal papillae	
	Males	Females
M. abdita Schmitz	4	4
M. aequalis (Wood)	–	4
M. albicaudata (Wood)	–	4
M. altifrons (Wood)	4	–
M. berndseni (Schmitz)	–	4
M. bistruncata Schmitz	–	4
M. brevicostalis (Wood)	2	4
M. breviseta (Wood)	–	4
M. breviterga (Lundbeck)	3	4
M. ciliata (Zetterstedt)	2	4
M. conformis (Wood)	4	–
M. consetigera (Schmitz)	4	–
M. correlata (Schmitz)	–	4
M. dubitalis (Wood)	4	–
M. emarginata (Wood)	3	–
M. fusciclava Schmitz	4	–
M. fuscinervis (Wood)	4	–
M. fuscipalpis (Lundbeck)	4	–
M. giraudii (Egger)	4	4
M. hilaris Schmitz	2	–
M. latifemorata (Becker)	4	–
M. latior Schmitz	–	4
M. longicostalis (Wood)	2	4
M. lucifrons (Schmitz)	4	–
M. lutescens (Wood)	–	4
M. nigra (Meigen)	4	4
M. nigriceps (Loew)	–	4
M. paludosa (Wood)	2	–
M. pleuralis (Wood)	4	4
M. propinqua (Wood)	–	4
M. pulicaria sensu lato	2, 3 or 4	2, 3 or 4
M. pusilla (Meigen)	2	–
M. rupestris Schmitz	4	4
M. sinuata Schmitz	2, 3 or 4	2, 3 or 4
M. spinolabella Disney	2 or 4	4
M. stichata (Lundbeck)	–	4
M. subtumida (Wood)	4	4
M. sylvatica (Wood)	–	4
M. tarsalis (Wood)	2	4
M. tenebricola Schmitz	–	4
M. tergata (Lundbeck)	–	3
M. termitomyca Disney	2	–
M. tumida (Wood)	4	4
M. vernalis (Wood)	4	–
M. zonata (Zetterstedt)	2	2

problems at the species level. In other sibling species complexes use has been made of cytotaxonomy and enzyme differences. The gut can be examined more rapidly and more cheaply. The rectal papilla number in particular could be worth examining in some of these complexes.

With regard to the resolving of the taxonomic problems in the *M. pulicaria*-complex many of the conclusions arrived at above should be regarded as working hypotheses. In particular synonyms have been proposed whenever the characters previously used to recognise a species have been discovered to lie within the range of variation of another species and when, at the same time, no new characters have been discovered that allow recognition of the 'species'. Where alternative characters have been found, as in the form of sternite 8 of *M. arquata* females (fig. 524), then the species stand. Only the characters by which such species are recognised have changed.

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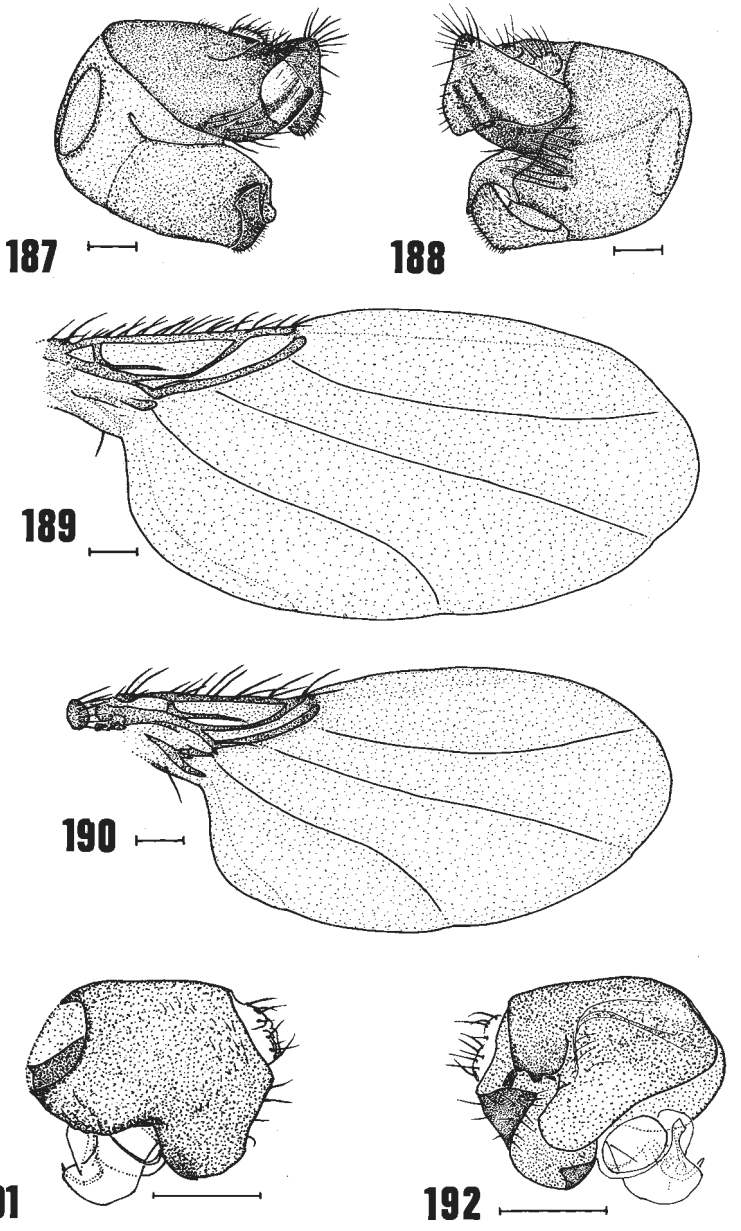
Figures

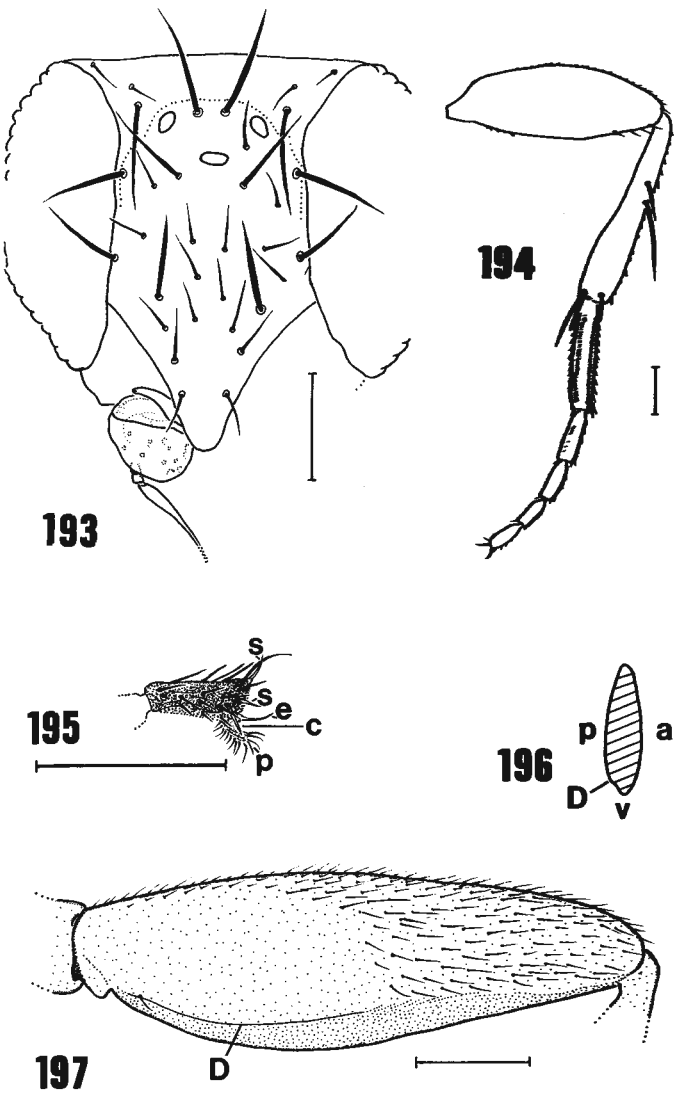
These figures have all been prepared from slide-mounts of specimens. In every case the *scale lines = 0·1 mm*. Numbering is continuous with Vol. 10, Part 6.
CAUTION: In matching specimens against drawings of complex three-dimensional structures, such as the hypopygium in particular, allowance must be made for alterations in appearance resulting from slight shifts in orientation. The hypandrium may be more or less displaced depending on the degree of protrusion, or retraction, of the penis complex. Unless otherwise stated the hypopygia are illustrated as viewed from the left side.

The following figures have been published previously in the journals indicated:
187–188, 327–328, 410–411, 416–418, 448, 497. *Glasg. Nat.*
189–195. *Zool. J. Linnean Soc.*
205, 213–217, 333–338, 348, 363, 380, 420, 434, 442. *Entomologist's mon. Mag.*
211–212, 371, 392–393, 397–403, 443–444, 457, 465–466. *Naturalist.*
219–220, 288, 291, 304–308, 325–326. *Entomologist's Rec. J. Var.*
229–238. *Z. ang. Zool.*
364–367, 381–383. *Entomologist's Gaz.*
454, 467–468. *Proc. Trans. Brit. Ent. Soc.*
469–470. *Ent. scand.*

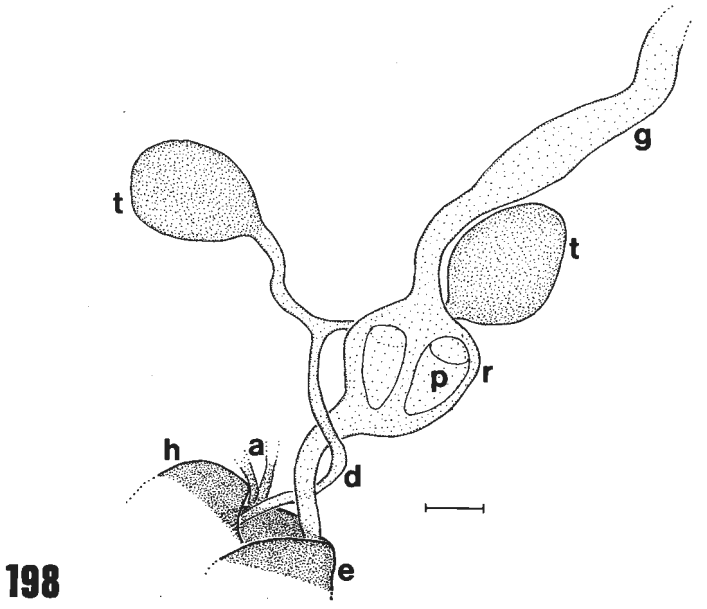
The drawing on the cover depicts a male of Megaselia scalaris.

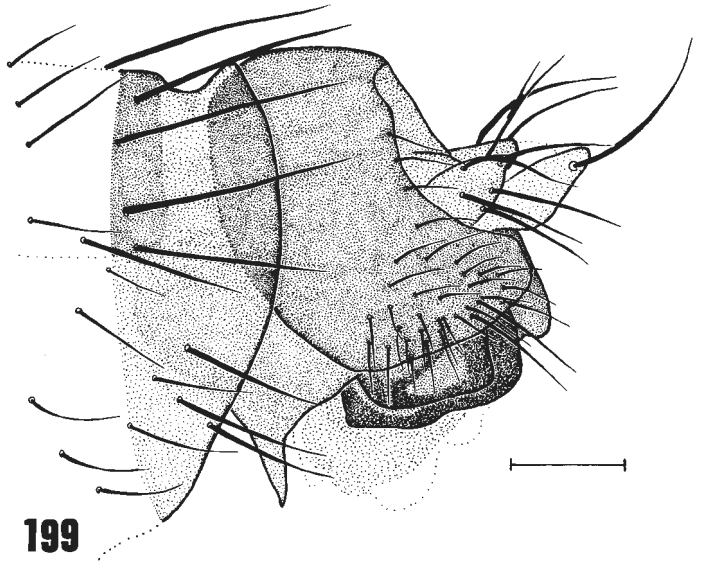


Figs 187–192. 187–188 *Phora penicillata* ♂ hypopygium viewed from left (187) and right (188) sides. 189, *Conicera schnittmanni* ♂ right wing. 190–192 *Obscuriphora sheppardi* ♂. 190, right wing. 191–192 hypopygium viewed from left (191) and right (192) sides.

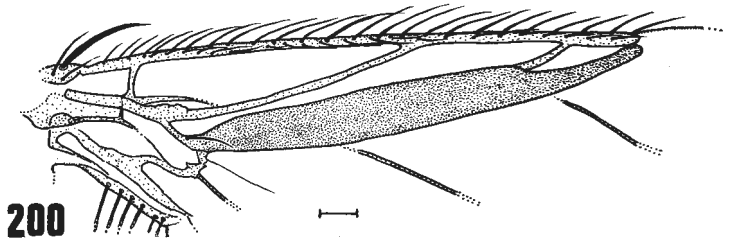


Figs 193–197. 193–195 *Obscuriphora sheppardi*. 193, ♀ frons. 194, anterior face of ♂ hind leg. 195, ♂ tarsal segments of front leg (s = spines, e = empodium, c = claw, p = pulvillus). 196, diagrammatic cross section of a mid-femur (a = anterior, p = posterior, v = ventral, D = deflection line). 197, *Megaselia verralli* ♂ posterior face of mid femur (D = deflection line).





Figs 198–199. *Megaselia* ♂♂. 198, *M. paludosa* dissection of end of abdomen to show rectal papillae (a = ducts to accessory glands, d = ejaculatory duct, e = epandrium, g = hind gut, h = hypandrium, p = rectal papilla, r = rectum, t = testis). 199, *M. humeralis* hypopygium.



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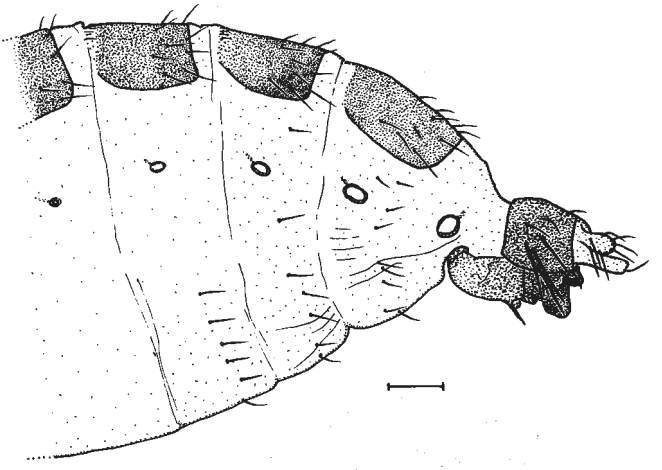

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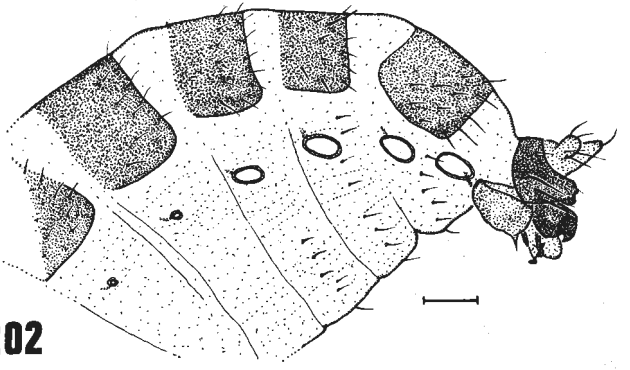

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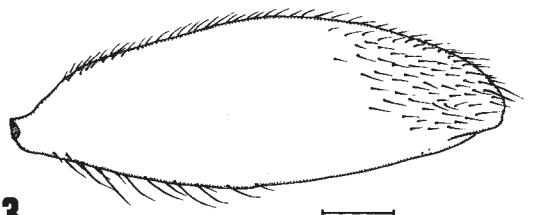
Figs 200–202. *Megaselia* ♂♂. 200, *M. humeralis* base of right wing, 201–202 left sides of abdomens. 201, *M. coacta*. 202, *M. stigmatica*.



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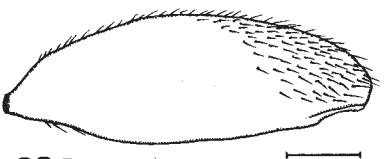

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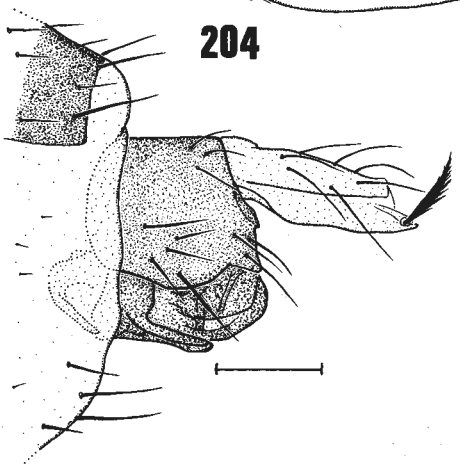

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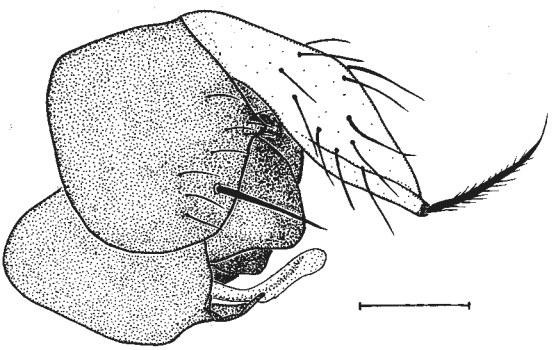

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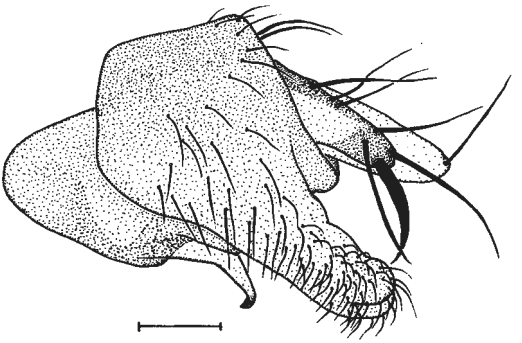
Figs 203–206. *Megaselia* ♂♂. 203–204 Posterior faces of hind femora. 203, *M. coacta*. 204, *M. stigmatica*. 205–206 Hypopygia. 205, *M. testacea*. 206, *M. scalaris*.



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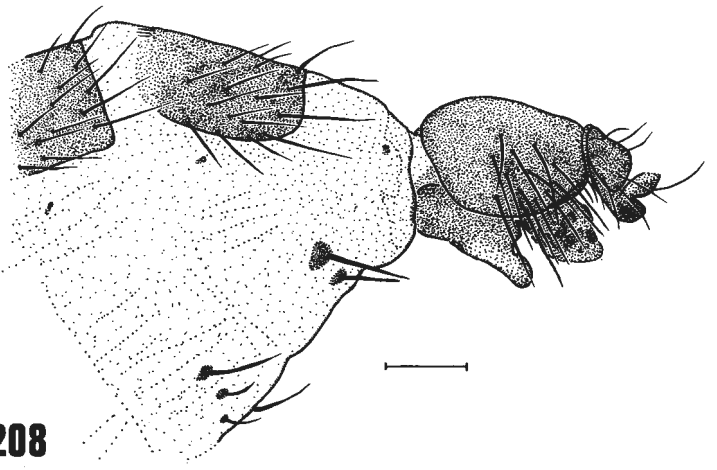

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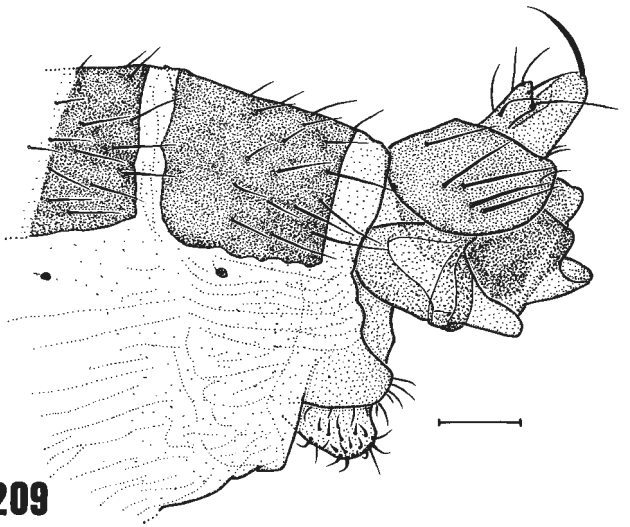

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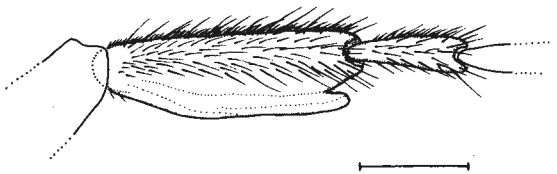
Figs 207–209. *Megaselia* ♂♂ hypopygia. 207, *M. meigeni*. 208, *M. atrosericea*. 209, *M. fuscinervis*.



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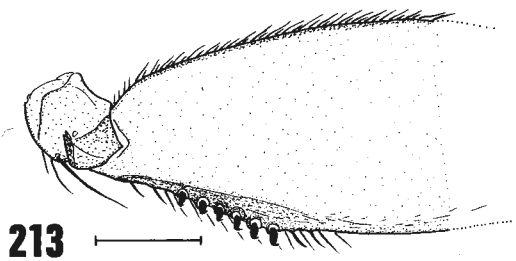

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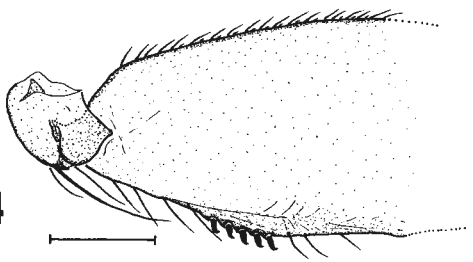

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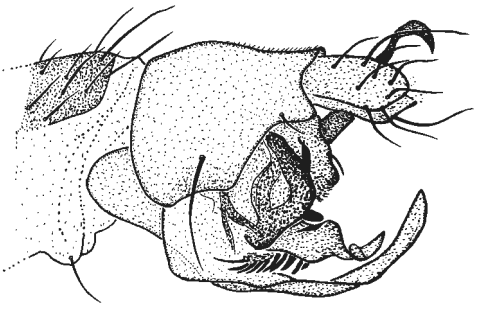
Figs 210–214. *Megaselia* ♂♂. 210, *M. cothurnata* metatarsus and second segment of front leg. 211–212 Segments 3–5 of mid-tarsi. 211, *M. lutea*. 212, *M. eisfelderae*. 213–214 Posterior faces of hind femora. 213, *M. hartfordensis*. 214, *M. serrata*.



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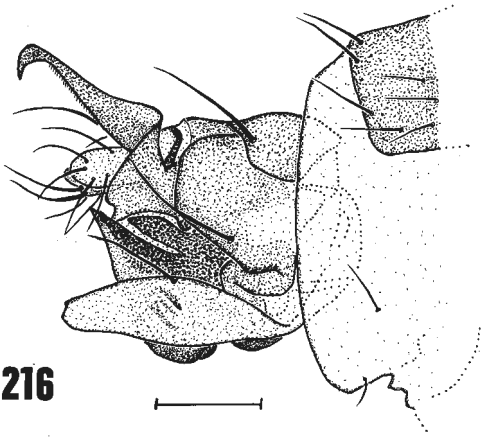

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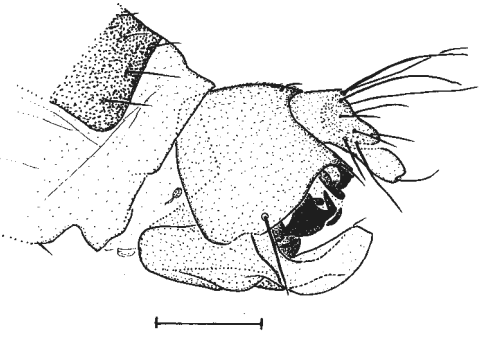

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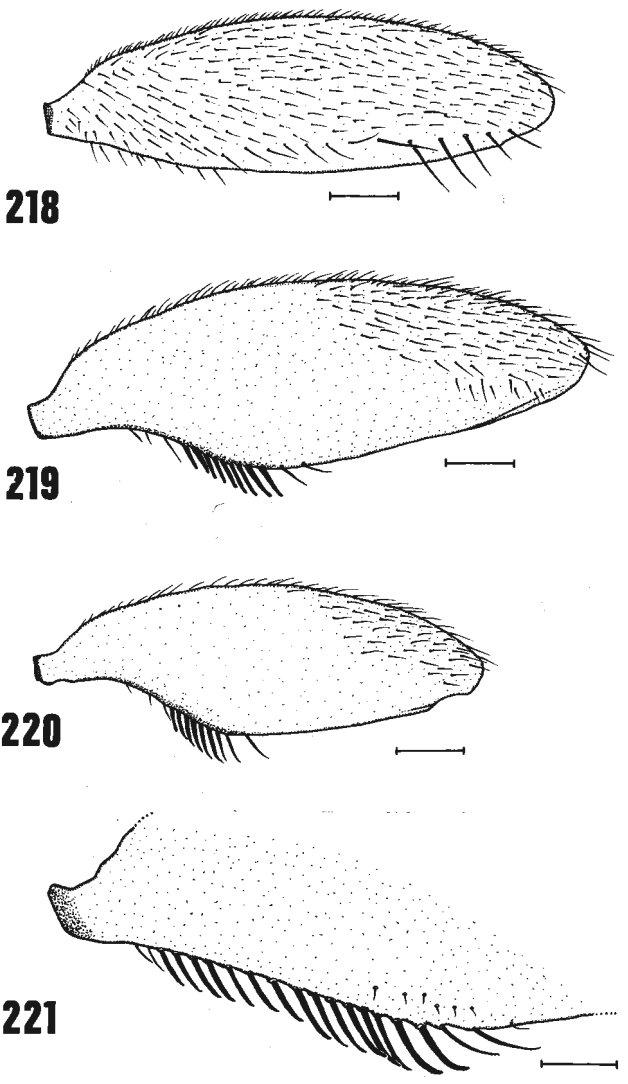
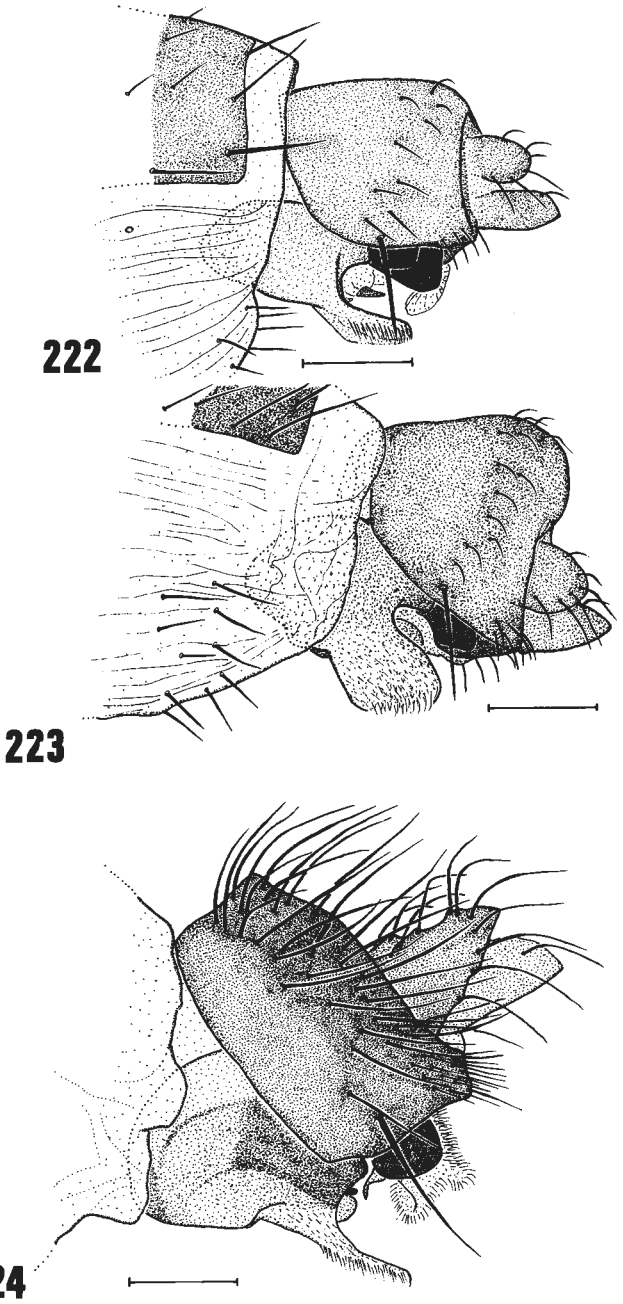
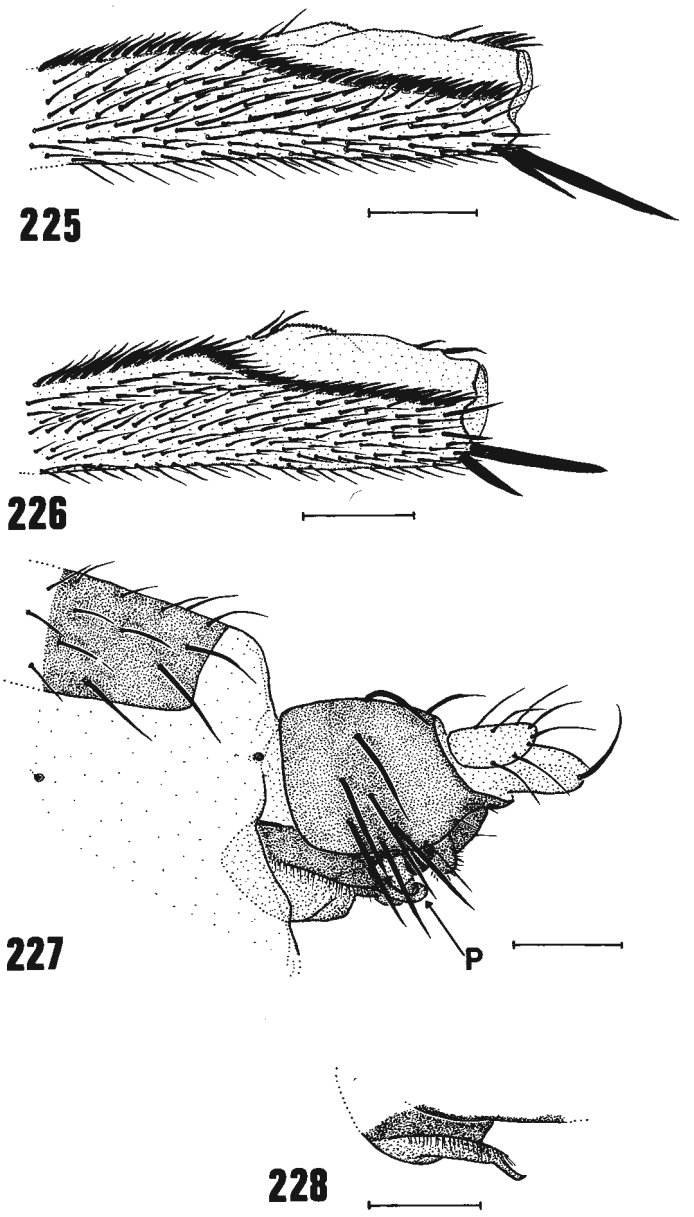
Figs 215–217. *Megaselia* ♂♂ hypopygia. 215–216 *M. hartfordensis*. 215, left side. 216, right side. 217. *M. serrata*.



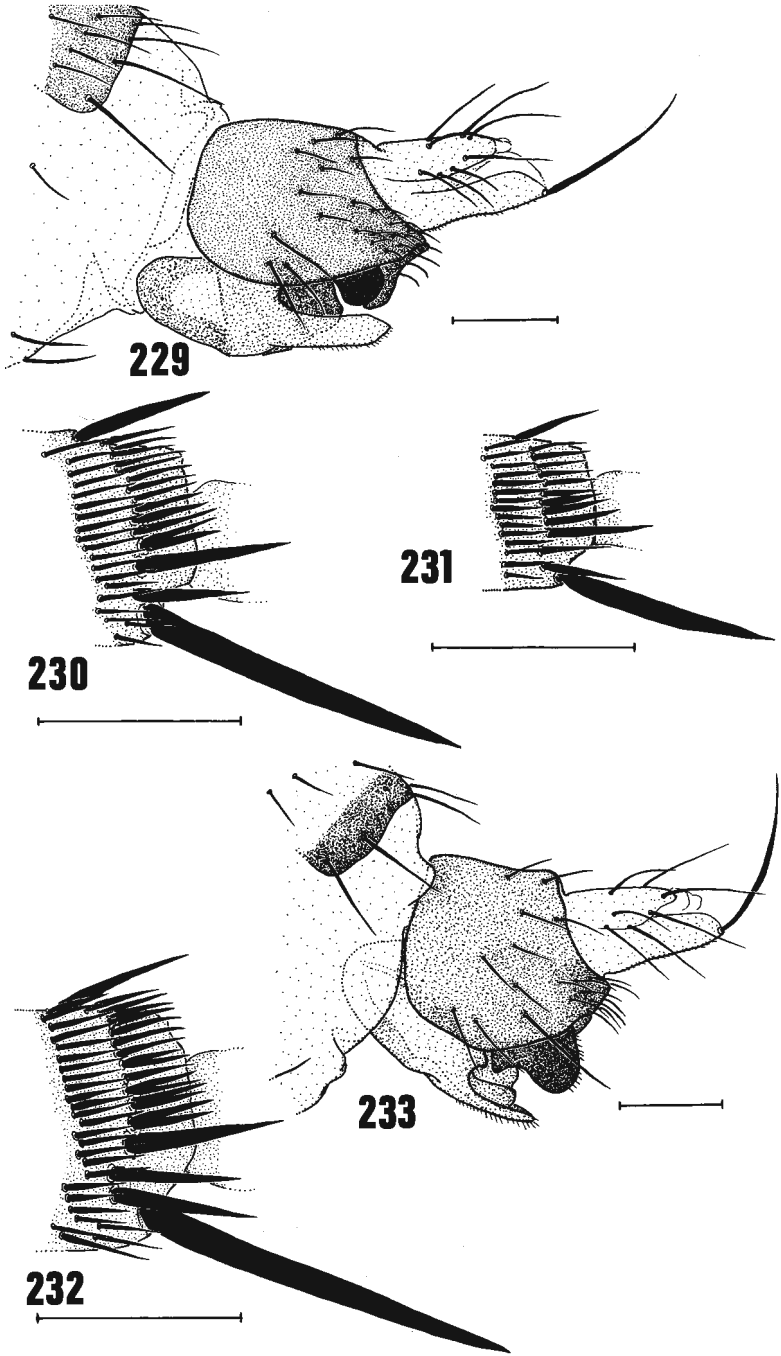
Figs 218–221. *Megaselia* ♂♂ hind femora. 218, *M. barbulata* anterior face. 219–221 Posterior faces. 219, *M. eccoptomera*. 220, *M. gartensis*. 221, *M. woodi*.



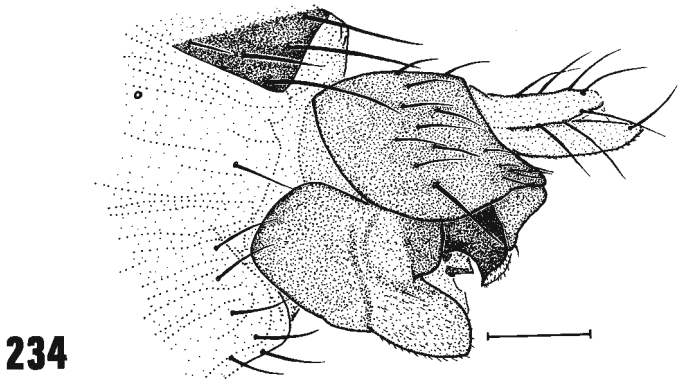
Figs 222–224. *Megaselia* ♂♂ hypopygia. 222, *M. gartensis*. 223, *M. eccoptomera*. 224, *M. woodi*.

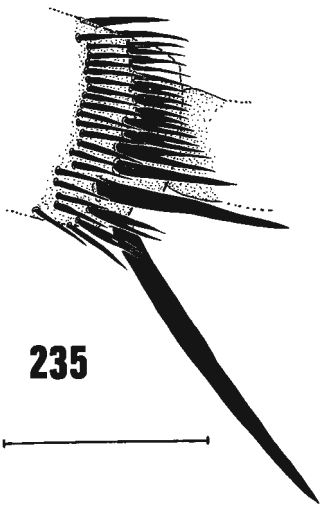


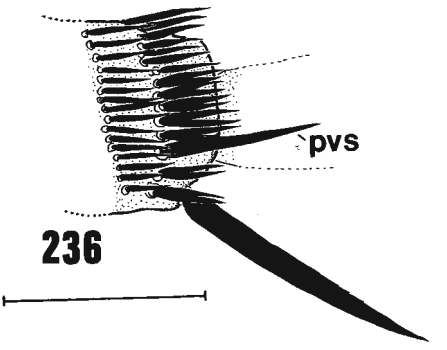
Figs 225–228. *Megaselia* ♂♂. 225–226 Anterior faces of tips of hind tibiae. 225, *M. hirtiventris*. 226, *M. nigra*. 227, *M. nigra* hypopygium (p = process of hypandrium). 228, *M. hirtiventris* hypandrium from left side.

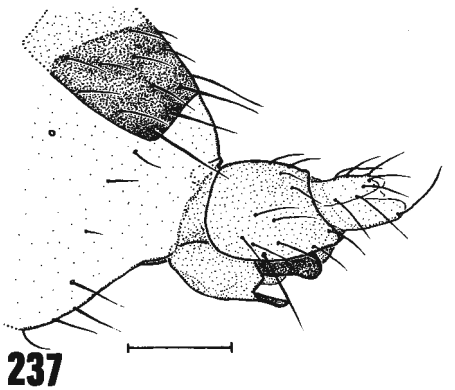


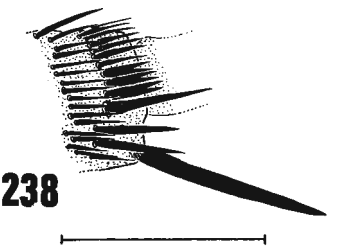
Figs 229–233. *Megaselia* ♂♂. 229–231 *M. altifrons*. 229, hypopygium. 230, 231, posterior faces of tips of hind tibiae in different specimens. 232–233 *M. variana*. 232, posterior face of tip of hind tibia. 233, hypopygium.



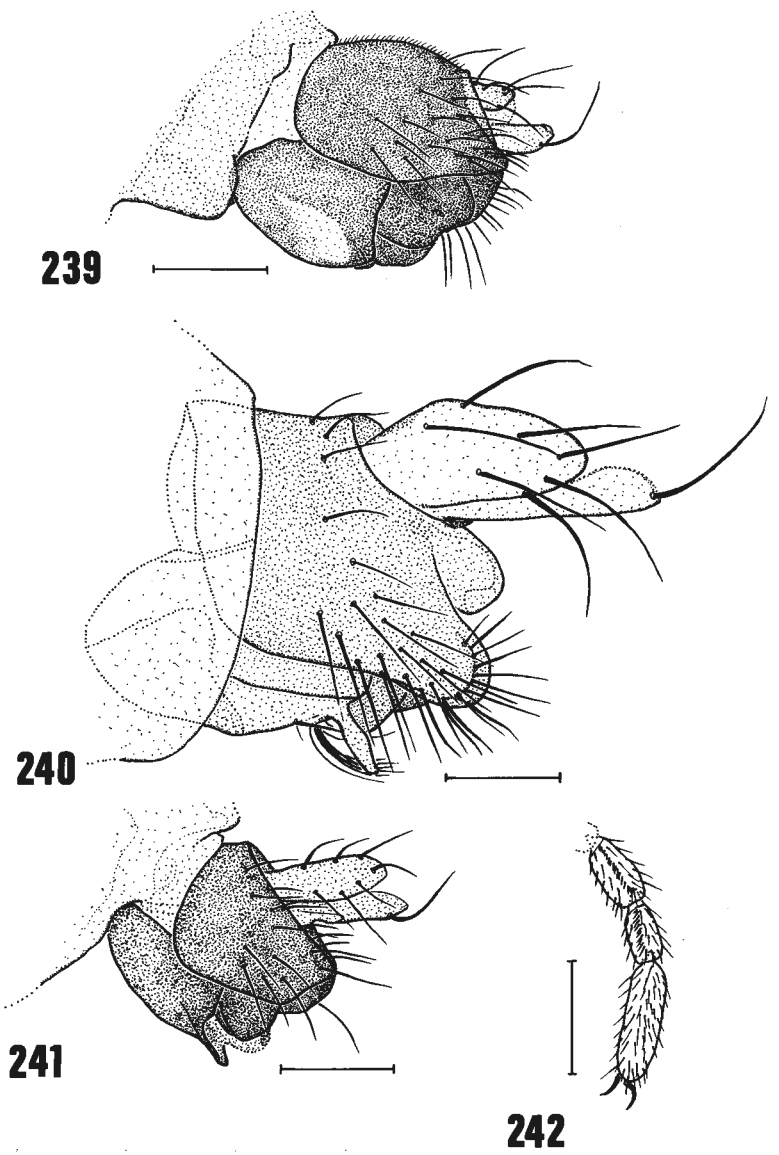




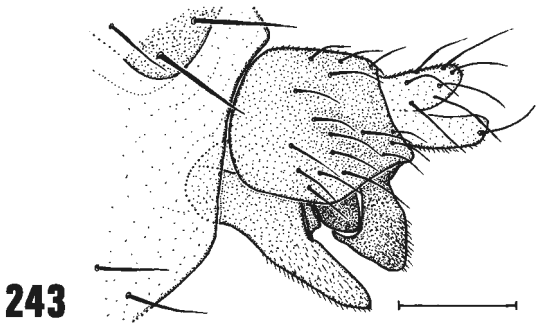


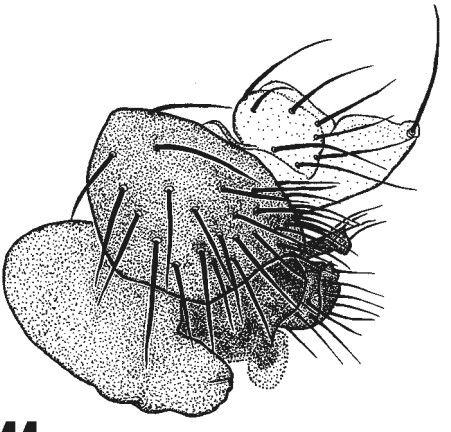


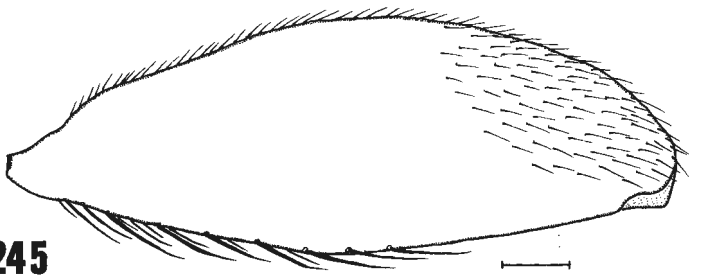
Figs 234–238. *Megaselia* ♂♂. 234–235 *M. bifurcata*. 234, hypopygium. 235, posterior face of apex of hind tibia. 236, *M. sinuata* posterior face of apex of hind tibia. 237–238 *M. bifida*. 237, hypopygium, 238, posterior face of apex of hind tibia.

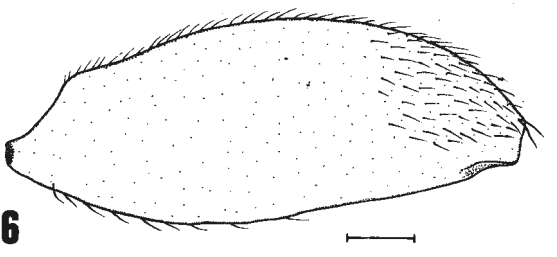


Figs 239–242. *Megaselia* ♂♂. 239–241 hypopygia. 239, *M. glabrifrons*. 240, *M. picta*. 241, *M. ciliata*. 242 *M. ciliata* tarsal segments 3–5 of front leg.

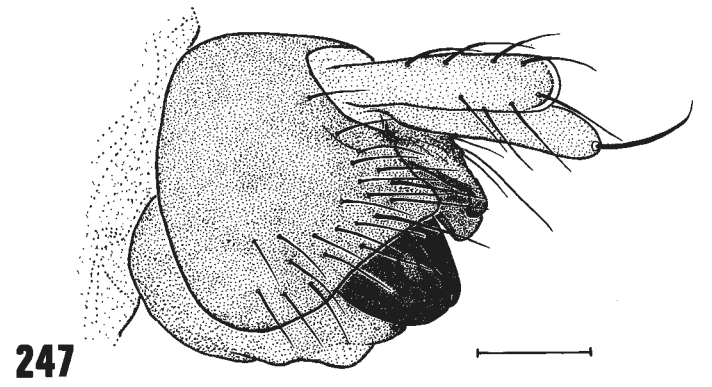


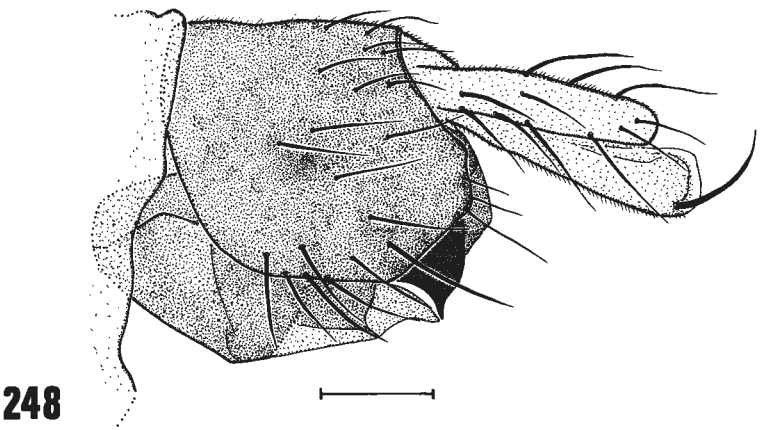


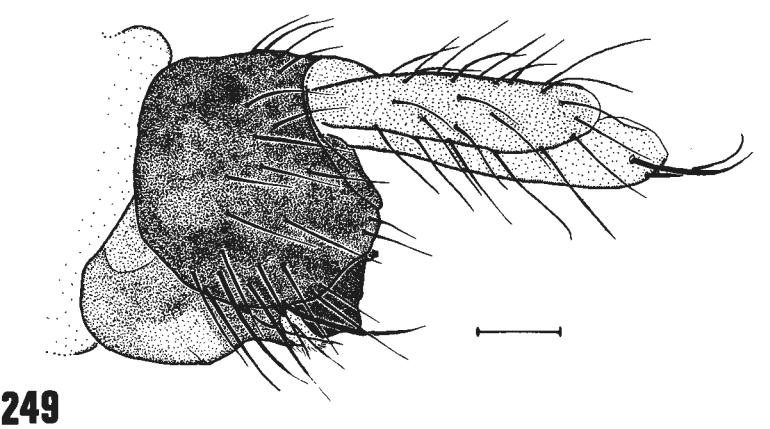




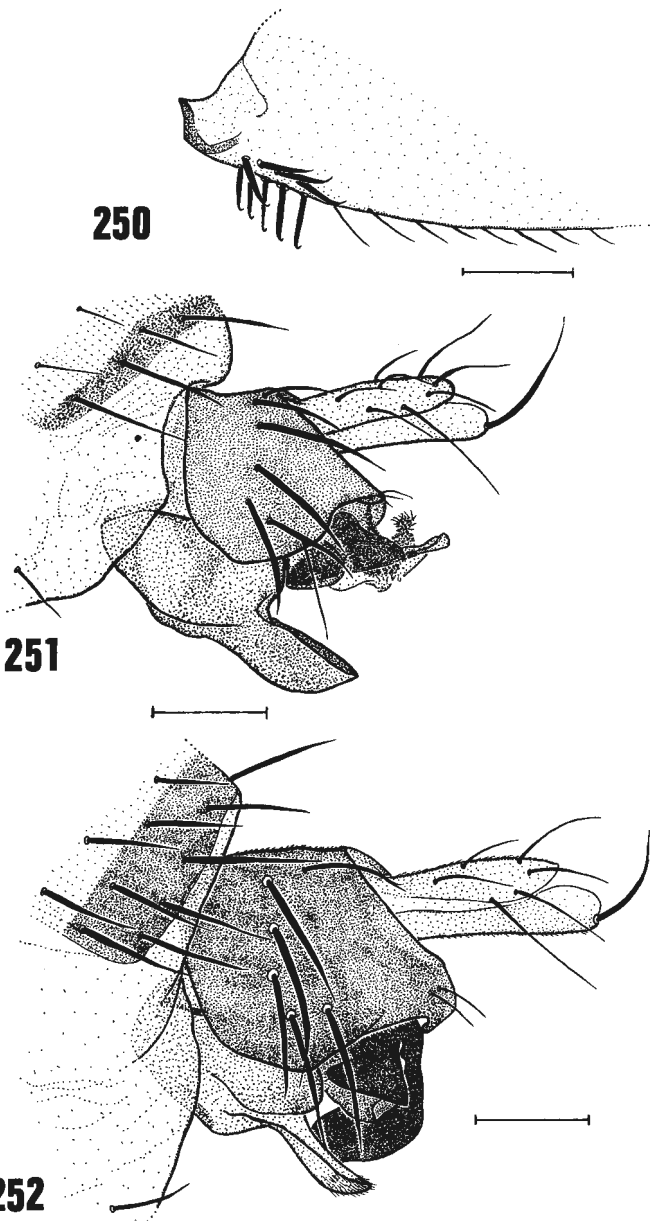
Figs 243–246. *Megaselia* ♂♂. 243–244 hypopygia. 243, *M. sinuata*. 244, *M. paludosa*. 245–246 posterior faces of hind femora. 245, *M. flavescens*. 246, *M. aequalis*.



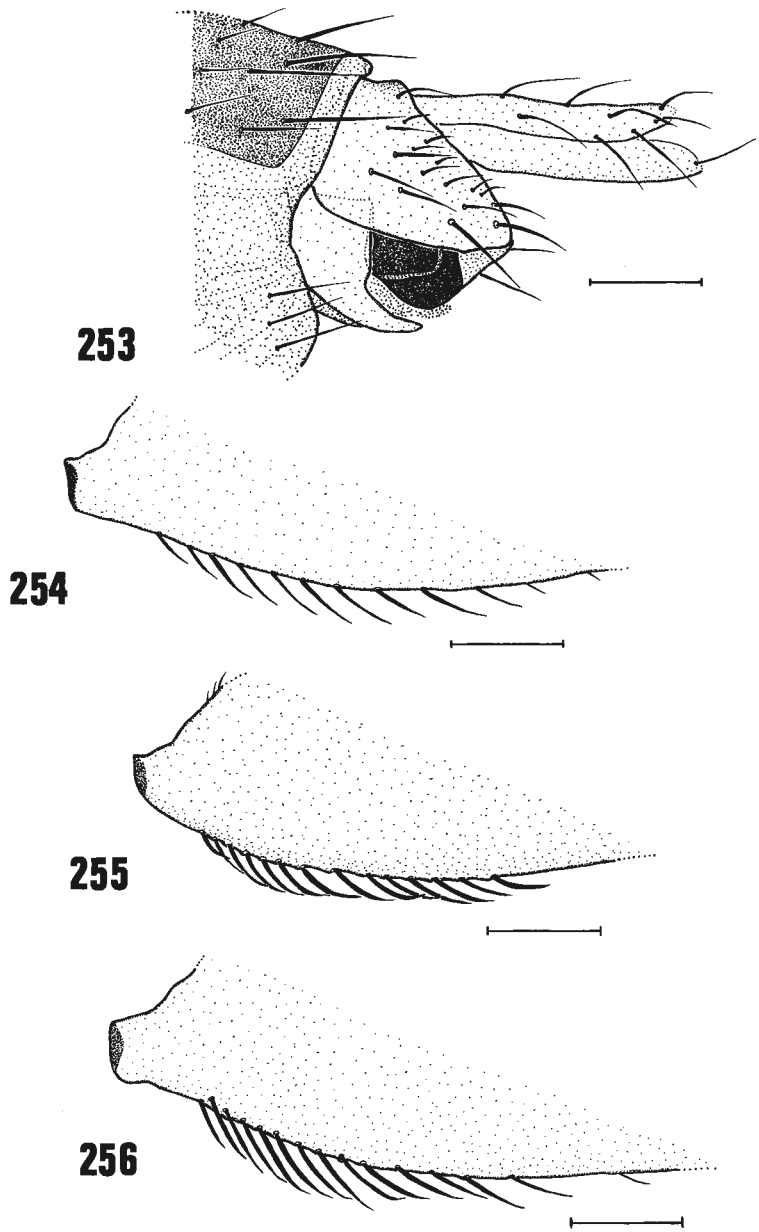




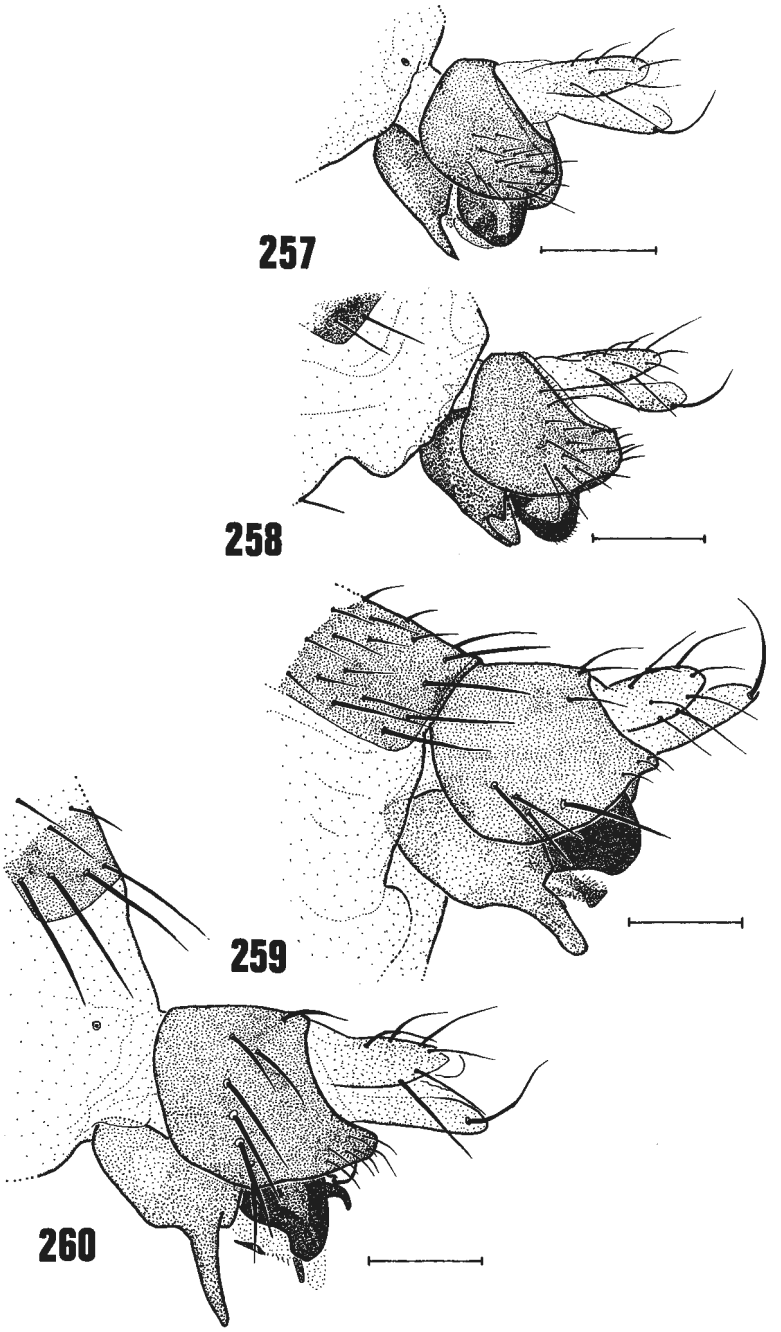
Figs 247–249. *Megaselia* ♂♂ hypopygia. 247, *M. spinigera*. 248, *M. campestris*. 249, *M. flavicoxa*.



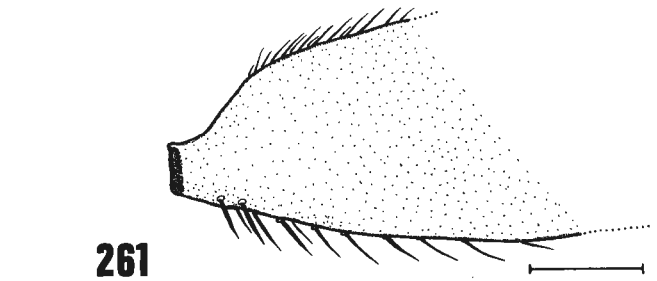
Figs 250–252. *Megaselia* ♂♂. 250, 251 *M. basispinata*. 250, posterior face of base of hind femur. 251, hypopygium. 252, *M. pleuralis* hypopygium.



Figs 253–256. *Megaselia* ♂♂. 253, *M. flavescens* hypopygium. 254–256 posterior faces of bases of hind femora. 254, *M. limburgensis*. 255, *M. stichata*. 256, *M. meconicera*.



Figs 257–260. *Megaselia* ♂♂ hypopygia. 257, *M. nasoni*. 258, *M. aequalis*. 259, *M. stichata*. 260, *M. meconicera*.



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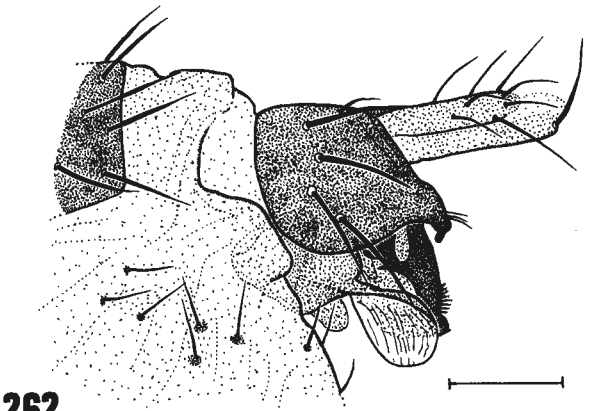

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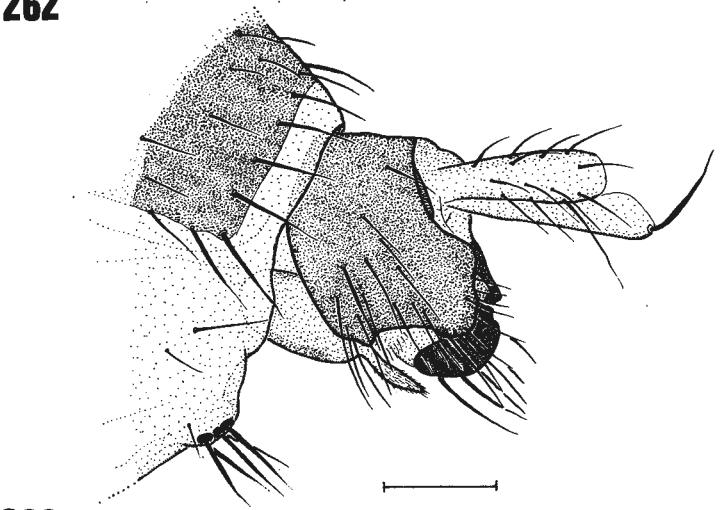

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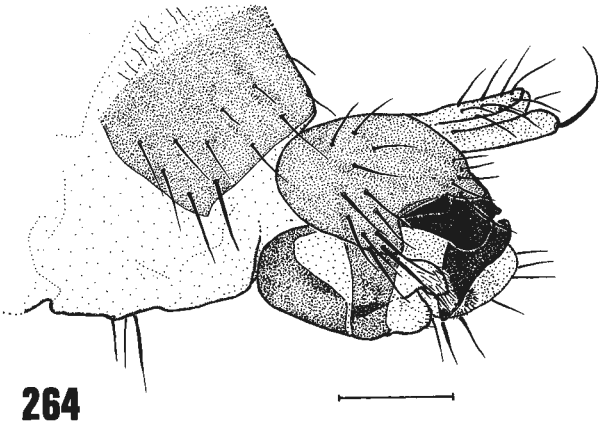
Figs 261–263. *Megaselia* ♂♂. 261, 262 *M. insons*. 261, posterior face of base of hind femur. 262, hypopygium. 263, *M. aculeata* hypopygium.



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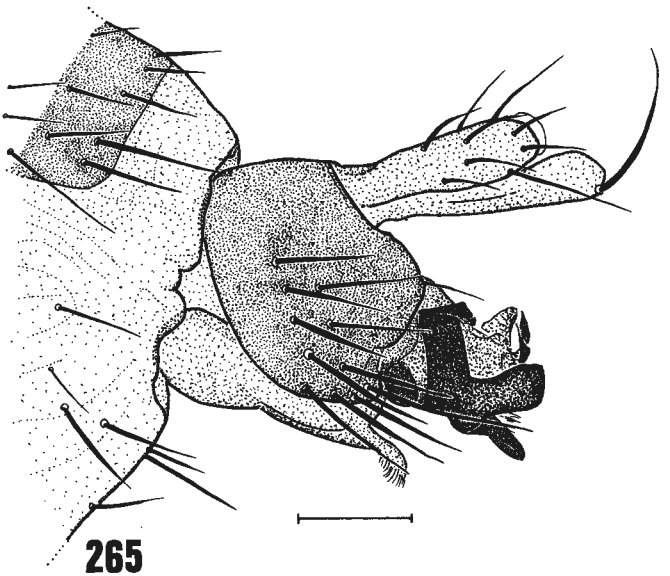

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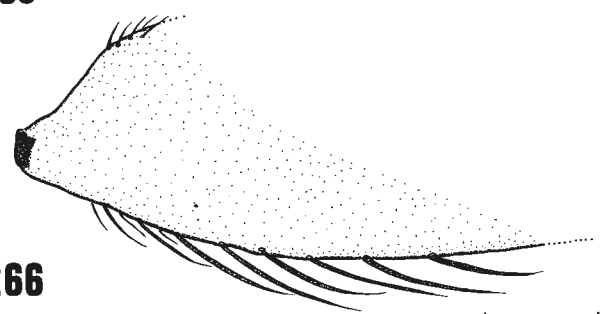

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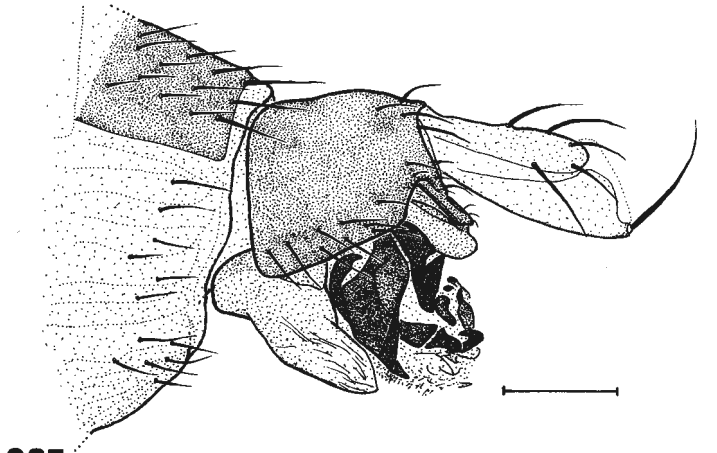
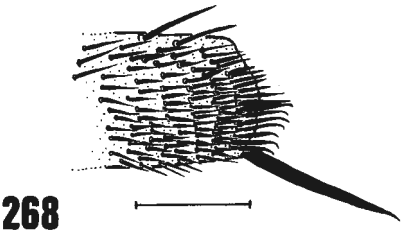
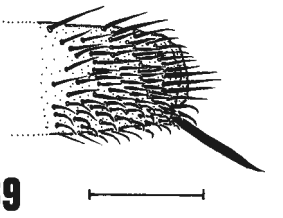
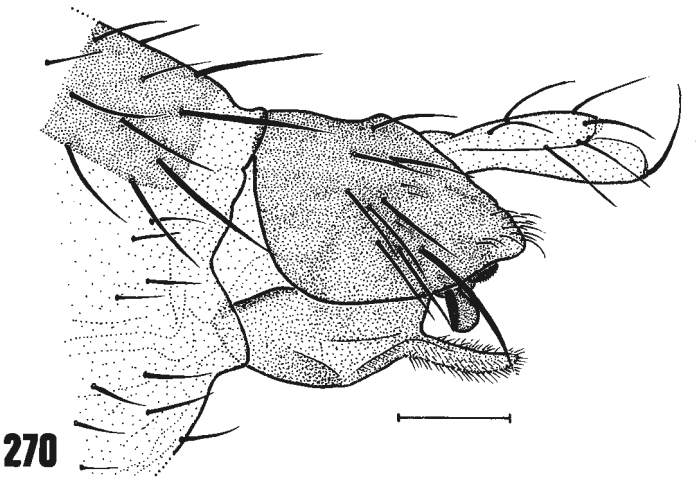
Figs 264–266. *Megaselia* ♂♂. 264, 265 hypopygia. 264, *M. pectoralis* in slightly ventro-lateral view. 265, *M. hirsuta*. 266, *M. elongata* posterior face of base of hind femur.

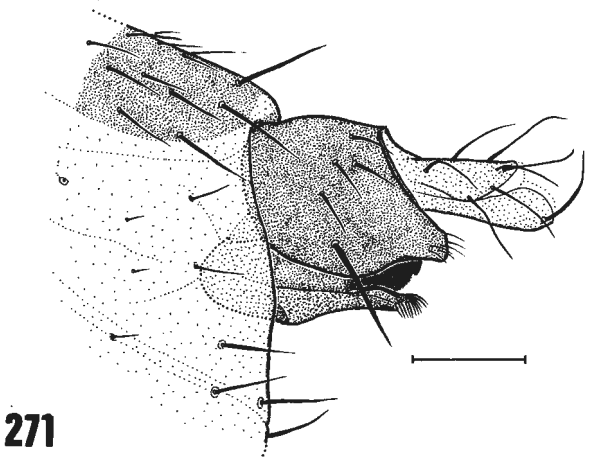








Figs 267–270. *Megaselia* ♂♂. 267, *M. elongata* hypopygium. 268, 269 posterior faces of tips of hind tibiae. 268, *M. fungivora*. 269, *M. frameata*. 270, *M. fungivora* hypopygium.



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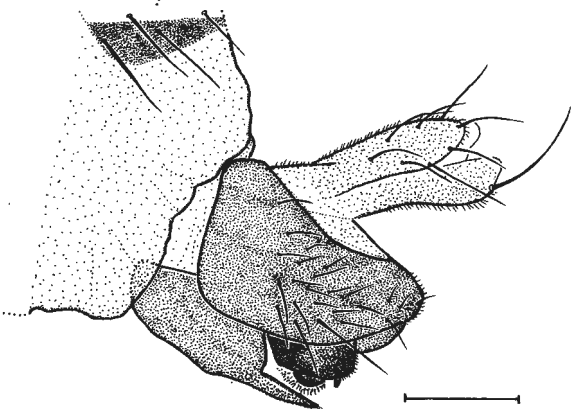

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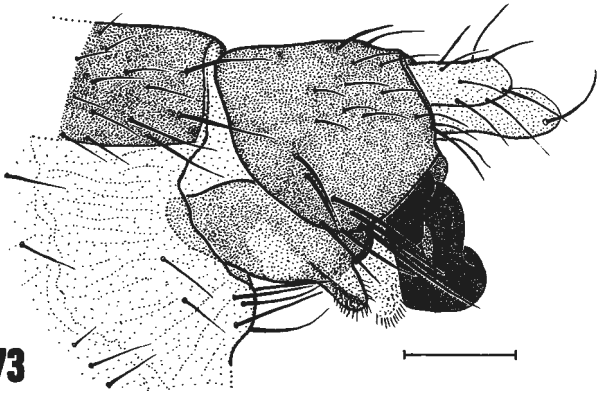

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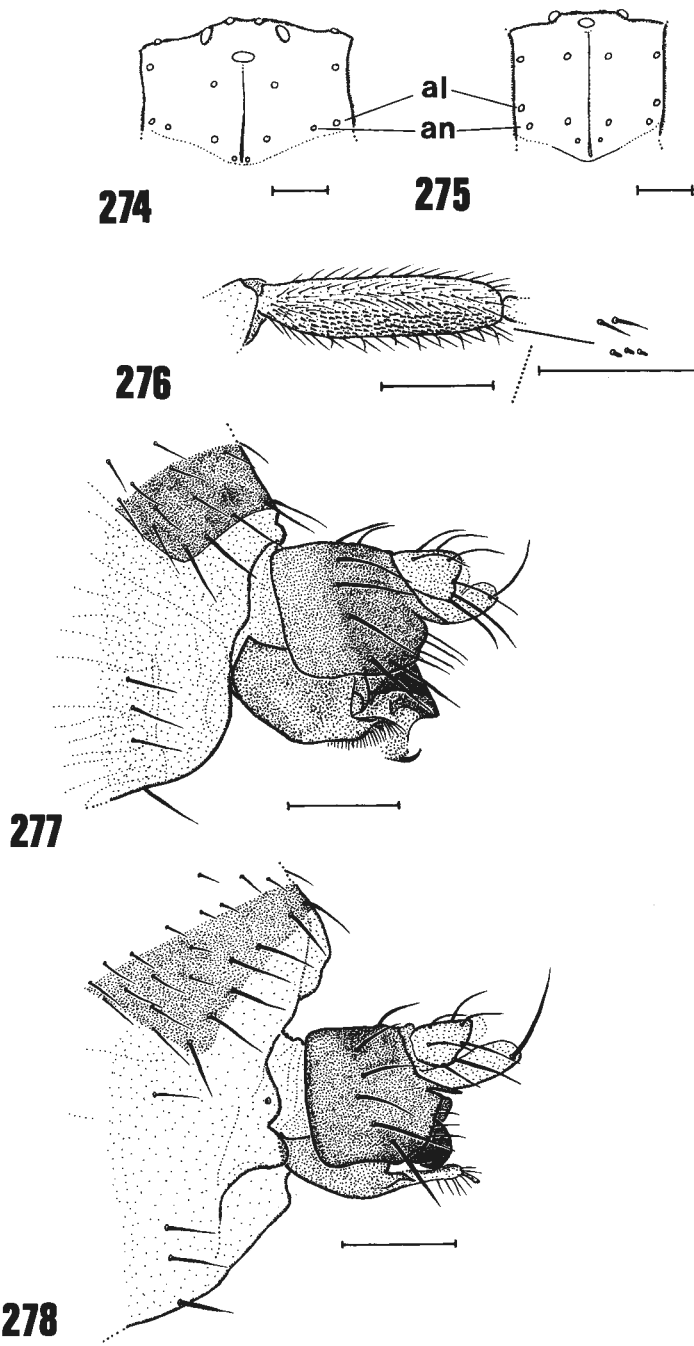
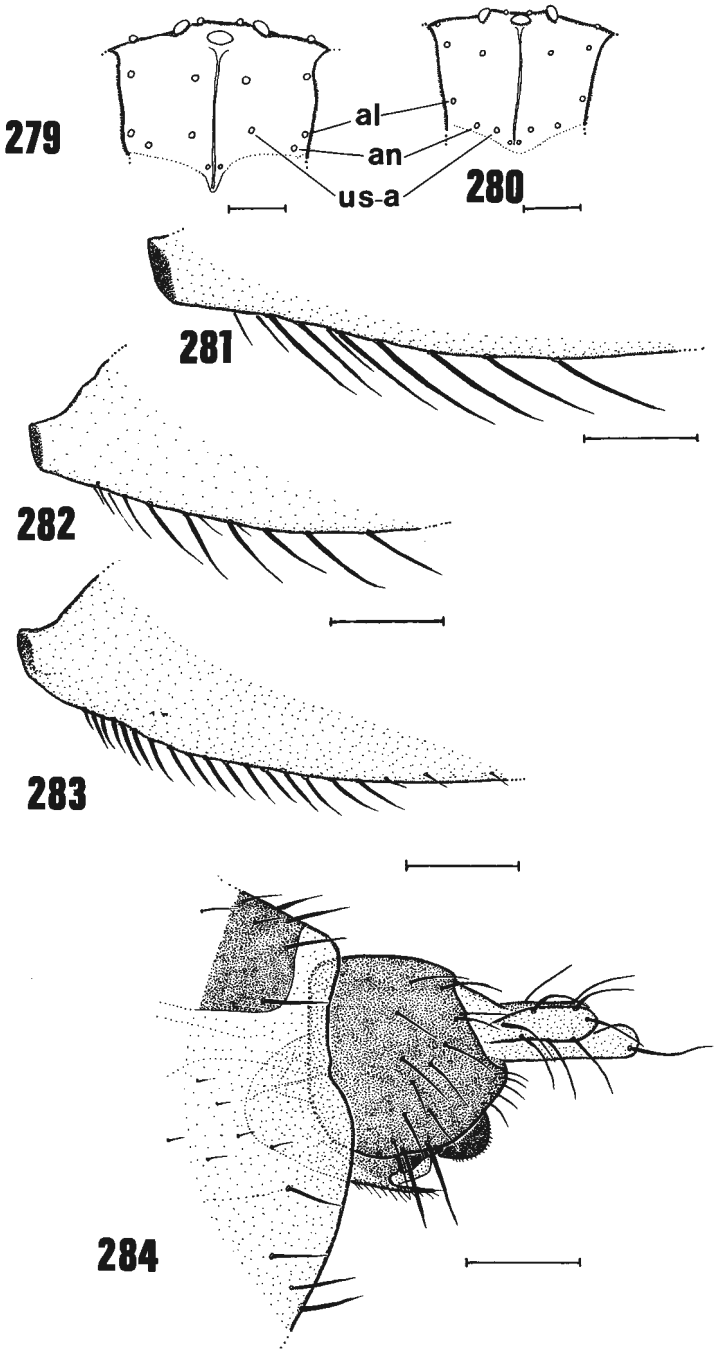
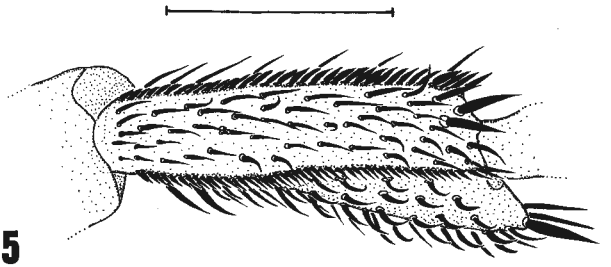
Figs 271–273. *Megaselia* ♂♂ hypopygia. 271, *M. frameata*. 272, *M. major*. 273, *M. palmeni*.



Figs 274–278. *Megaselia* ♂♂. 274 and 275 frons (al = position of antero-lateral bristles. an = position of antial bristles). 274, *M. palmeni*. 275, *M. curvicapilla*. 276, *M. manicata* metatarsus of front leg, with some of hairs and spines enlarged to right. 277, 278 hypopygia. 277, *M. curvicapilla*. 278, *M. manicata*.



Figs 279–284. *Megaselia* ♂♂. 279 and 280 frons (al = position of antero-lateral bristles. an = position of antial bristles. us-a = position of upper supra-antennal bristles). 279, *M. rudis*. 280, *M. setulipalpis*. 281–283 posterior faces of bases of hind femora. 281, *M. rudis*. 282, *M. spinata*. 283, *M. setulipalpis*. 284, *M. setulipalpis* hypopygium.



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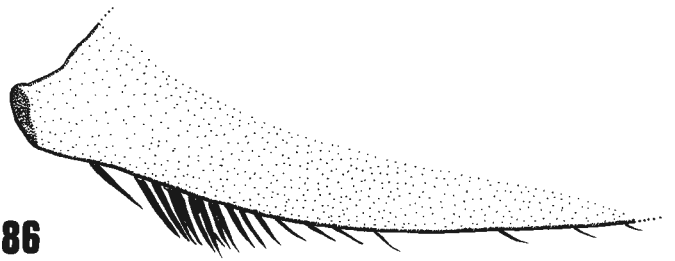

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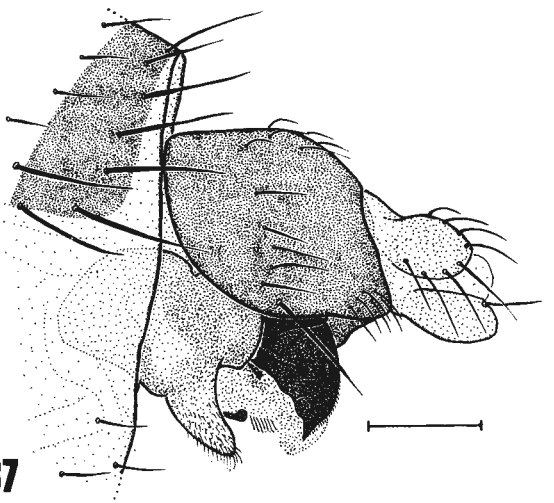

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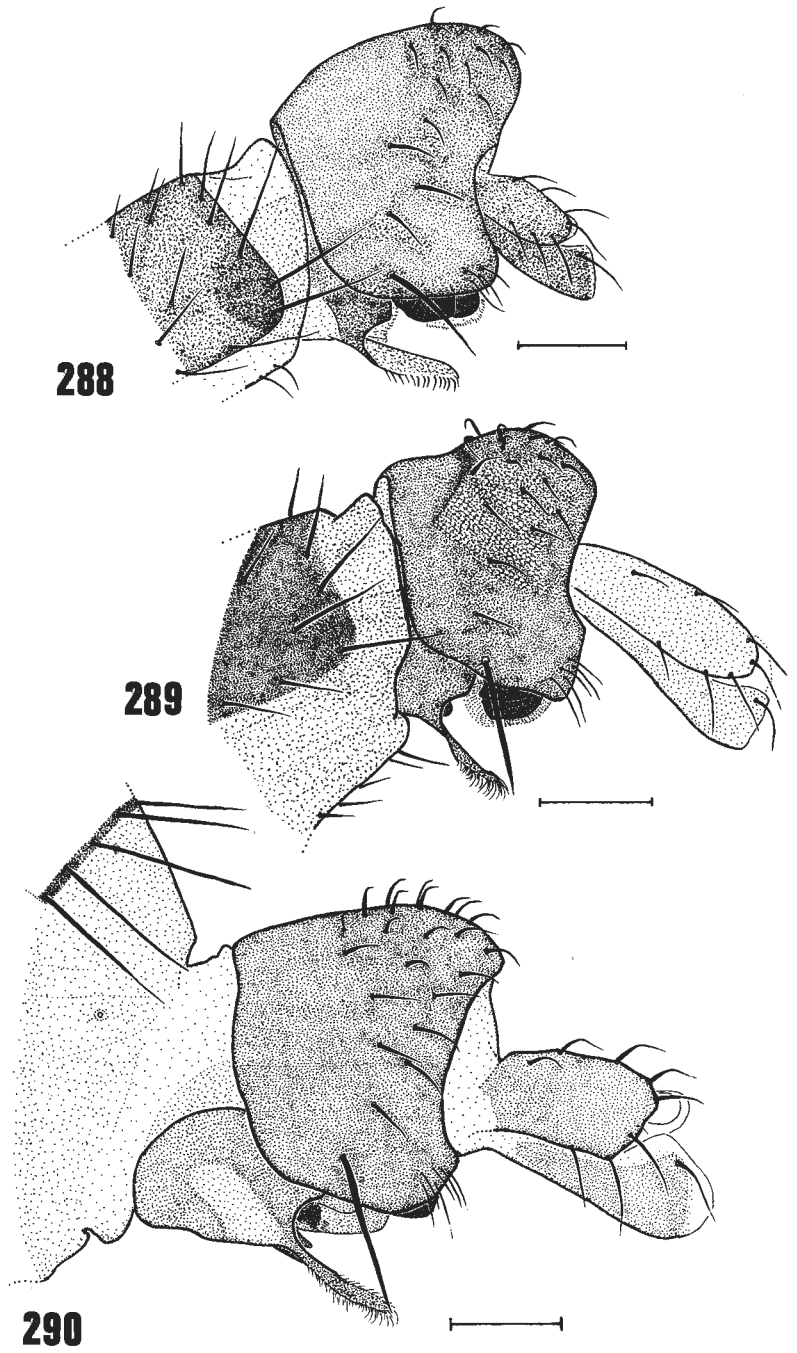
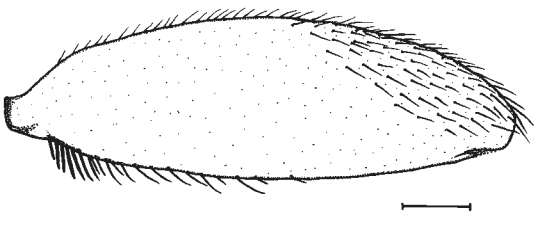
Figs 285–287. *Megaselia groenlandica* ♂. 285, posterior face of front metatarsus. 286, posterior face of base of hind femur. 287, hypopygium.



Figs 288–290. *Megaselia* ♂♂ hypopygia. 288, *M. coccyx*. 289, *M. sordescens*. 290, *M. sordida*.



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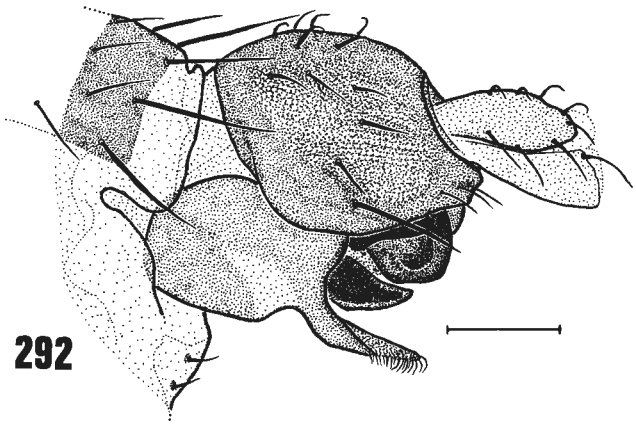

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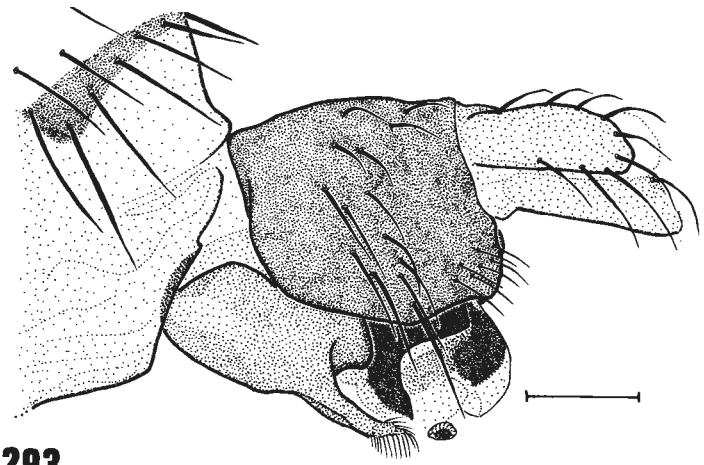

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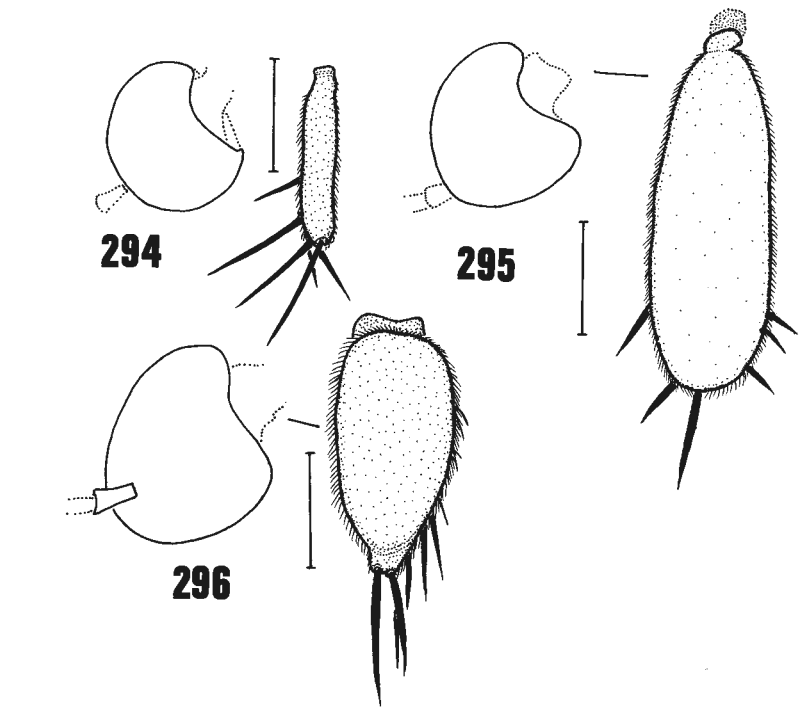
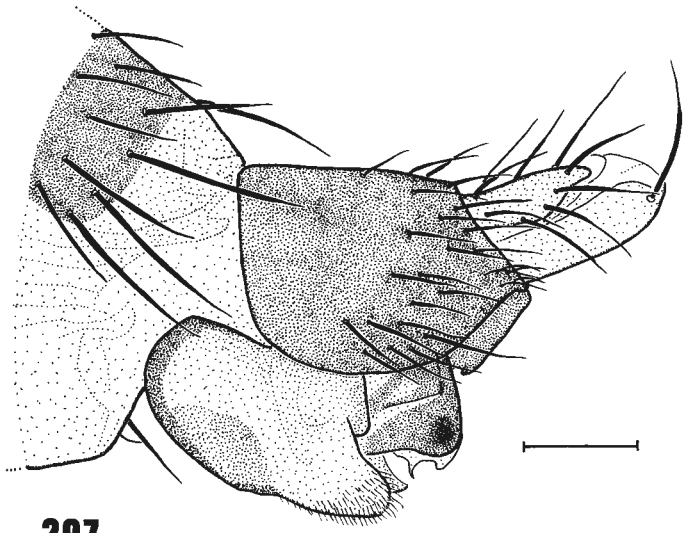
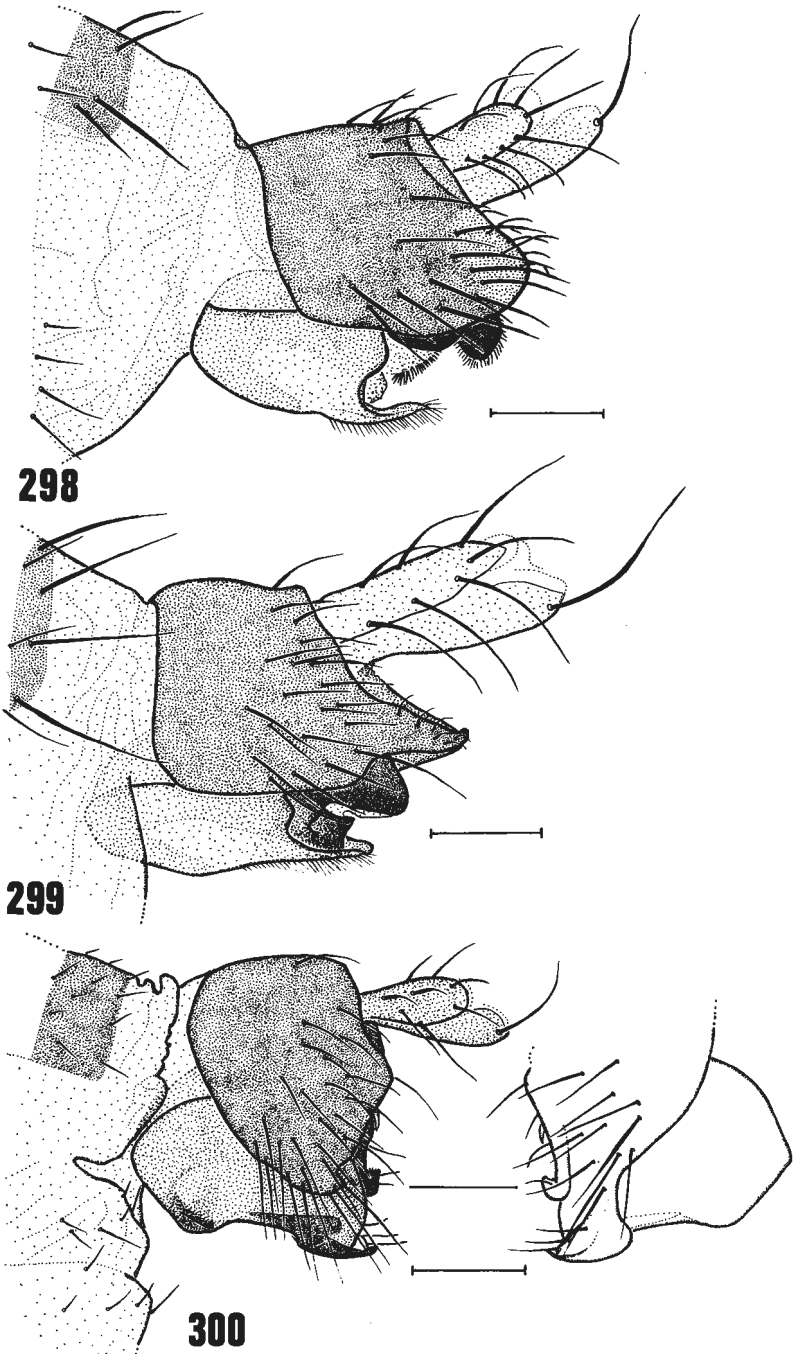
Figs 291–293. *Megaselia* ♂♂. 291, *M. coccyx* posterior face of hind femur. 292, 293 hypopygia. 292, *M. diversa*. 293, *M. sepulchralis*.

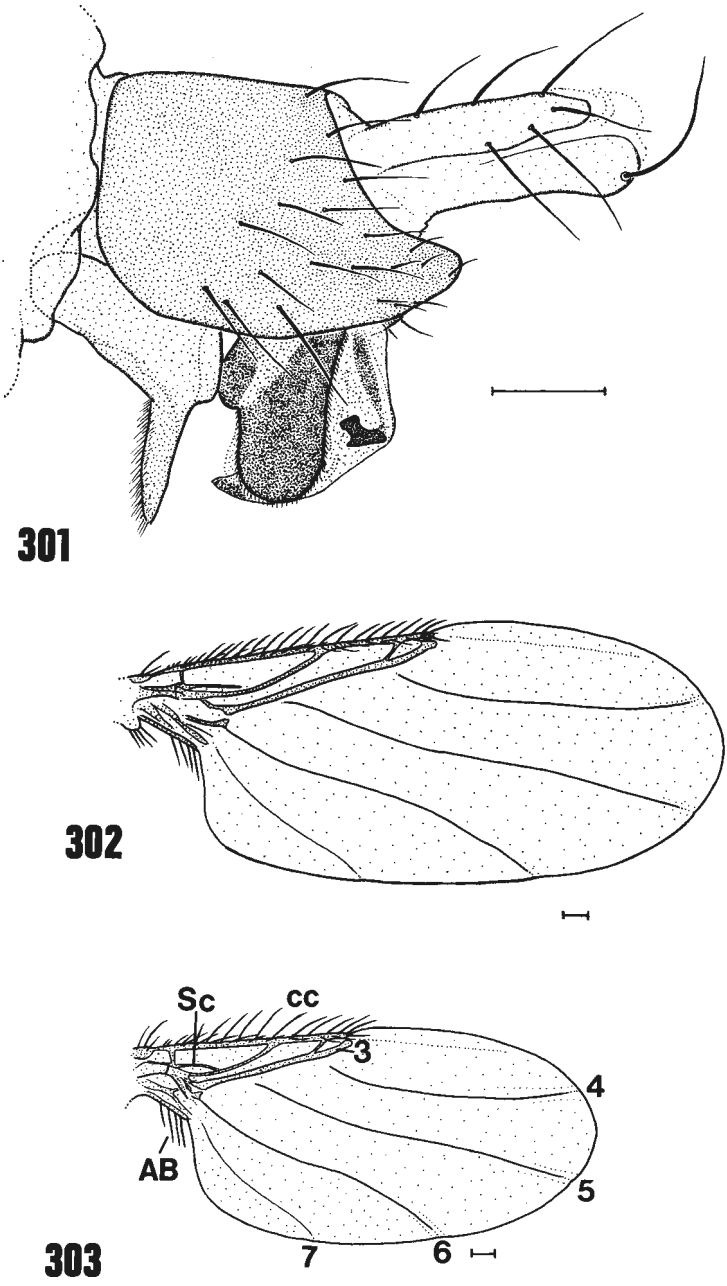




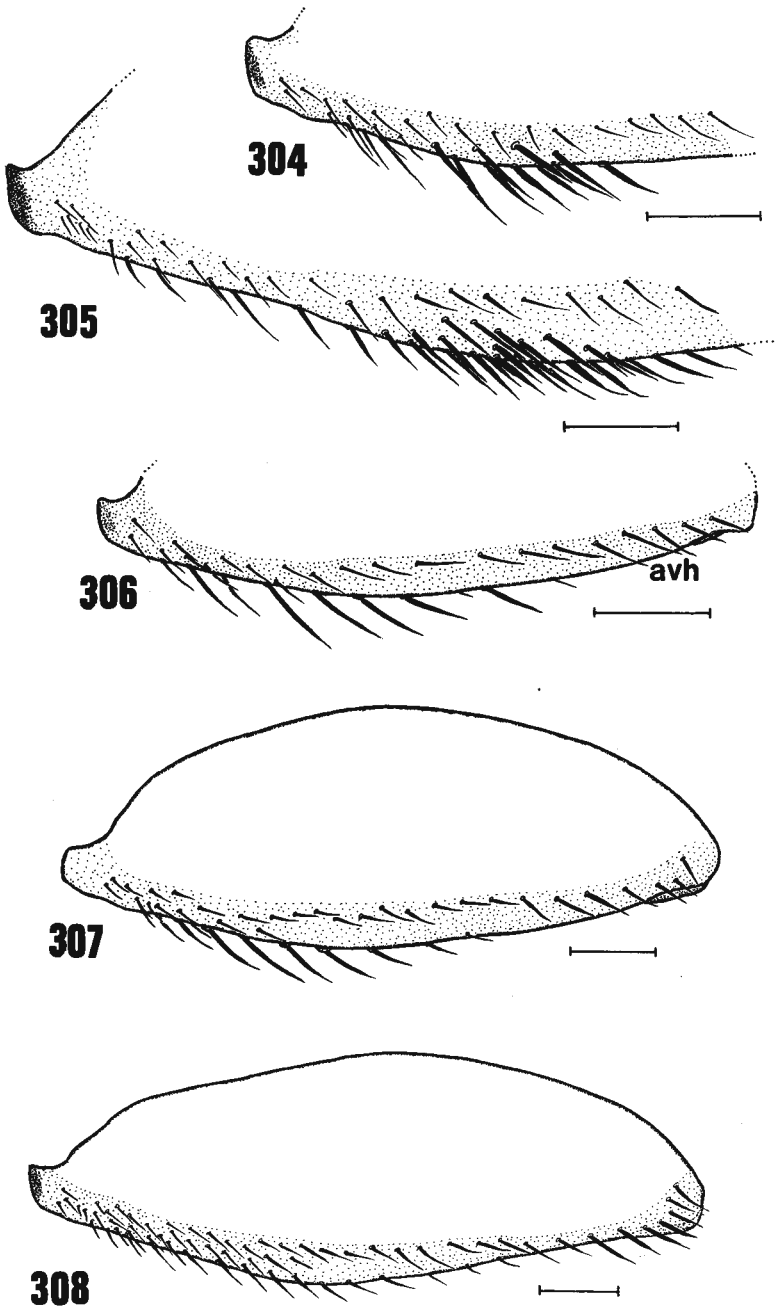
Figs 294–297. *Megaselia* ♂♂. 294–296 right palps and outlines of right antennae. 294, *M. verralli*. 295, *M. nigriceps*. 296, *M. obscuripennis*. 297, *M. nigriceps* hypopygium.



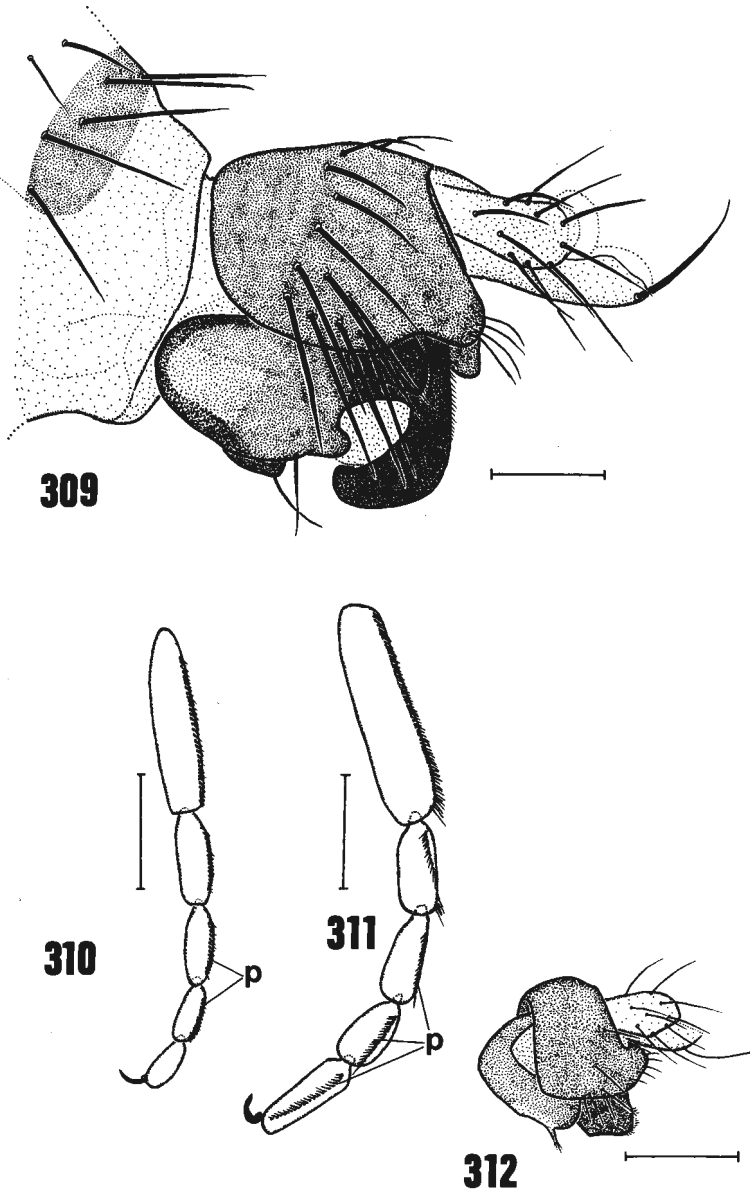
Figs 298–300. *Megaselia* ♂♂ hypopygia. 298, *M. obscuripennis*. 299, *M. dubitalis*. 300, *M. verralli* with outline of right side to right.



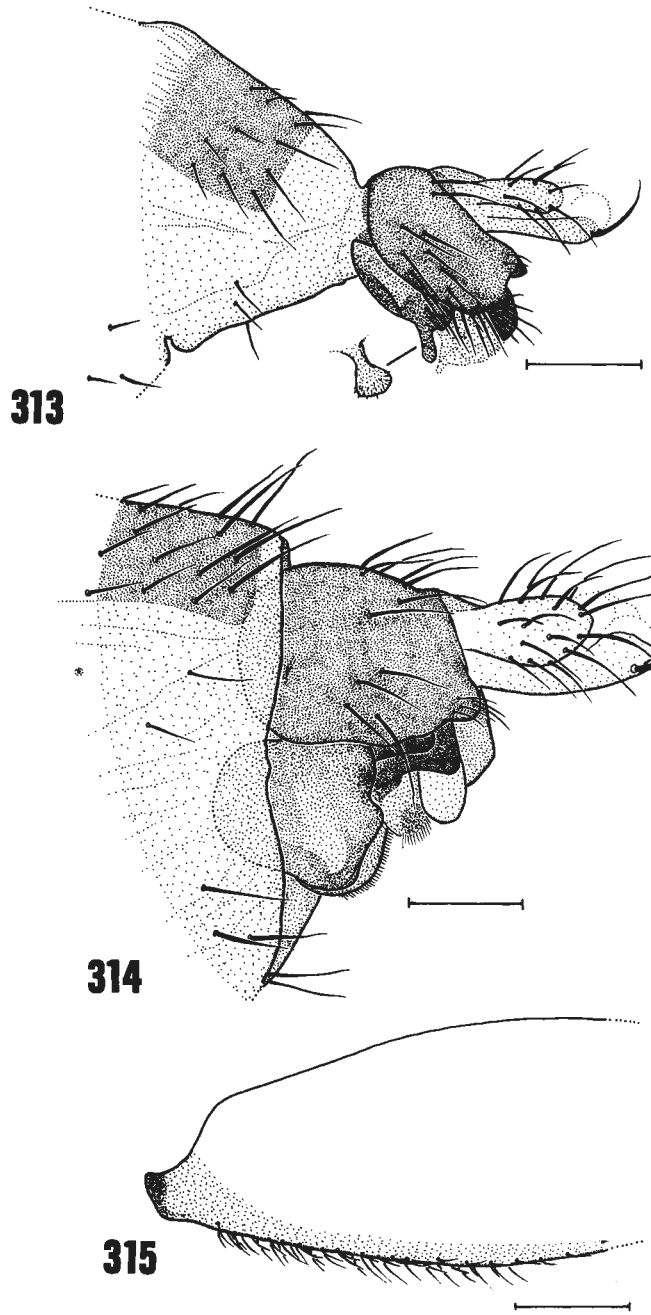
Figs 301–303. *Megaselia* ♂♂. 301, *M. simulans* hypopygium. 302, 303 right wings. 302, *M. hortensis*. 303, *M. subconvexa* (Sc = subcosta, cc = costal cilia, AB = axillary bristles. 3–7 = veins 3–7).



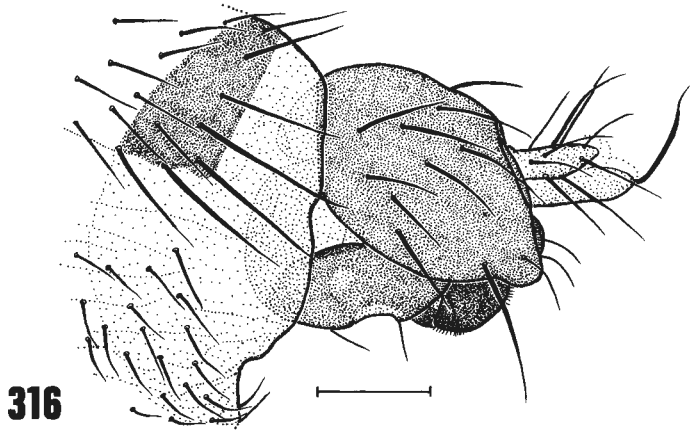
Figs 304–308. *Megaselia* ♂♂ anterior faces of hind femora. 304, *M. pilifemur*. 305, *M. dahli*. 306, *M. subcarpalis*. 307, *M. intercostata*. 308, *M. protarsalis*.

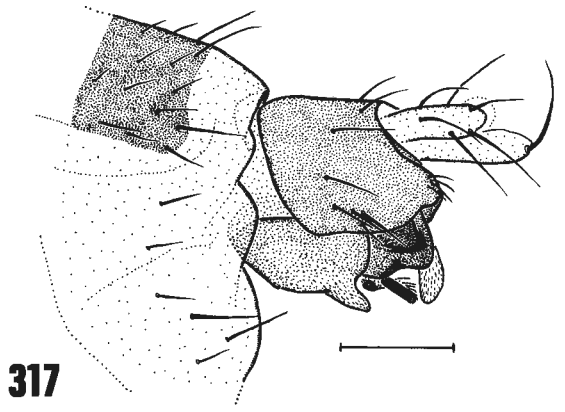


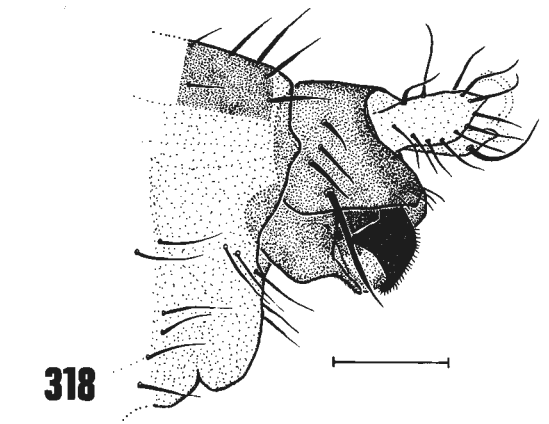
Figs 309–312. *Megaselia* ♂♂. 309, *M. dahli* hypopygium. 310, 311 fore tarsi (p = hair palisades). 310, *M. fenestralis*. 311, *M. crassipes*. 312, *M. fenestralis* hypopygium.



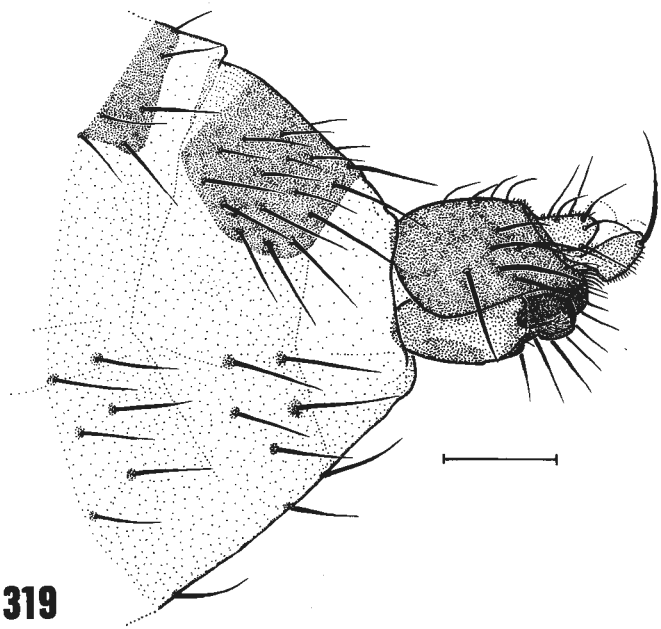
Figs 313–315. *Megaselia* ♂♂. 313, *M. latifrons* hypopygium, with short, bare form of posterior lobe of left side of hypandrium: the typical form being shown in ventral view to left. 314, *M. hortensis* hypopygium. 315, *M. speiseri* posterior face of base of hind femur.







Figs 316–318. *Megaselia* ♂♂ hypopygia. 316, *M. alticolella*. 317, *M. crassipes*. 318, *M. speiseri*.



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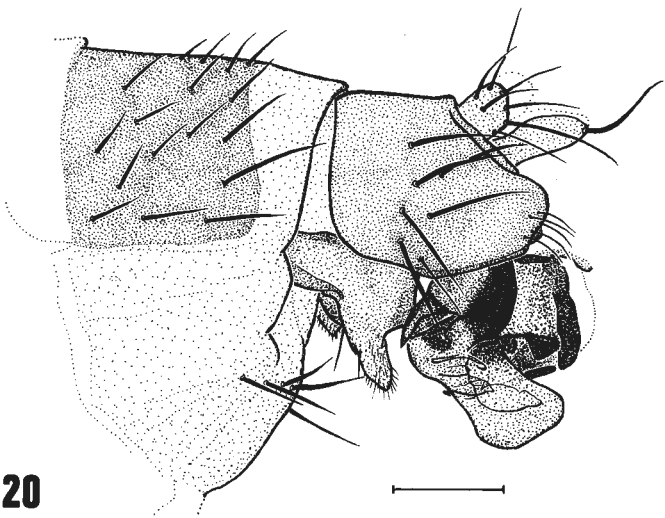

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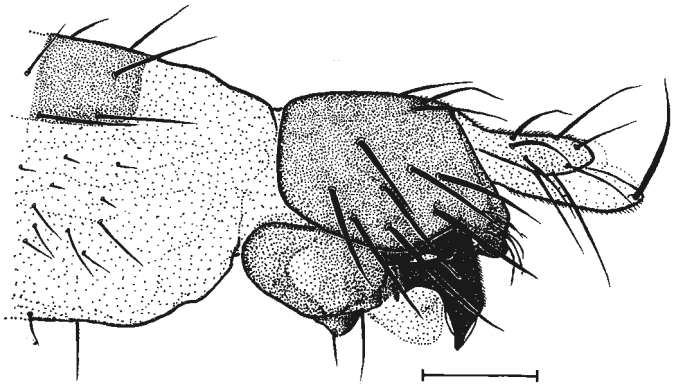
Figs 319–320. *Megaselia* ♂♂ hypopygia. 319, *M. involuta*. 320, *M. unicolor*.



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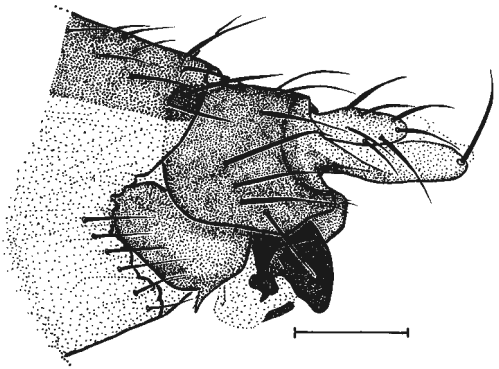

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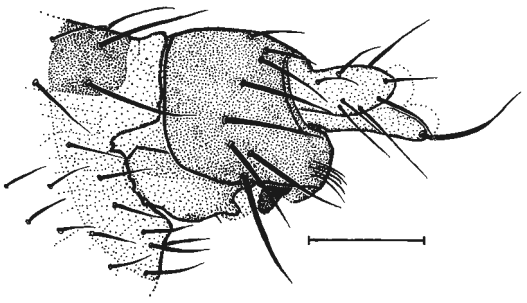

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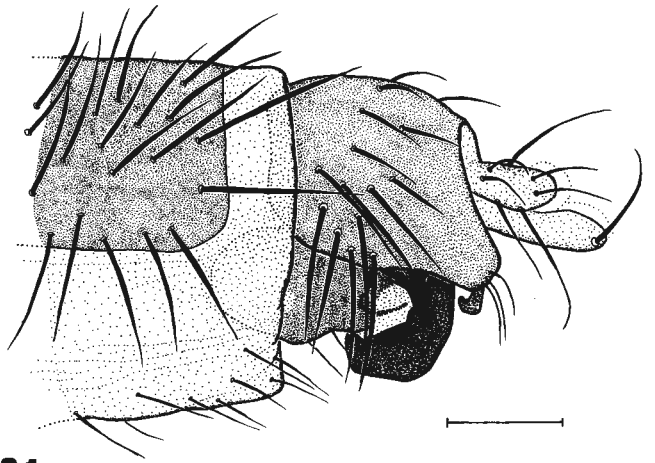
Figs 321–323. *Megaselia* ♂♂ hypopygia. 321, *M. hyalipennis*. 322, *M. subconvexa*. 323, *M. conformis*.



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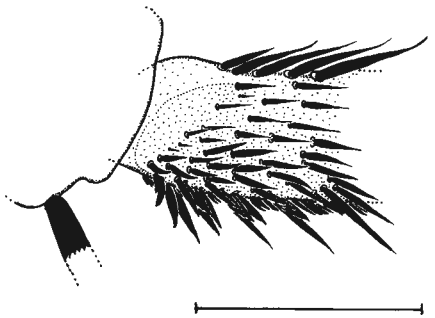

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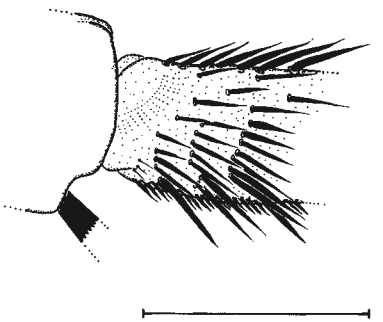

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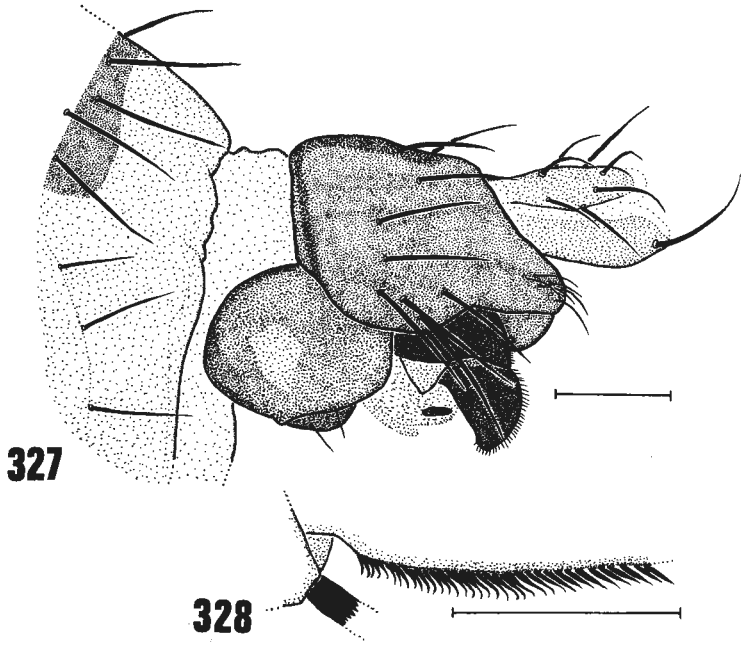
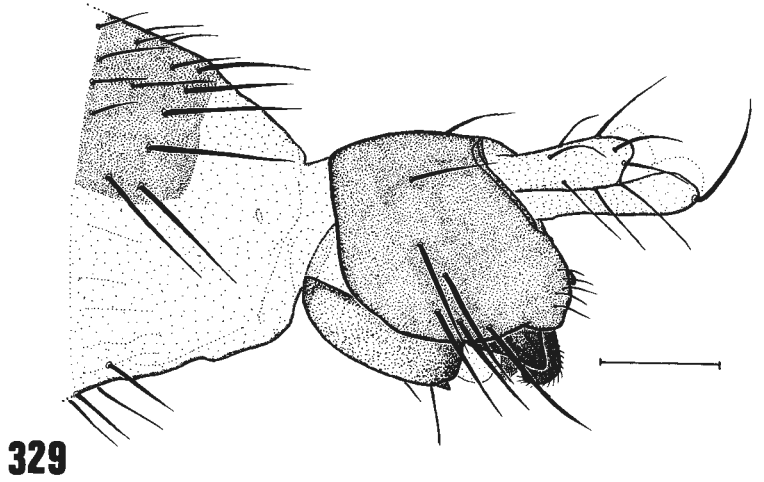
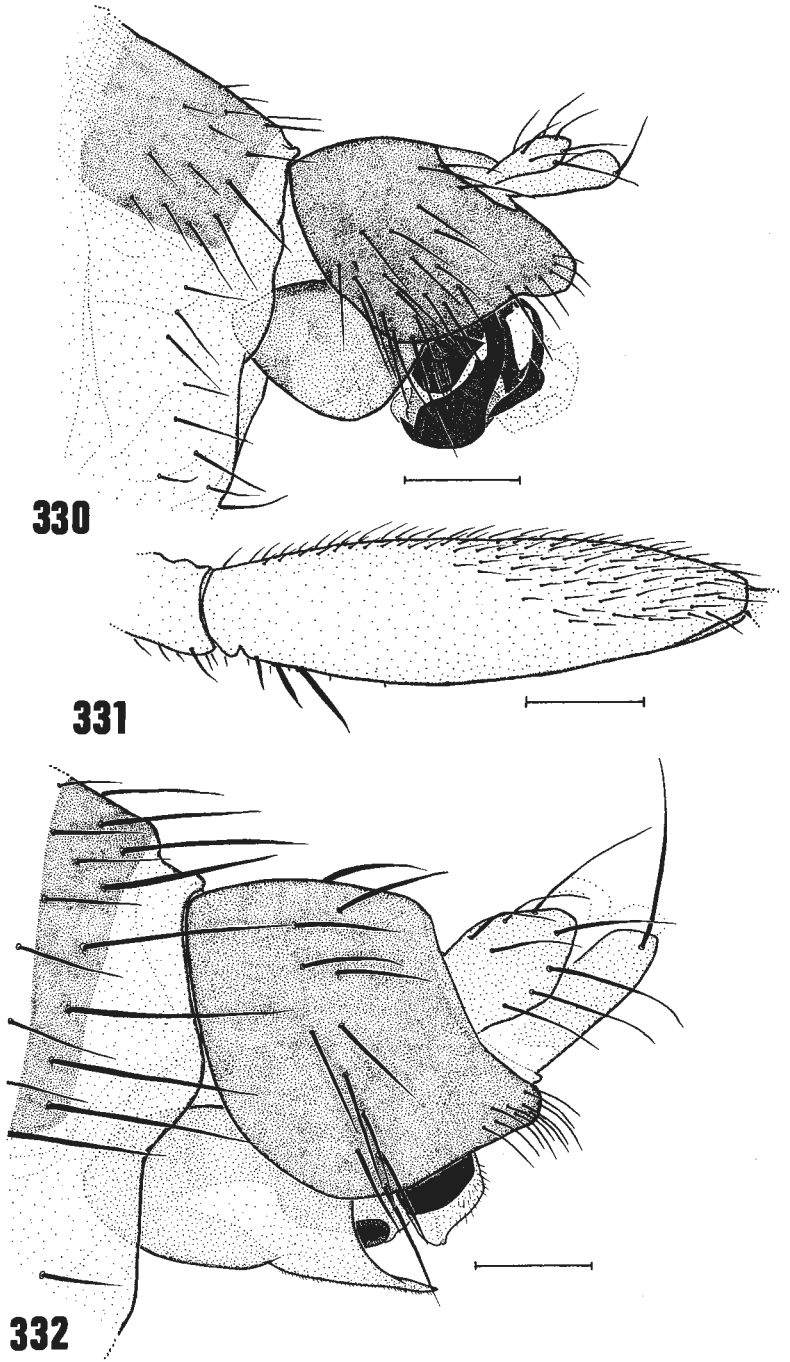
Figs 324–326. *Megaselia* ♂♂. 324, *M. valvata* hypopygium. 325, 326 posterior faces of bases of hind metatarsi. 325, *M. valvata*. 326, *M. protarsalis*.

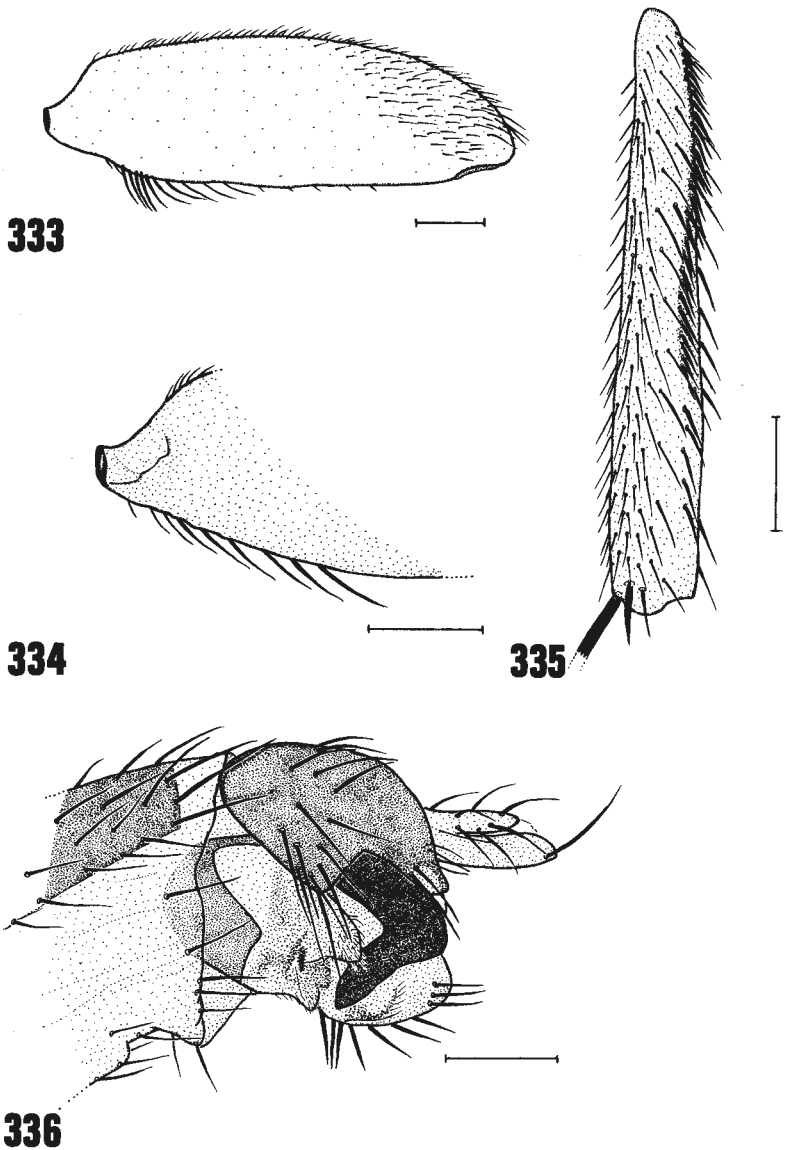




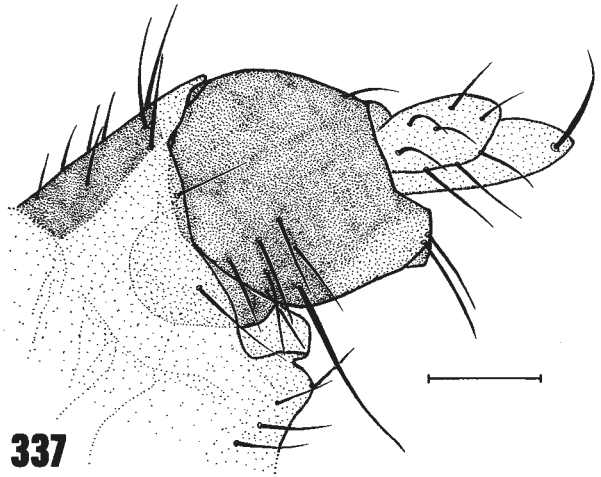
Figs 327–329. *Megaselia* ♂♂. 327, 328 *M. horsfieldi*. 327, hypopygium. 328, anterior face of base of ventral hair palisade of hind metatarsus. 329, *M. protarsalis* hypopygium.

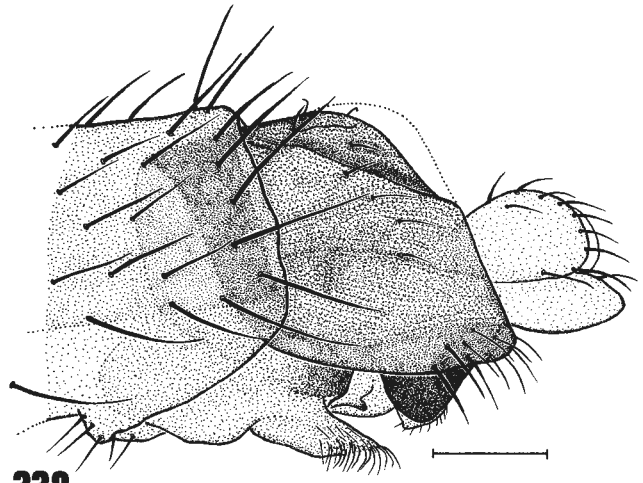


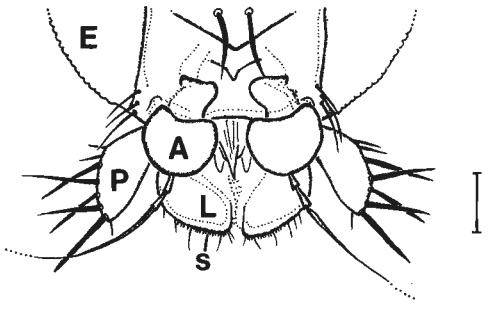
Figs 330–332. *Megaselia* ♂♂. 330, 331 *M. affinis*. 330, hypopygium. 331, posterior face of mid-femur. 332, *M. robusta* hypopygium.



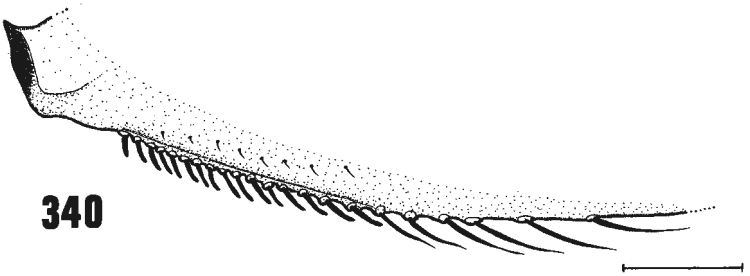
Figs 333–336. *Megaselia* ♂♂. 333, 334 posterior faces of hind femora. 333, *M. armata*. 334, *M. pectoralis*. 335, *M. furva* posterior face of mid tibia. 336, *M. pectoralis* hypopygium.

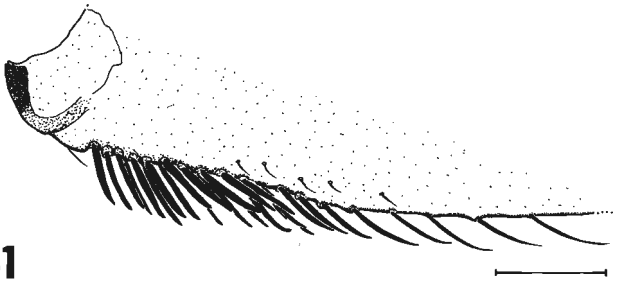


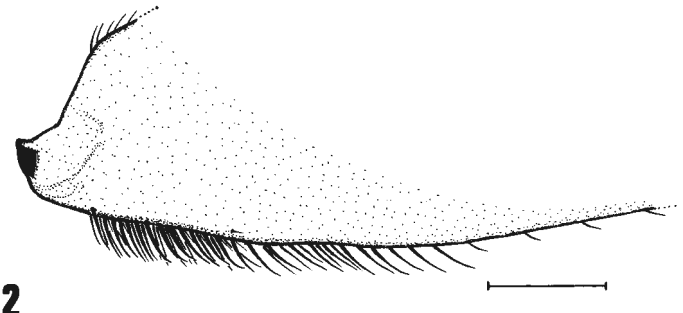


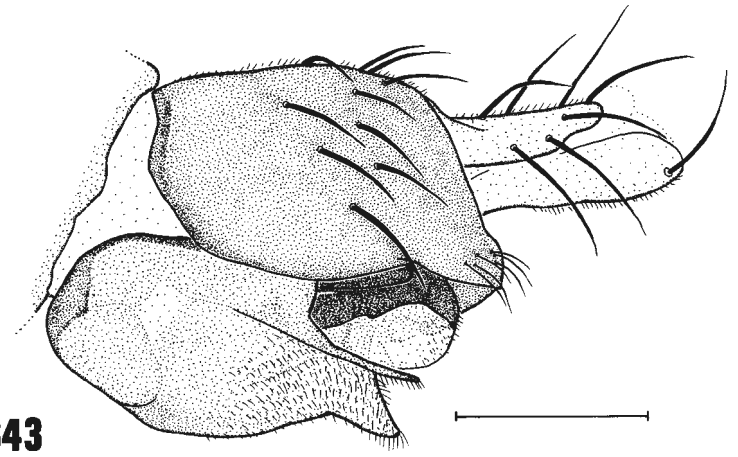


Figs 337–339. *Megaselia* ♂♂. 337, *M. rudis* hypopygium. 338, *M. killarneyensis* hypopygium (dotted line = postulated position of 'undented' epandrium). 339, *M. altifrons* lower part of head from front (E = eye, P = palp, A = antenna, L = labellum, s = spines).

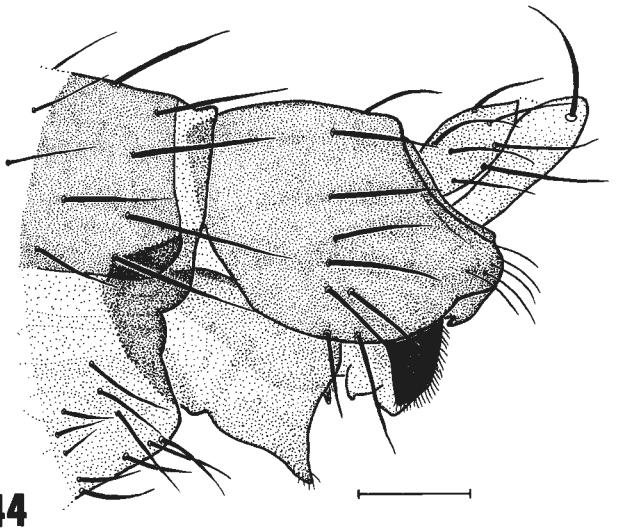








Figs 340–343. *Megaselia* ♂♂. 340–342, posterior faces of bases of hind femora. 340, *M. robusta*. 341, *M. beckeri*. 342, *M. hirticrus*. 343, *M. hirticrus* hypopygium.



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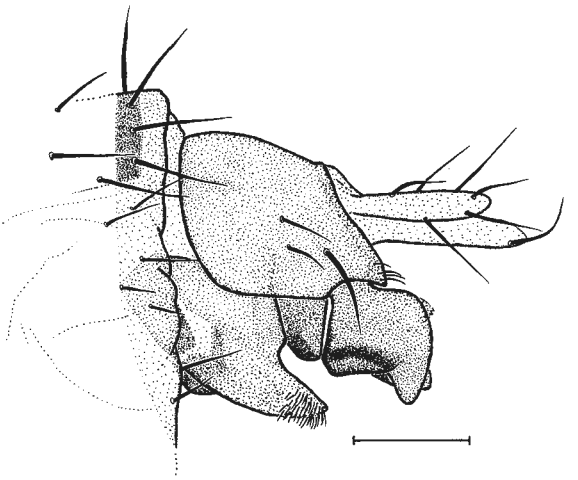

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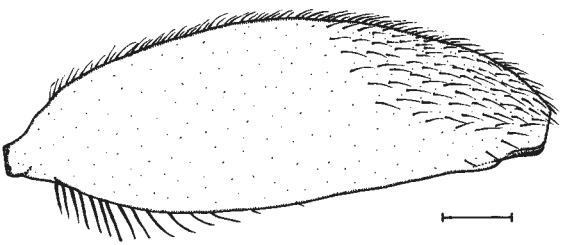

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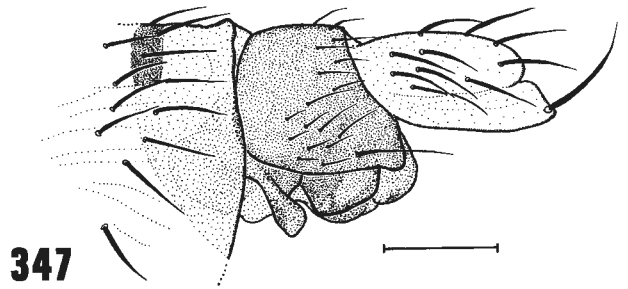
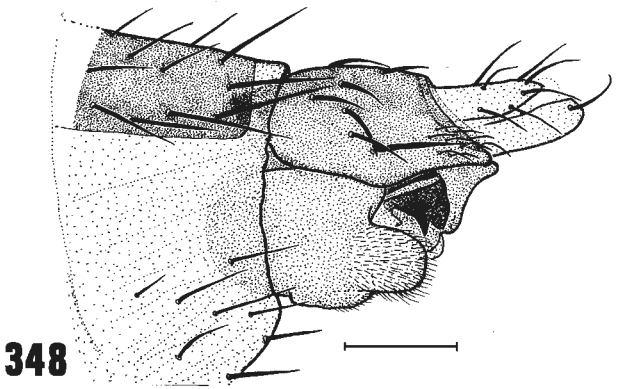
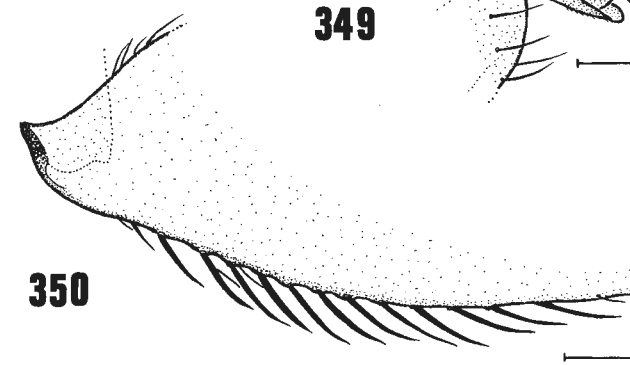
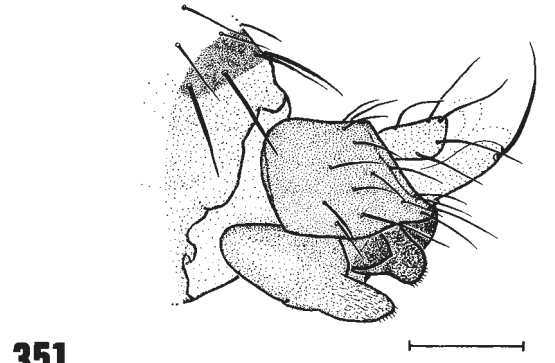
Figs 344–346. *Megaselia* ♂♂. 344, *M. beckeri* hypopygium. 345, *M. armata* hypopygium. 346, *M. aquilonia* posterior face of hind femur.







Figs 347–350. *Megaselia* ♂♂. 347–349, hypopygia. 347, *M. rufa*. 348, *M. oweni*. 349, *M. hibernans*. 350, *M. consetigera* posterior face of base of hind femur.



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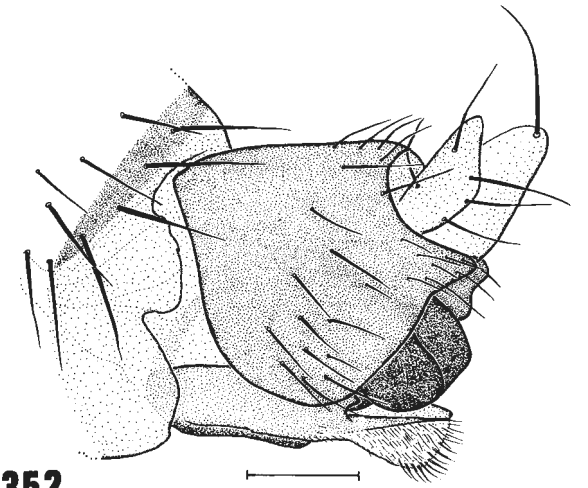

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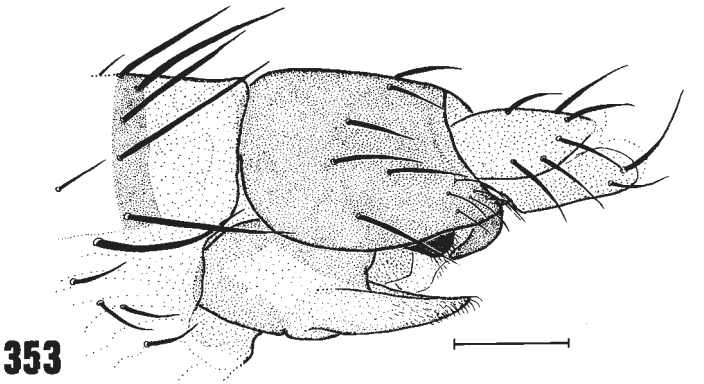

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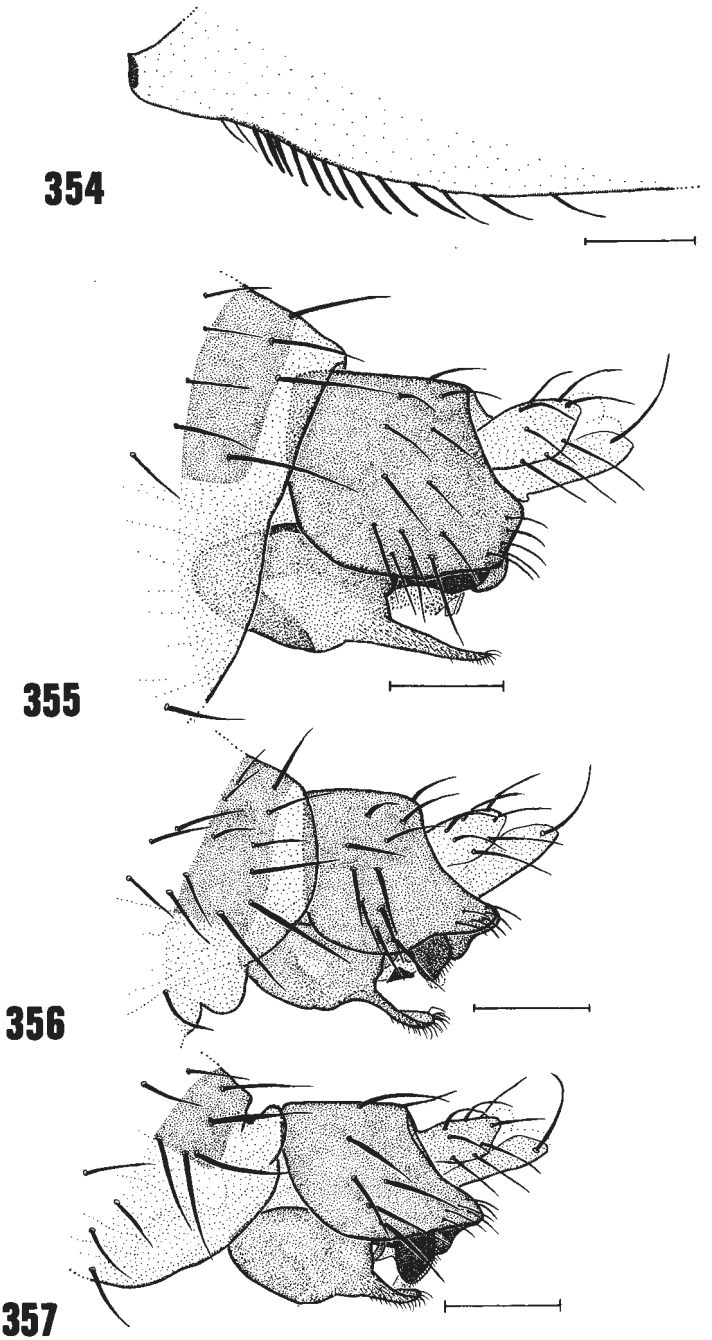
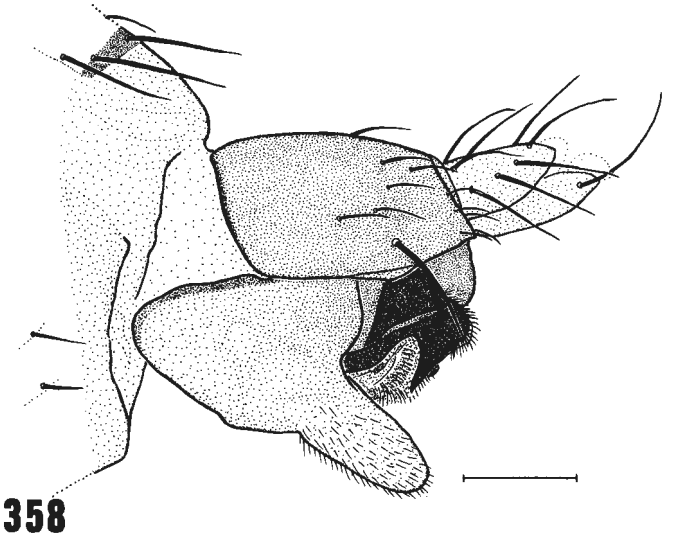
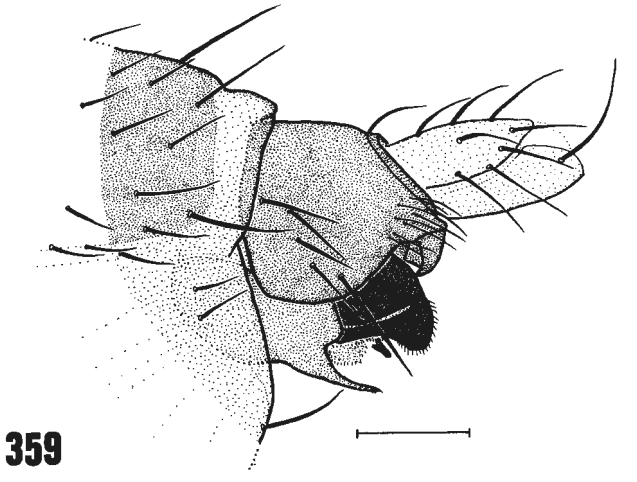
Figs 351–353. *Megaselia* ♂♂ hypopygia. 351, *M. lucifrons*. 352, *M. subpalpalis*. 353, *M. consetigera*.

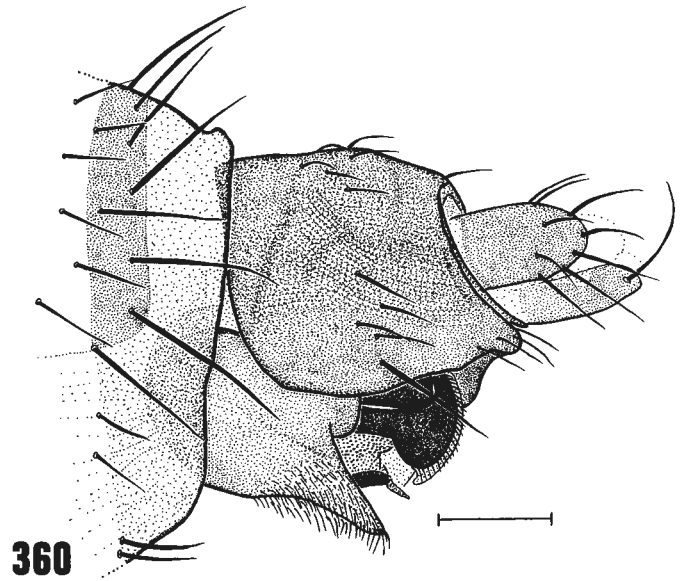


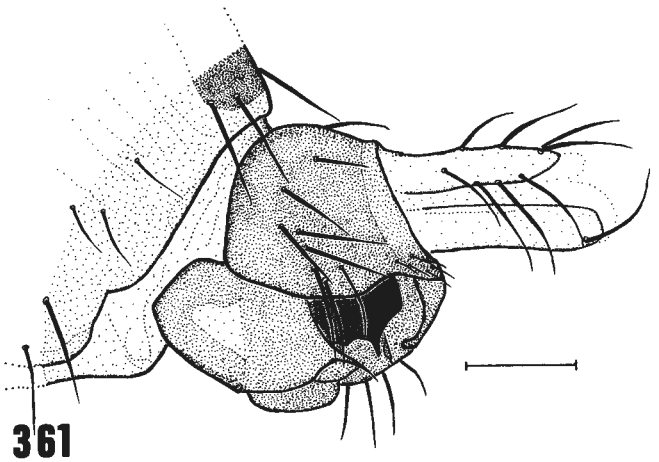
Figs 354–357. *Megaselia* ♂♂. 354, *M. beyeri* posterior face of base of hind femur. 355–357, hypopygia. 355, *M. aquilonia*. 356, *M. beyeri*. 357, *M. differens*.



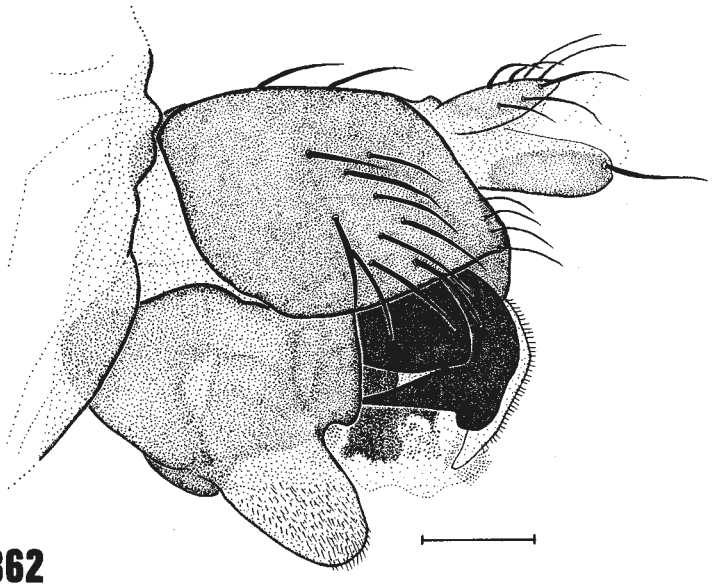


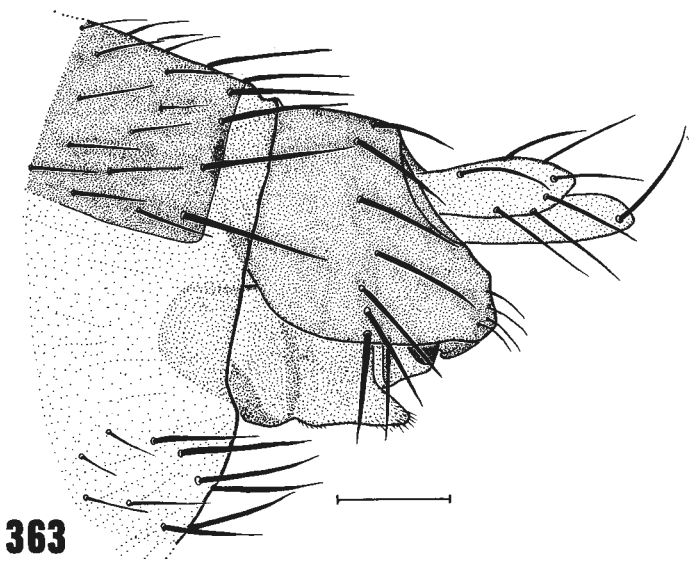
Figs 358–359. *Megaselia* ♂♂ hypopygia. 358, *M. posticata*. 359, *M. communiformis*.



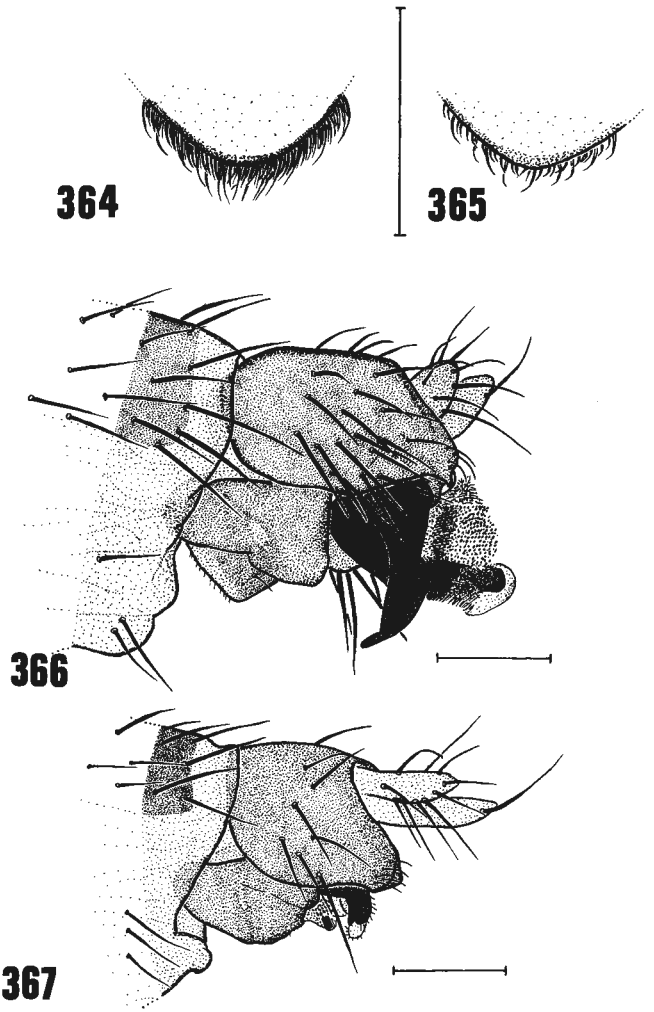


Figs 360–361. *Megaselia* ♂♂ hypopygia. 360, *M. fumata*. 361, *M. albiclava*.

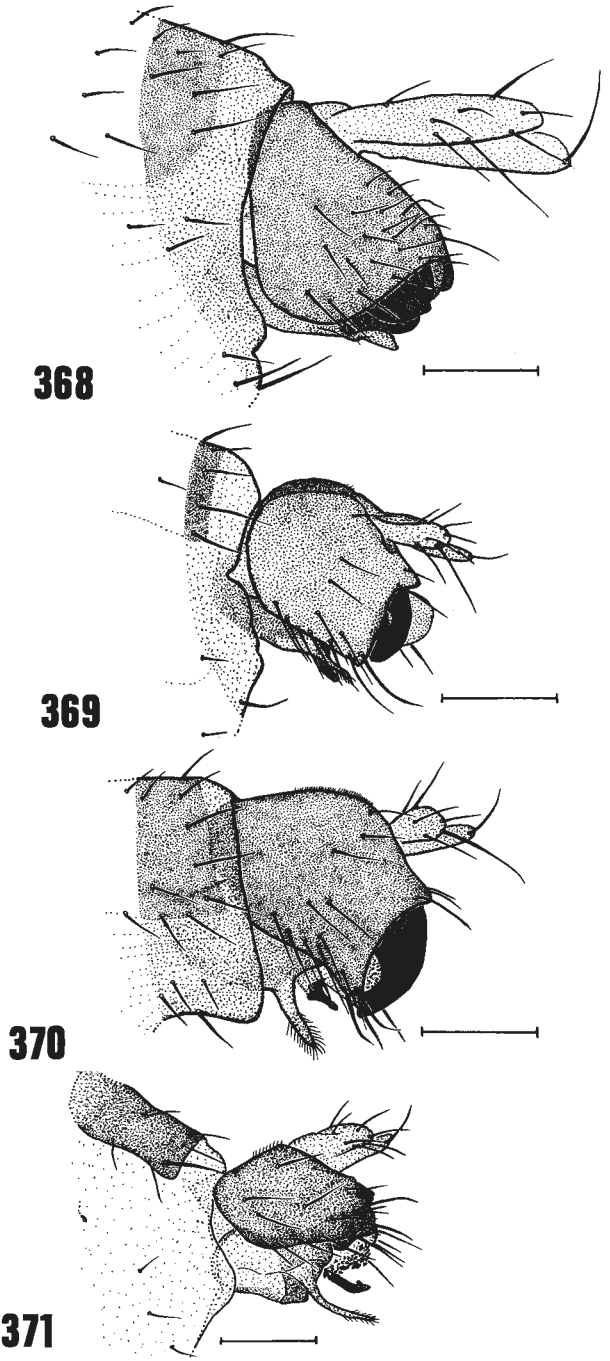




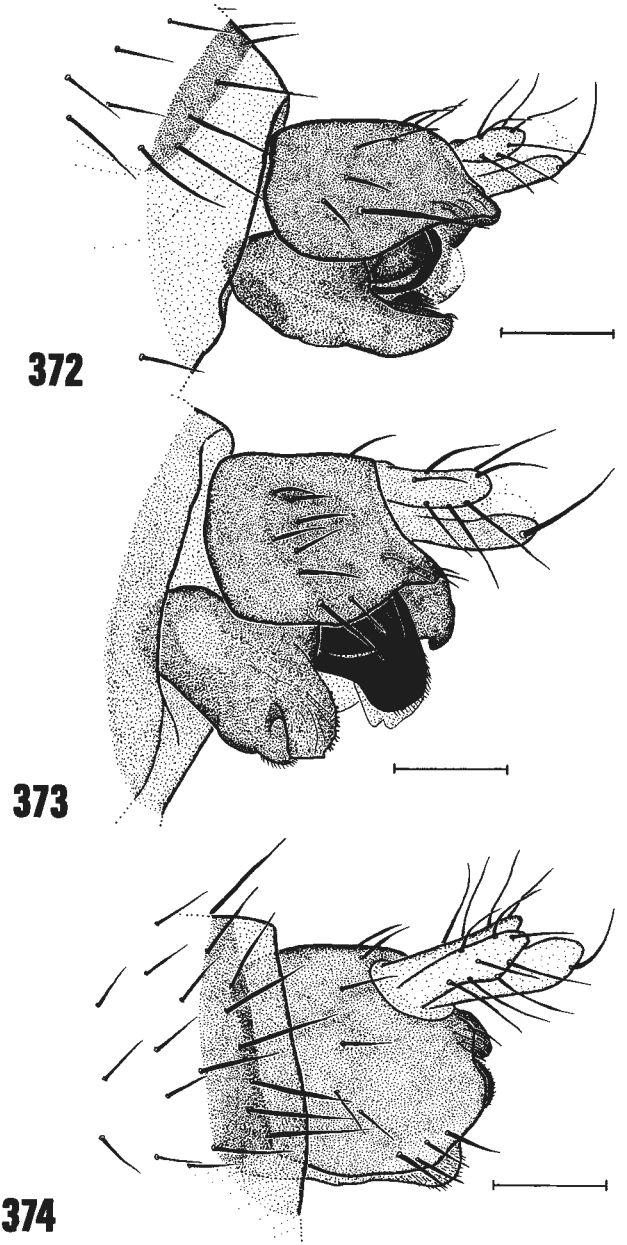
Figs 362–363. *Megaselia* ♂♂ hypopygia. 362, *M. fuscipalpis*. 363, *M. tonyirwini*.



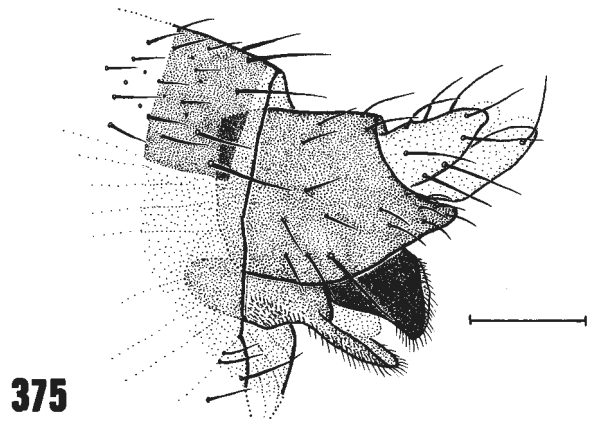
Figs 364–367. *Megaselia* ♂♂. 364–365, apex of third antennal segment. 364, *M. unguicularis*. 365, *M. feshiensis*. 366–367, hypopygia. 366, *M. unguicularis*. 367, *M. feshiensis*.

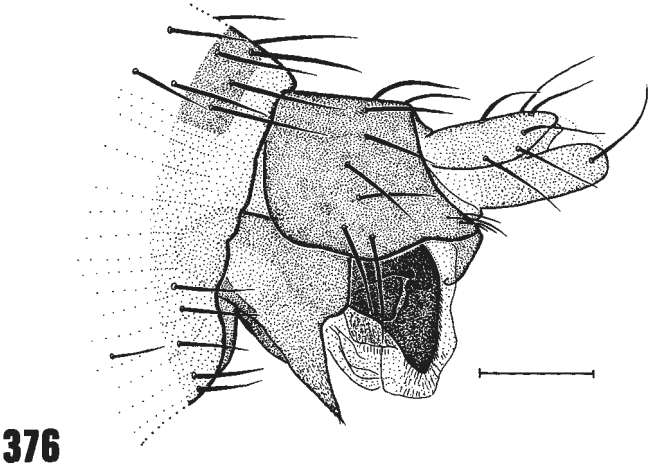


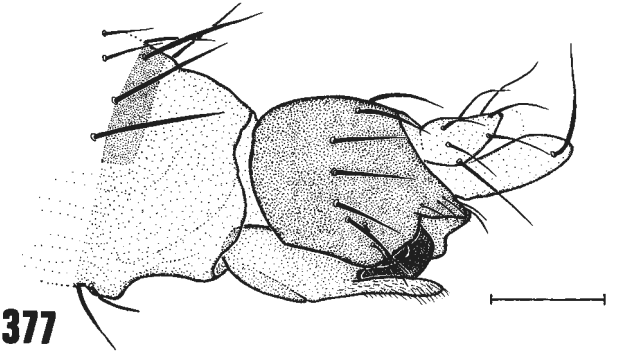
Figs 368–371. *Megaselia* ♂♂ hypopygia. 368, *M. styloprocta*. 369, *M. ignobilis*. 370, *M. pusilla*. 371, *M. drakei*.



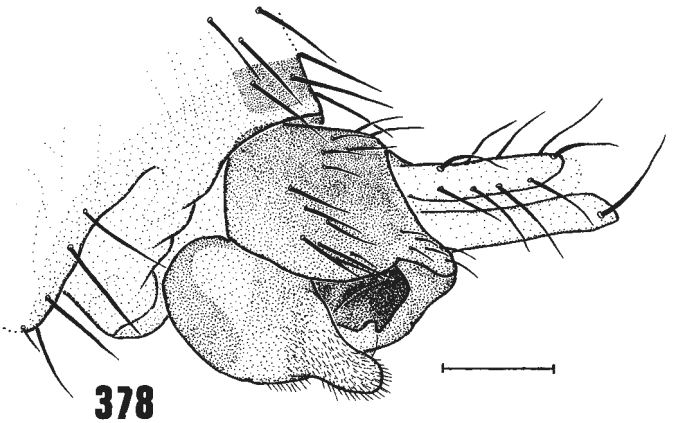
Figs 372–374. *Megaselia* ♂♂ hypopygia. 372, *M. pumila*. 373, *M. vestita*. 374, *M. indifferens*.

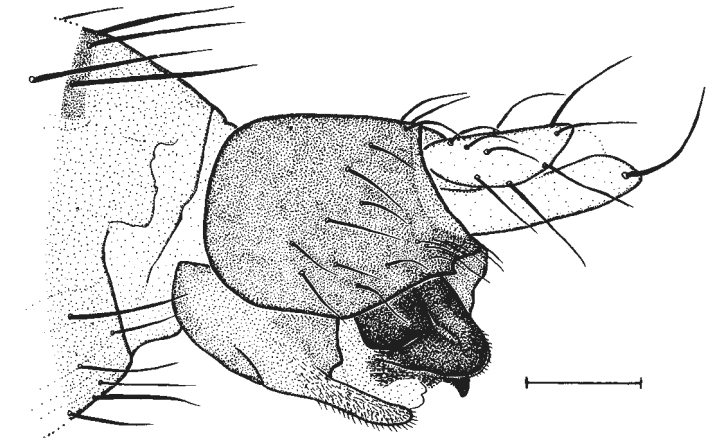


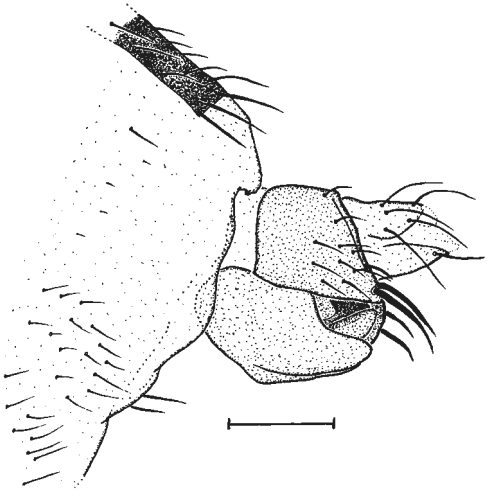




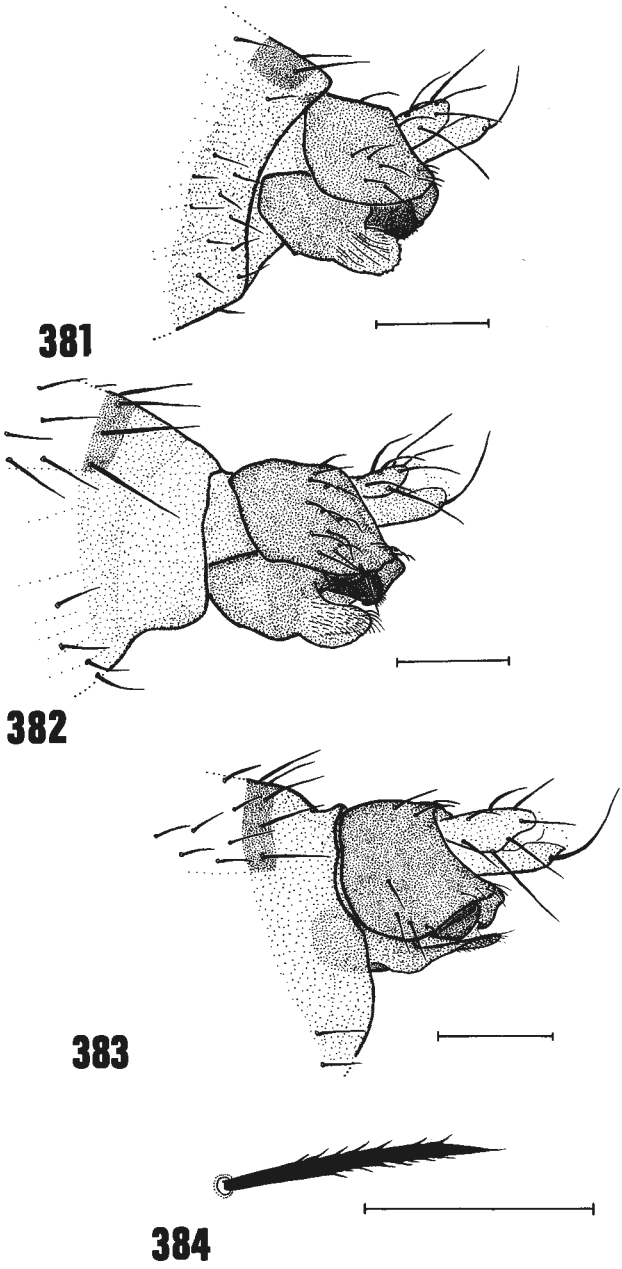
Figs 375–377. *Megaselia* ♂♂ hypopygia. 375, *M. tergata*. 376, *M. fusciclava*. 377, *M. subpleuralis*.



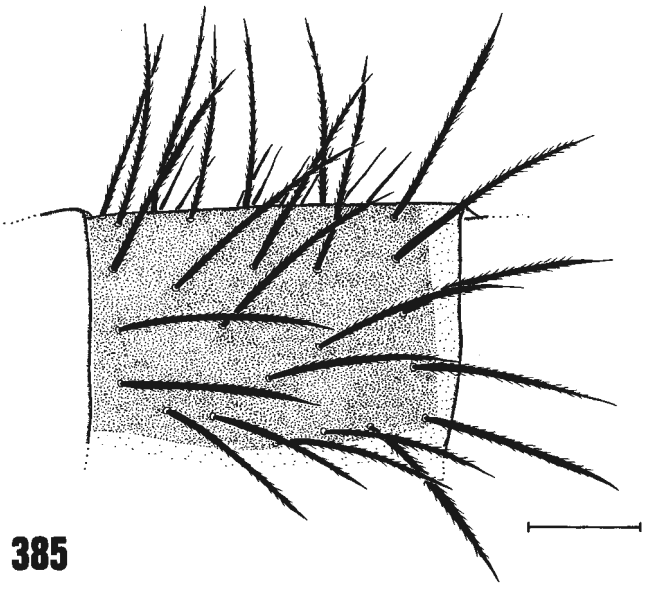


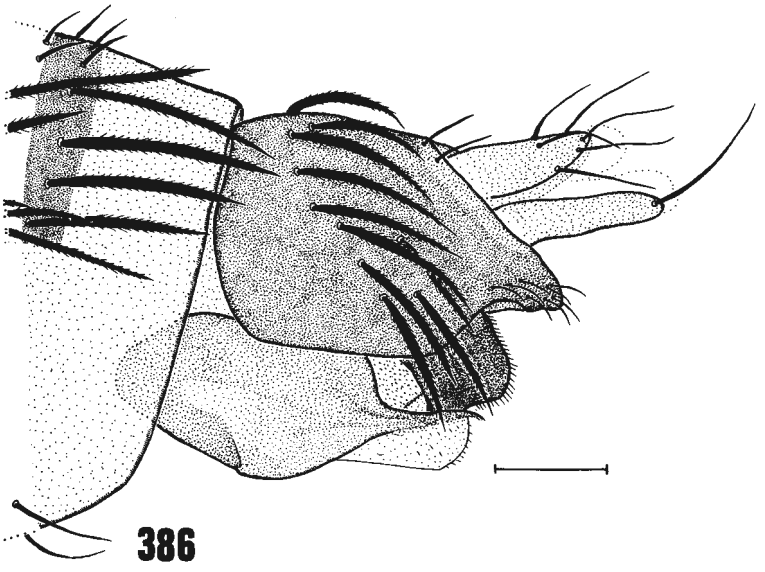


Figs 378–380. *Megaselia* ♂♂ hypopygia. 378, *M. subfraudulenta*. 379, *M. fuscovariana*. 380, *M. hendersoni*.

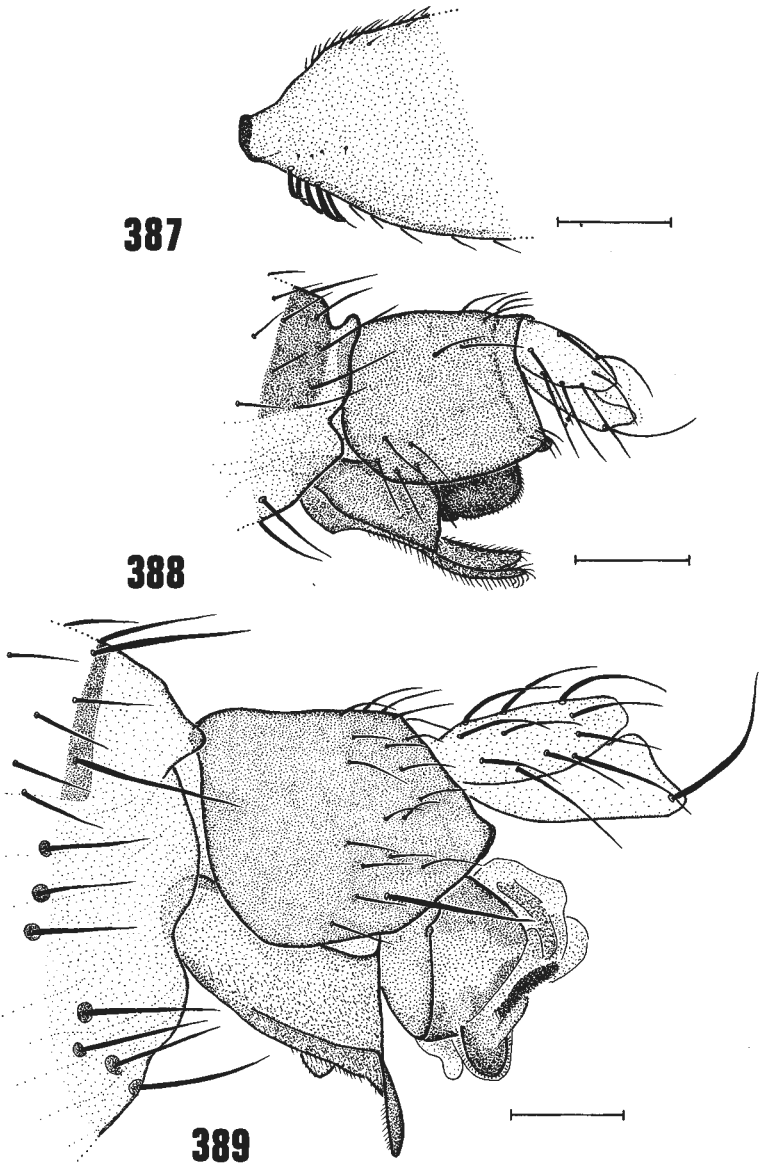


Figs 381–384. *Megaselia* ♂♂. 381–383 hypopygia. 381, *M. mcleani*. 382, *M. superciliata*. 383, *M. simplex*. 384, a single feathered bristle (from epandrium of *M. rubescens*).

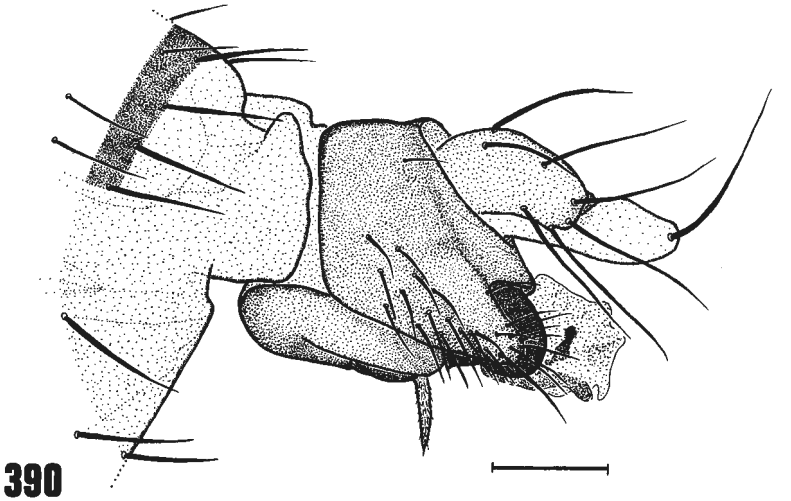


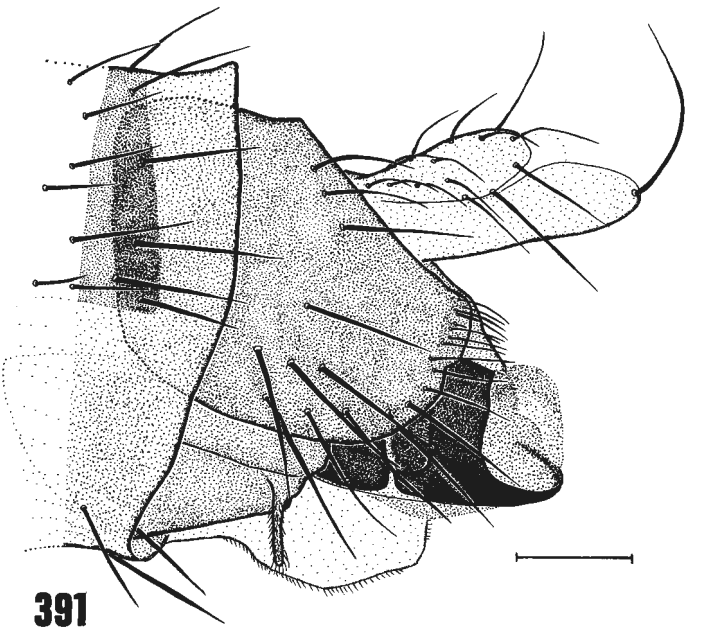


Figs 385–386. *Megaselia rufipes* ♂. 385, abdominal tergite 4 viewed from left side. 386, hypopygium.

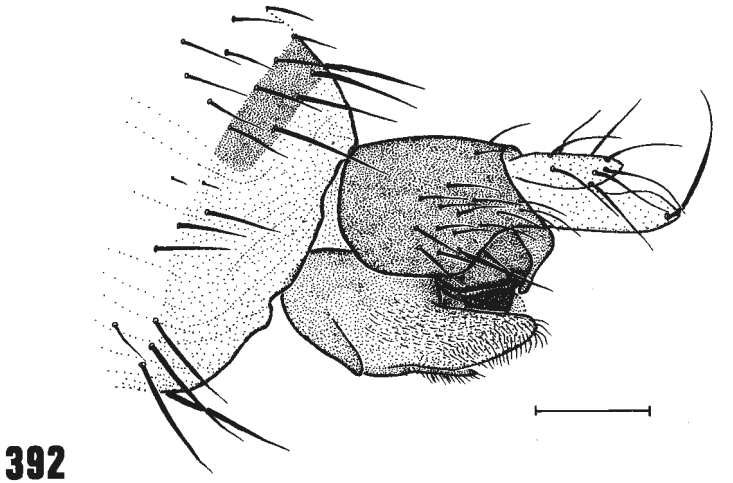


Figs 387–389. *Megaselia* ♂♂. 387–388 *M. longiseta*. 387, posterior face of base of hind femur. 388, hypopygium. 389, *M. ruficornis* hypopygium.





Figs 390–391. *Megaselia* ♂♂ hypopygia. 390, *M. plurispinulosa*. 391, *M. pseudogiraudii*.



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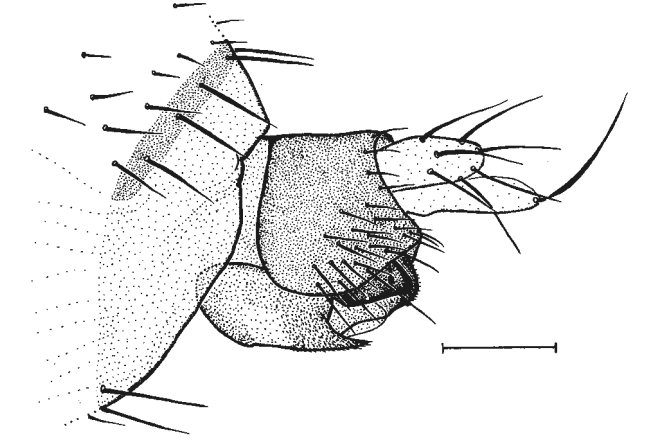

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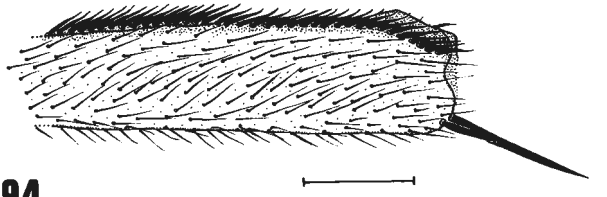

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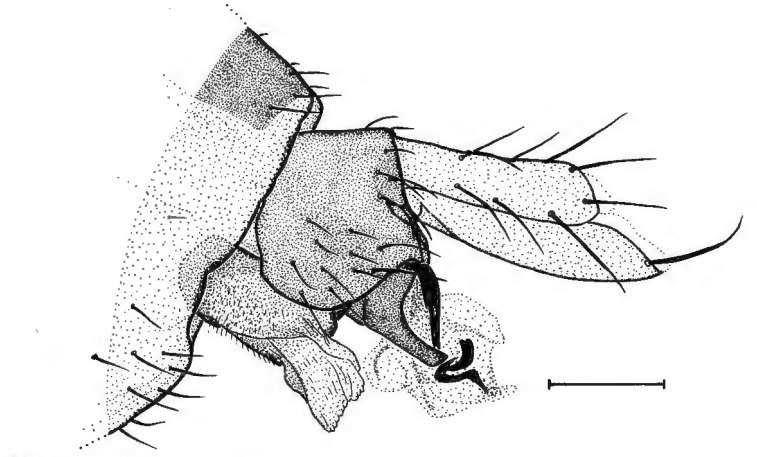
Figs 392–394. *Megaselia* ♂♂. 392–393 hypopygia. 392, *M. densior*. 393, *M. malhamensis*. 394, *M. latipalpis* anterior face of hind tibia.



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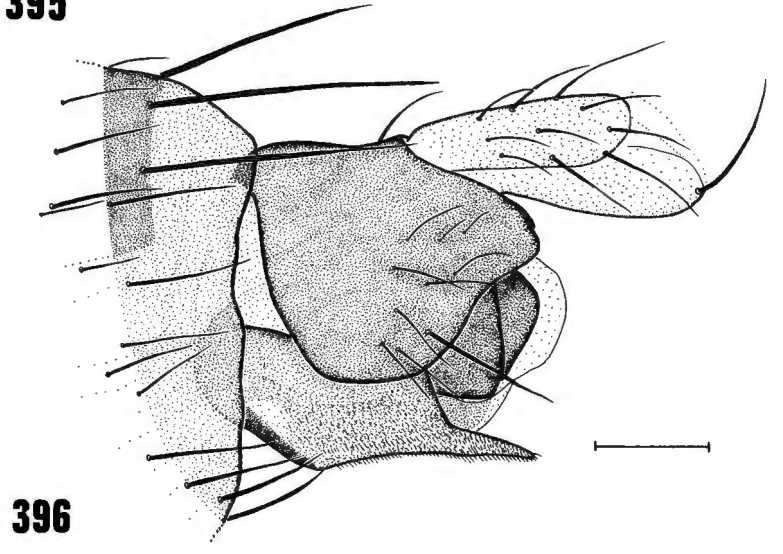

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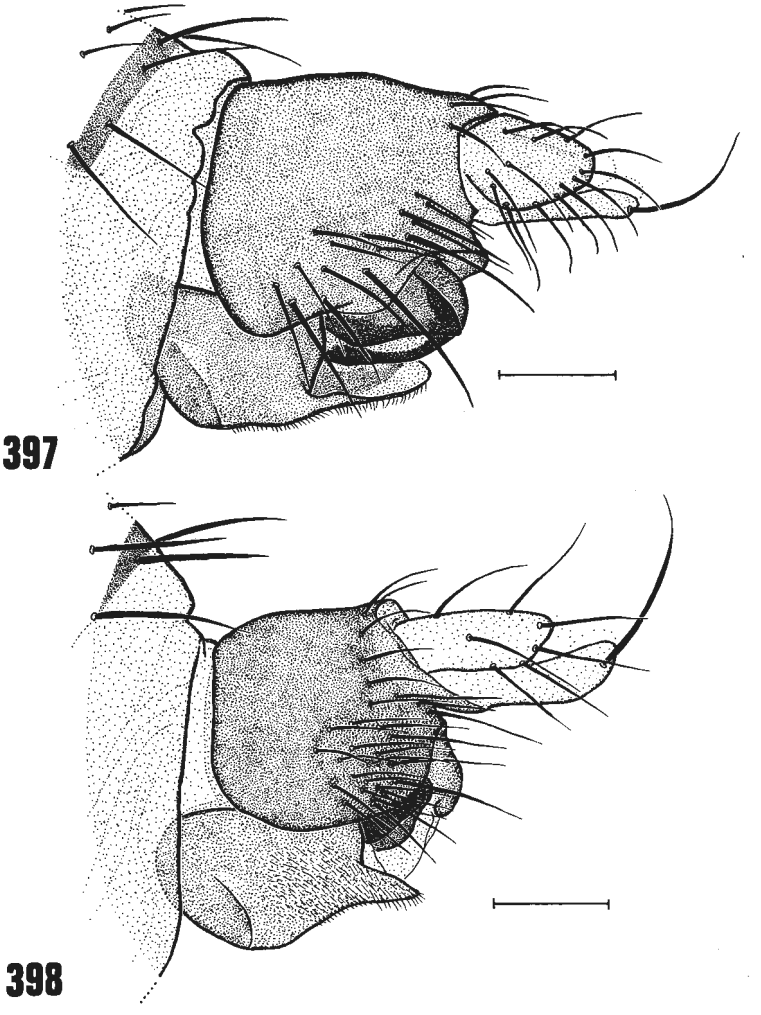
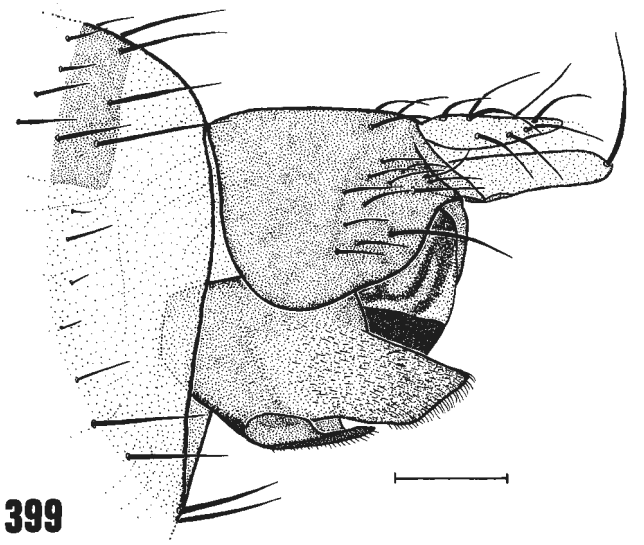
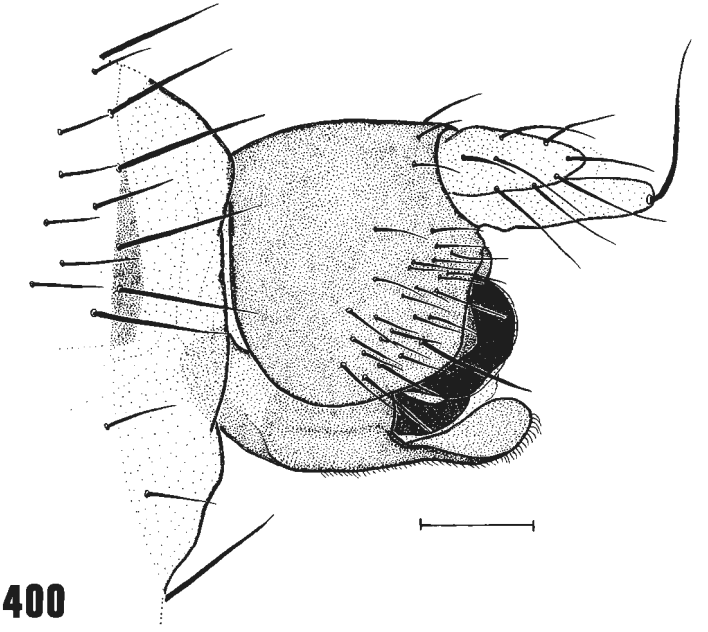
Figs 395–396. *Megaselia* ♂♂ hypopygia. 395, *M. emarginata*. 396, *M. latifemorata*.

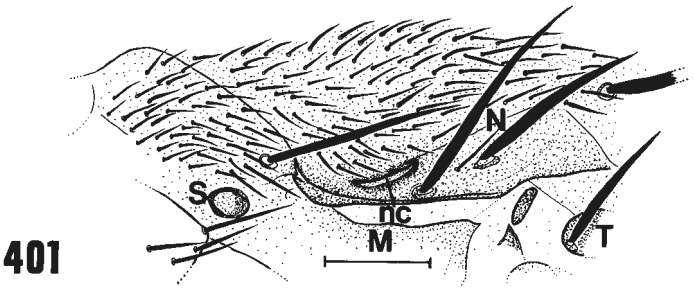


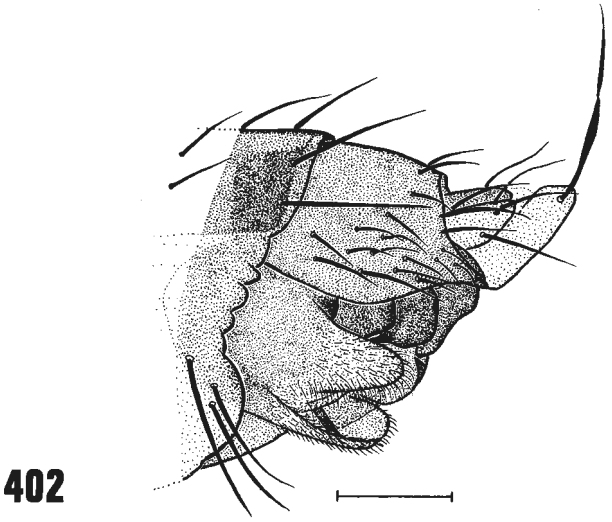
Figs 397–398. *Megaselia* ♂♂ hypopygia. 397, *M. albicans*. 398, *M. septentrionalis*.

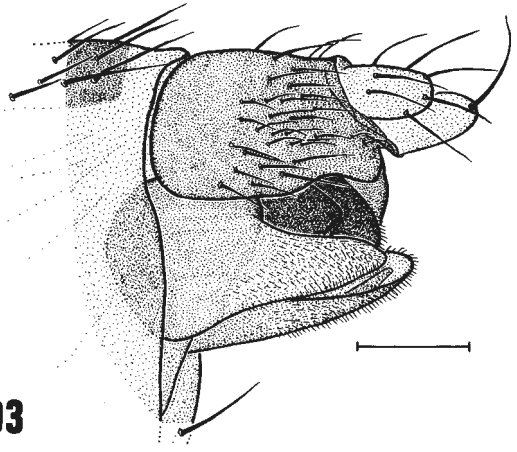




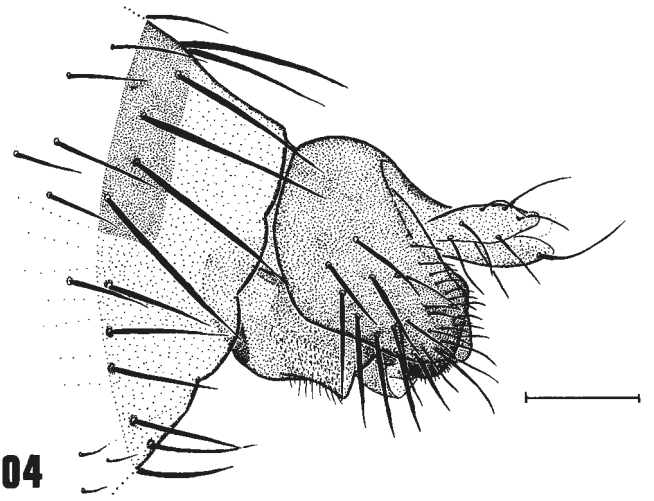
Figs 399–400. *Megaselia* ♂♂ hypopygia. 399, *M. giraudii*. 400, *M. parnassia*.







Figs 401–403. *Megaselia* ♂♂. 401, *M. giraudii* left notopleuron (S = prothoracic spiracle, M = mesopleuron, N = notopleural bristles, T = tegula at base of wing, nc = notopleural cleft). 402, *M. breviseta* hypopygium. 403, *M. correlata* hypopygium.



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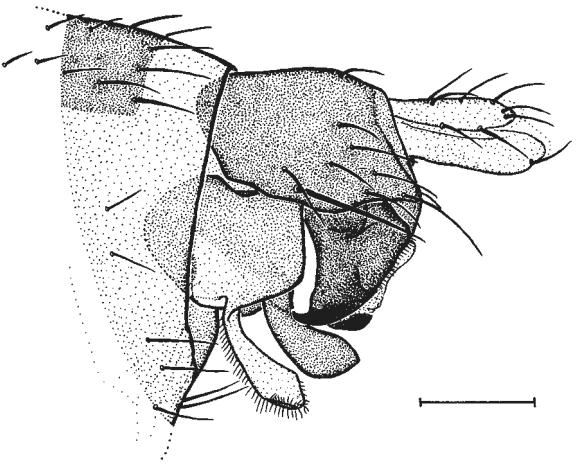

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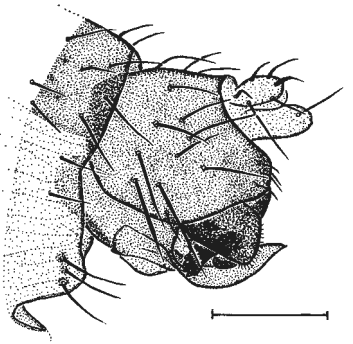

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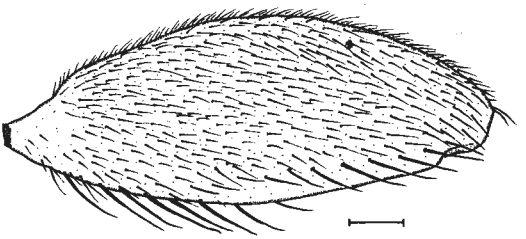
Figs 404–406. *Megaselia* ♂♂ hypopygia. 404, *M. spinicincta*. 405, *M. latipalpis*. 406, *M. longipalpis*.



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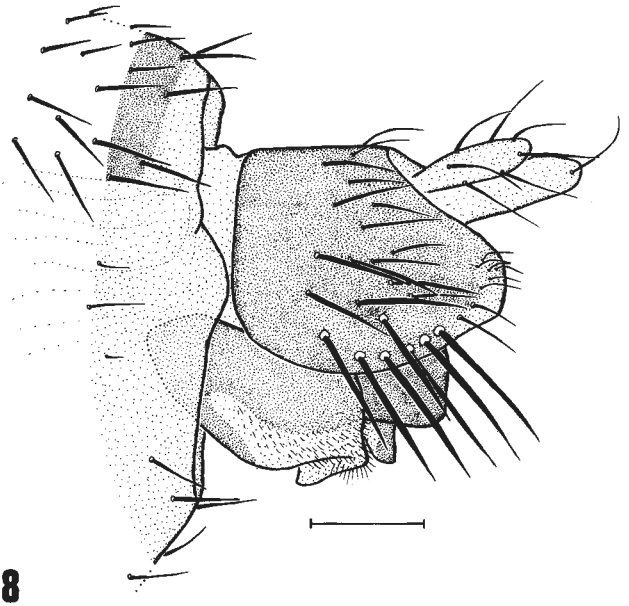

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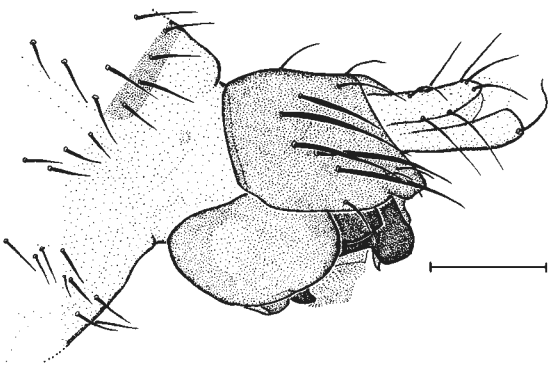

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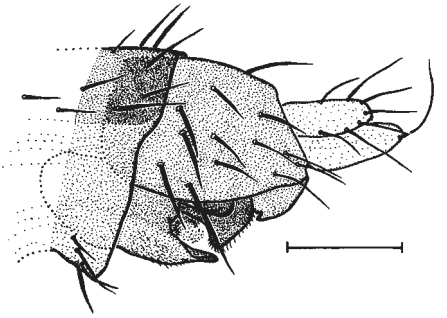
Figs 407–409. *Megaselia* ♂♂. 407, *M. breviseta* anterior face of hind femur. 408–409 hypopygia. 408, *M. rubescens*. 409, *M. sulphuripes*.



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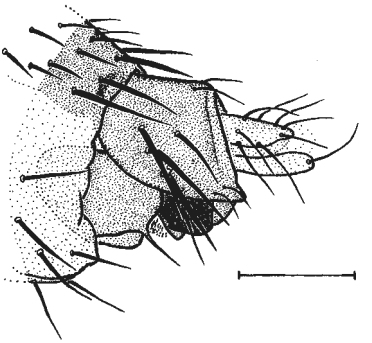

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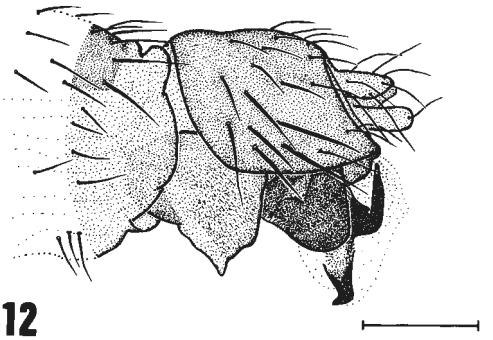

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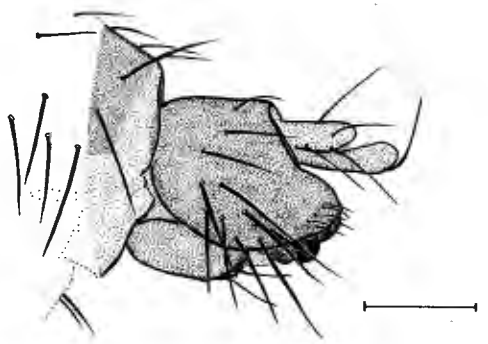
Figs 410–412. *Megaselia* ♂♂ hypopygia. 410, *M. sheppardi*. 411, *M. hirticaudata*. 412, *M. devia*.



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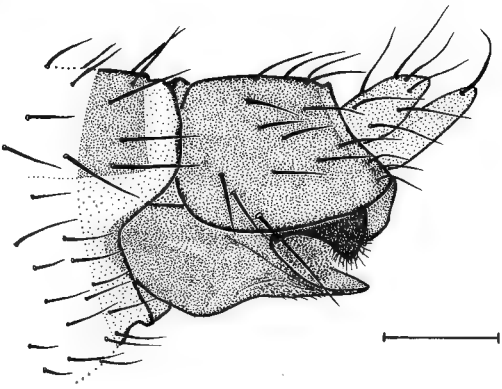

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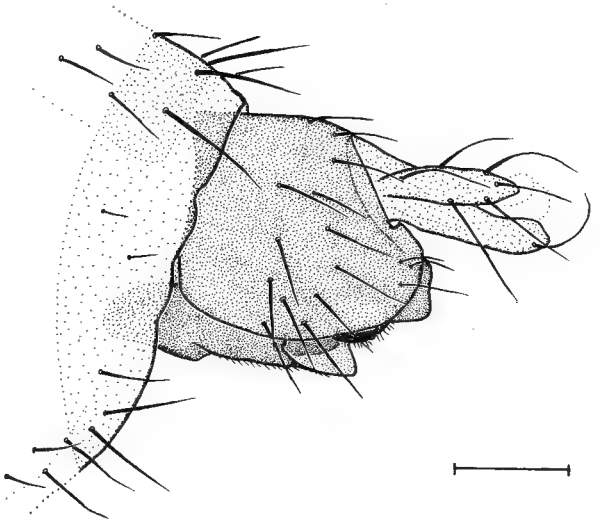
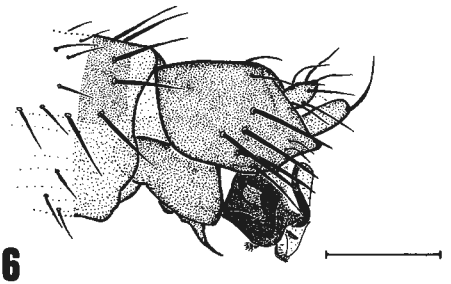


415

Figs 413–415. *Megaselia* ♂♂ hypopygia. 413, *M. cothurnata*. 414, *M. scutellaris*. 415, *M. lutea*.



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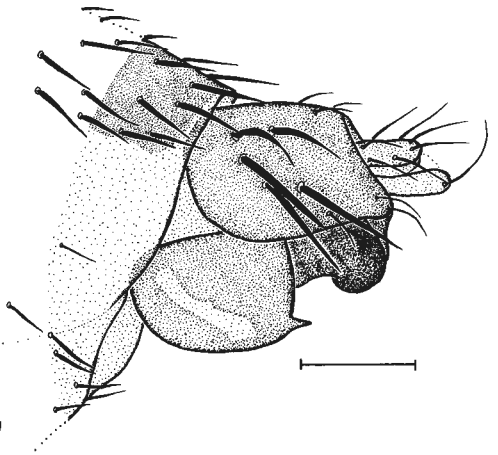

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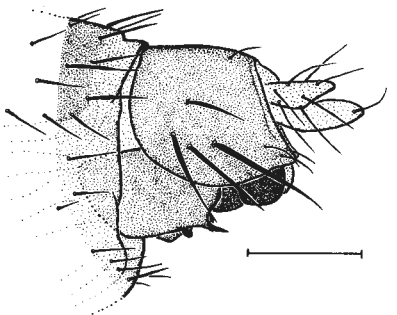

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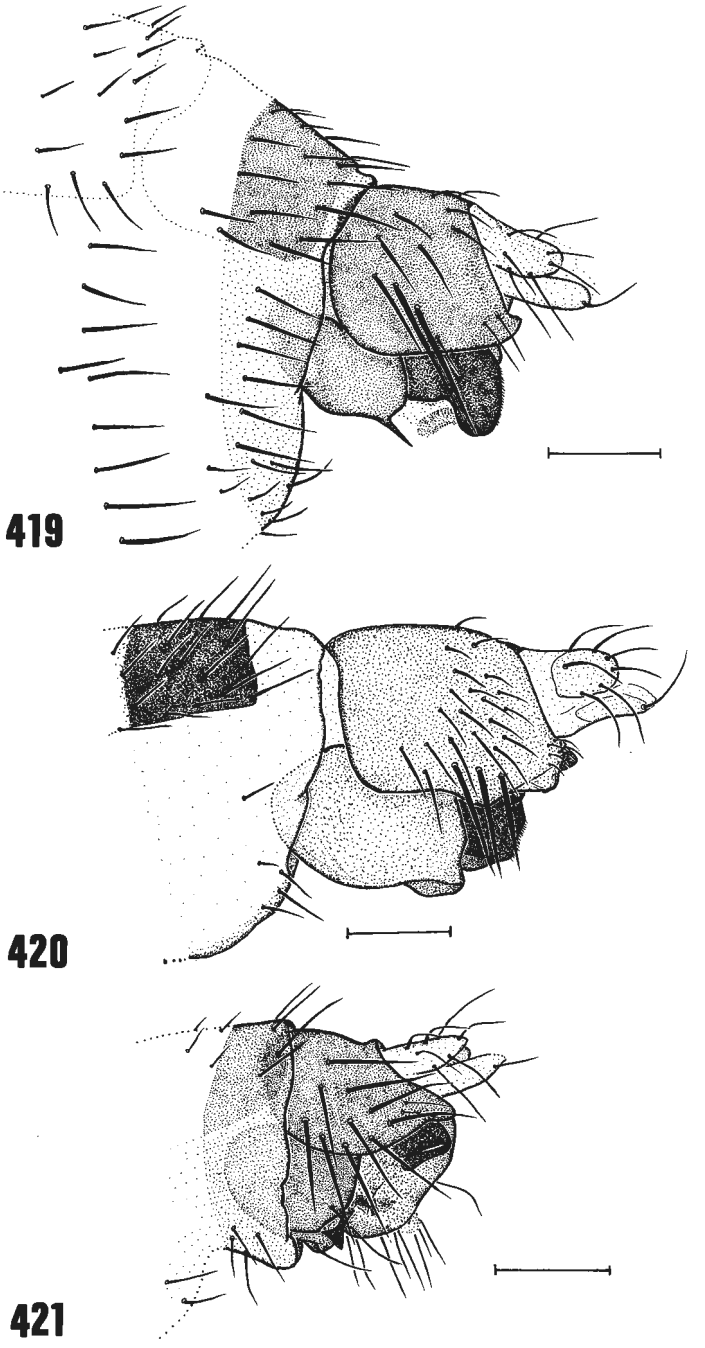
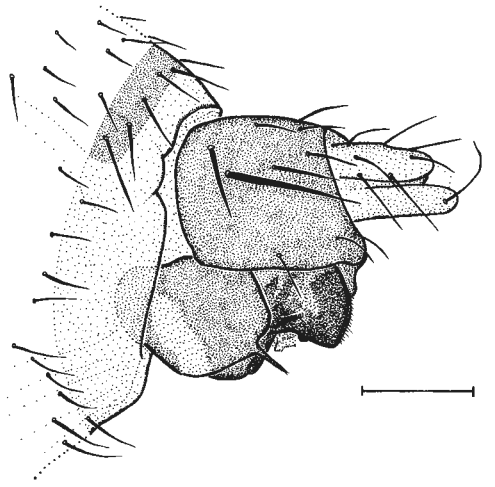
Figs 416–418. *Megaselia* ♂♂ hypopygia. 416, *M. capronata.* 417, *M. mortenseni.* 418, *M. subfuscipes.*



Figs 419–421. *Megaselia* ♂♂ hypopygia. 419, *M. halterata*. 420, *M. discreta*. 421, *M. rufifrons*.



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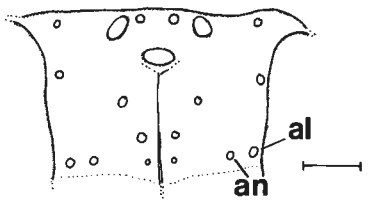

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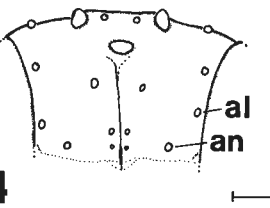

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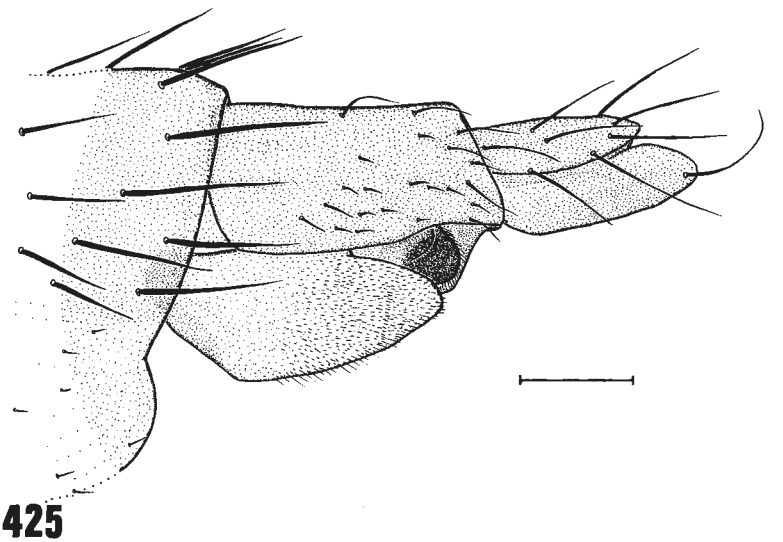
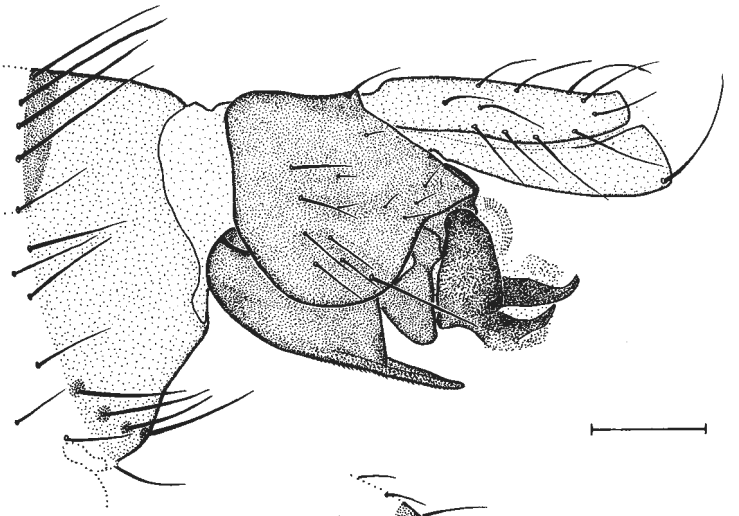


425

Figs 422–425. *Megaselia* ♂♂. 422, *M. pallidizona* hypopygium. 423–424, frons showing ocelli and positions of bristles (al = antero-lateral, an = antial). 423, *M. costalis*. 424, *M. crassicosta*. 425, *M. melanocephala* hypopygium.



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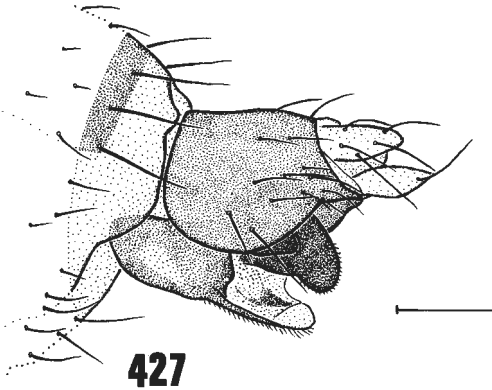

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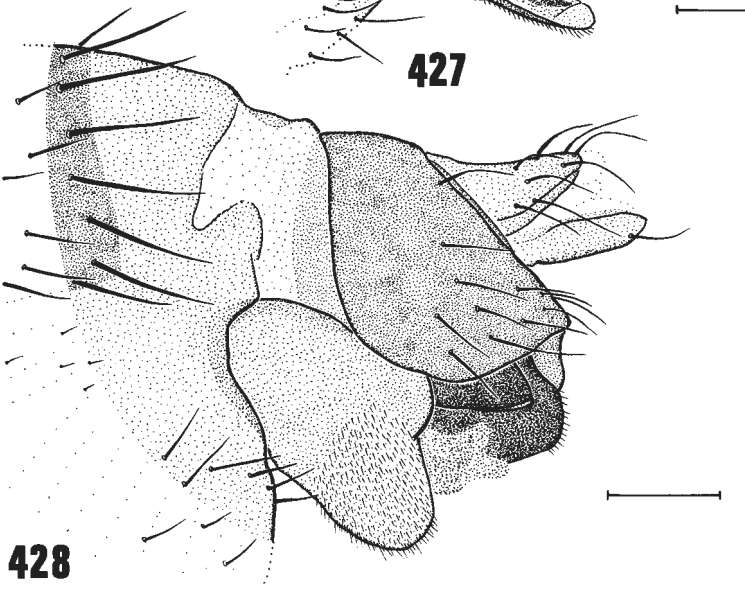
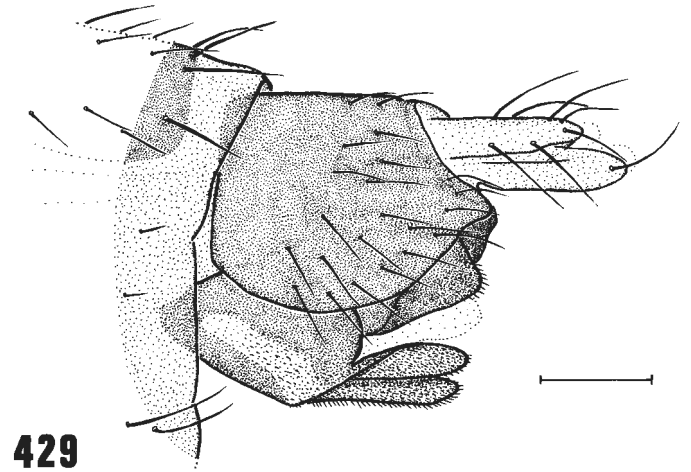
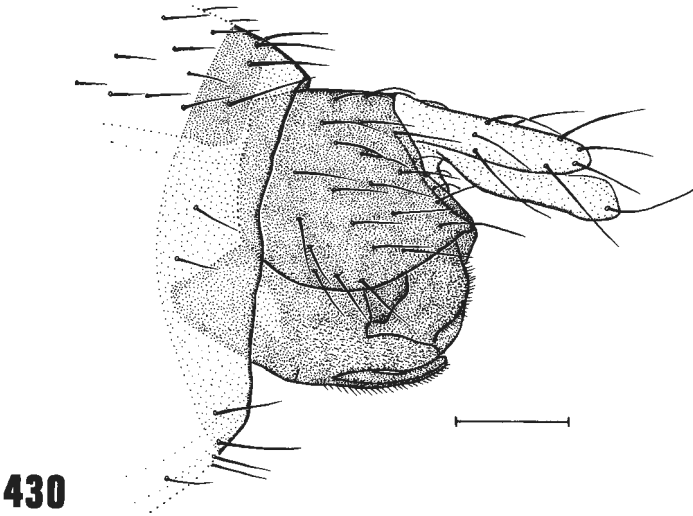
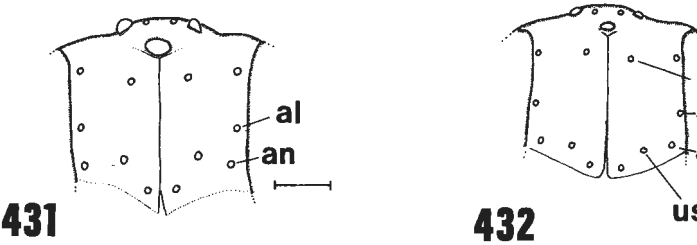


428

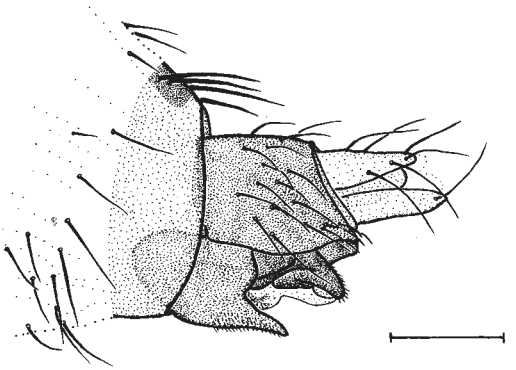
Figs 426–428. *Megaselia* ♂♂ hypopygia. 426, *M. errata*. 427, *M. tarsella*. 428, *M. brunneipennis*.







Figs 429–432. *Megaselia* ♂♂. 429–430 hypopygia. 429, *M. flava*. 430, *M. flavicans*. 431–432 frons showing ocelli and positions of bristles (al = antero-laterals, an = antials, po = pre-ocellar, us = upper supra-antennal). 431, *M. infraposita*. 432, *M. minuta*.



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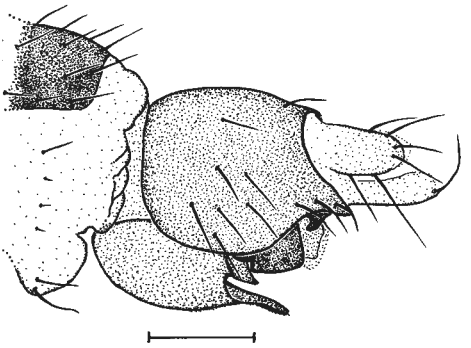

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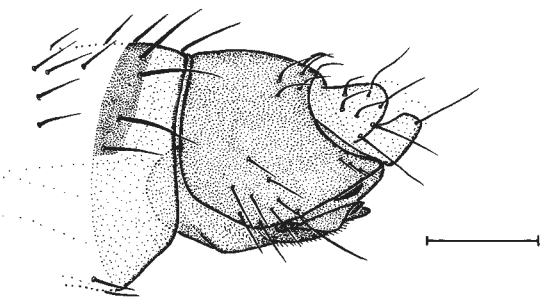
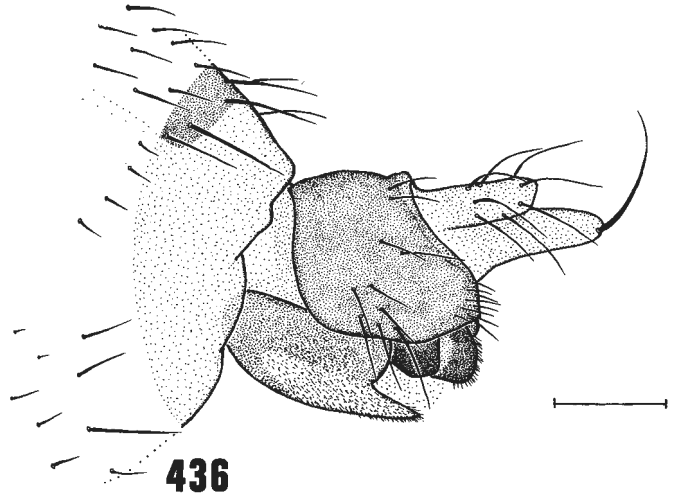


435

Figs 433–435. *Megaselia* ♂♂ hypopygia. 433, *M. mixta*. 434, *M. rubella*. 435, *M. pygmaea*.



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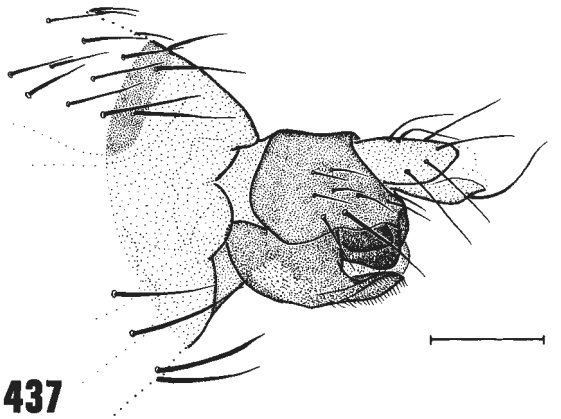

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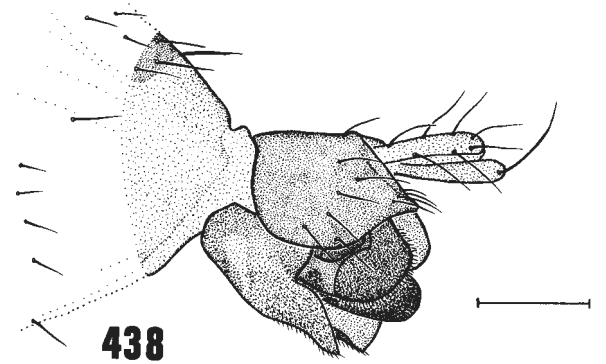

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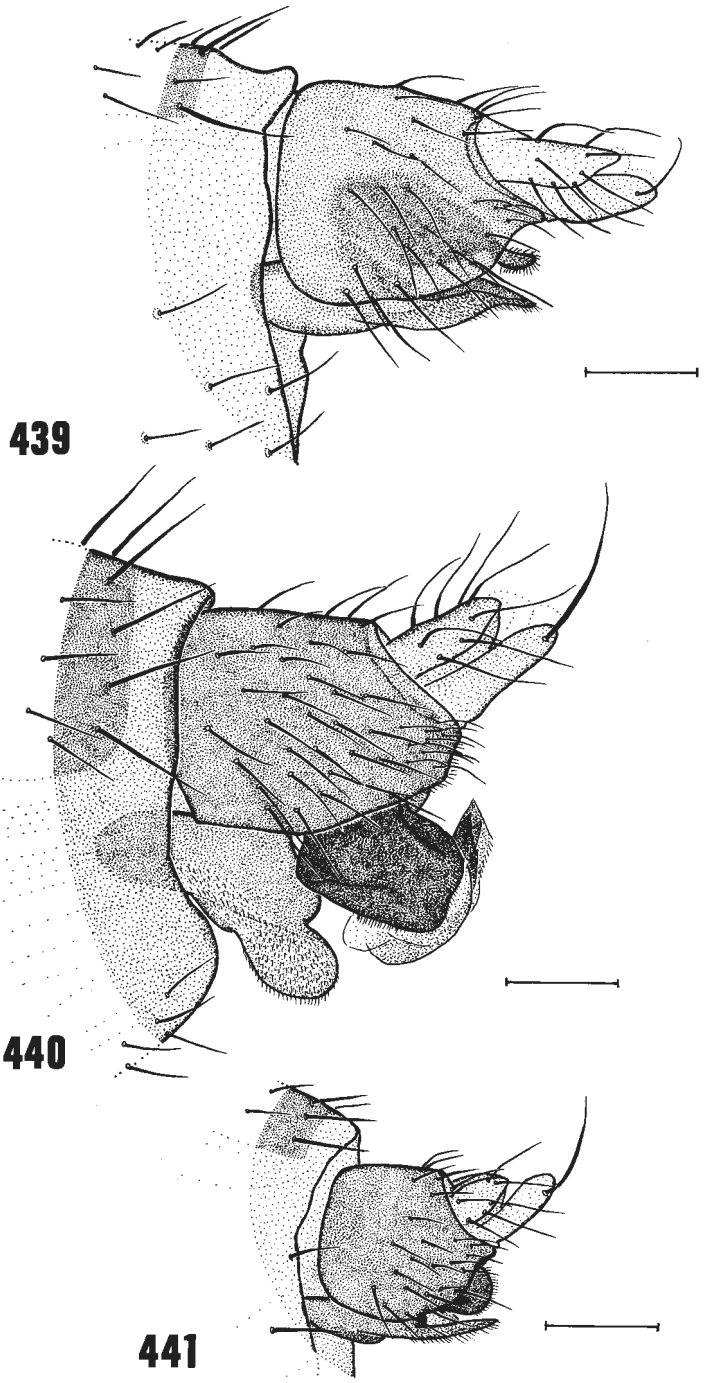
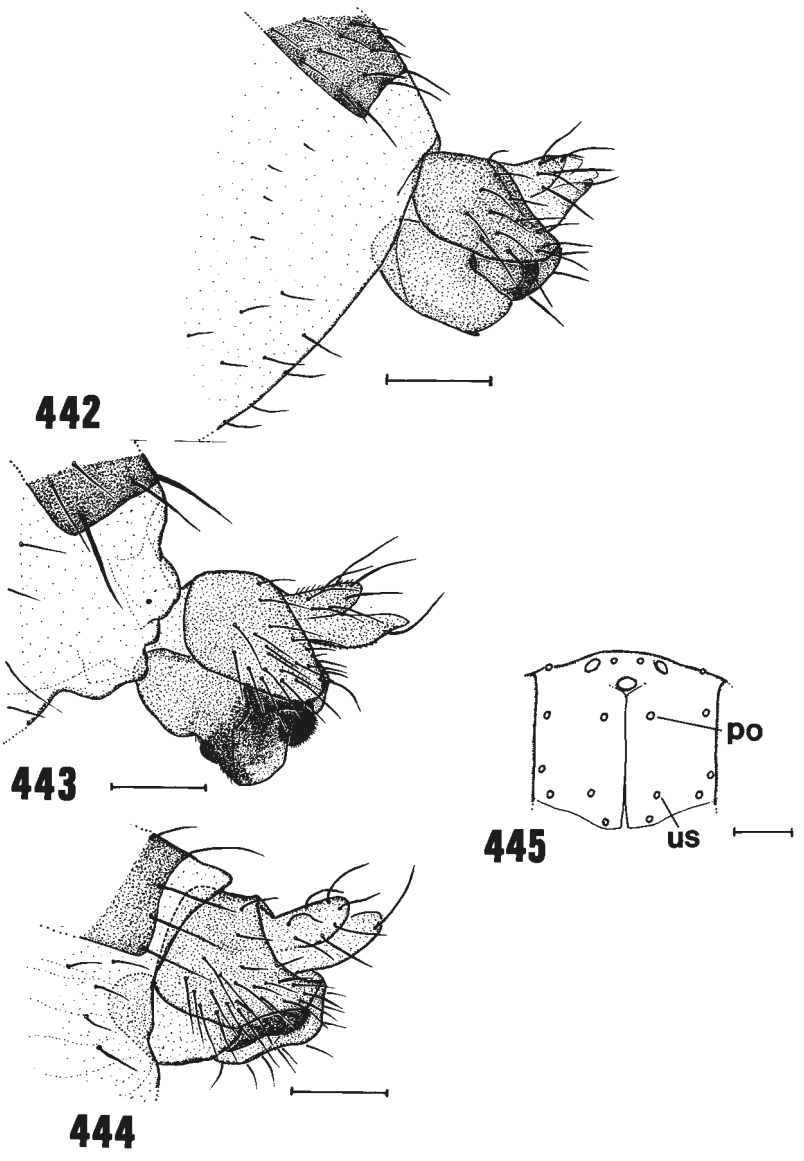
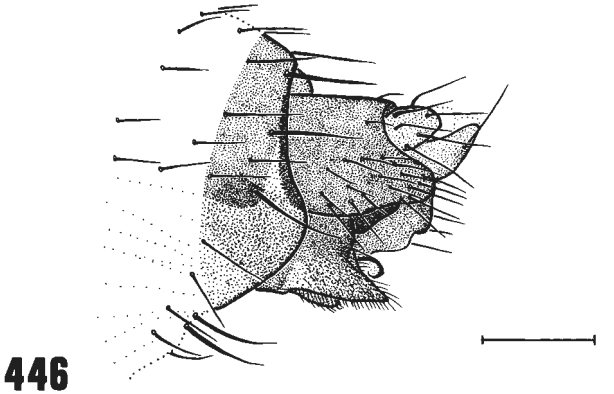
Figs 436–438. *Megaselia* ♂♂ hypopygia. 436, *M. infraposita*. 437, *M. minuta*. 438, *M. cinereifrons*.

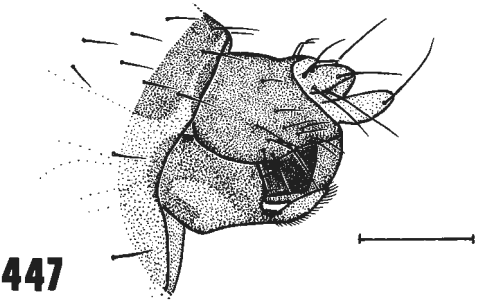


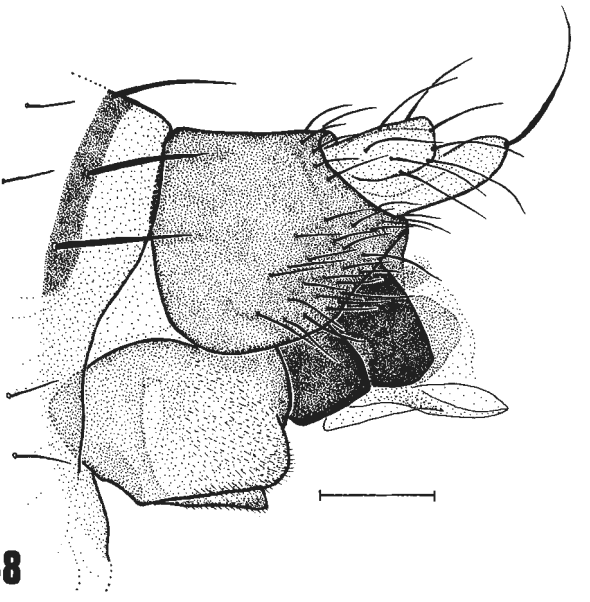
Figs 439–441. *Megaselia* ♂♂ hypopygia. 439, *M. breviterga*. 440, *M. tenebricola*. 441, *M. largifrontalis*.



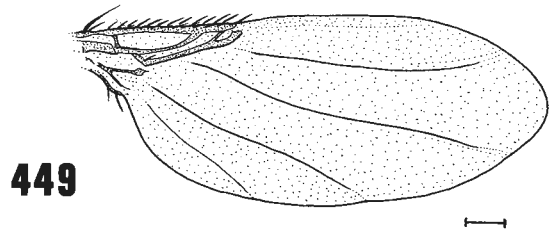
Figs 442–445. *Megaselia* ♂♂. 442–444 hypopygia. 442, *M. collini*. 443, *M. latior*. 444, *M. sylvatica*. 445, *M. perdistans* frons showing ocelli and positions of bristles (po = pre-ocellar, us = upper supra-antennal).







Figs 446–448. *Megaselia* ♂♂ hypopygia. 446, *M. brevicostalis*. 447, *M. brevior*. 448, *M. abernethae*.



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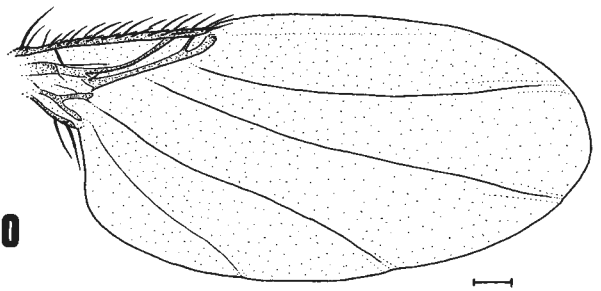

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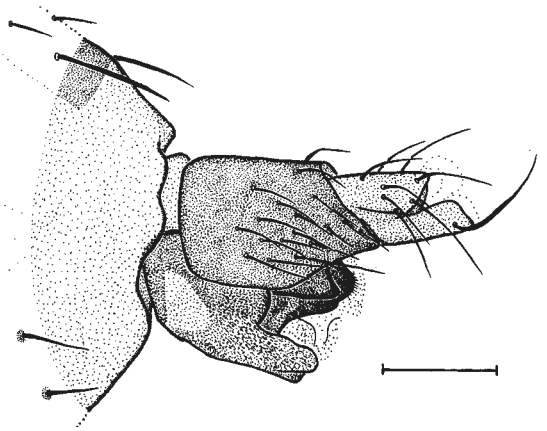

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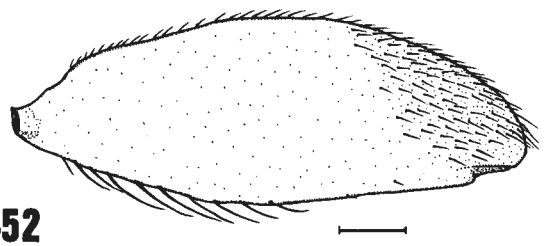
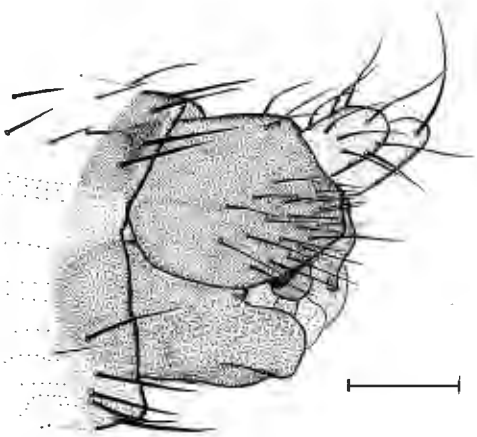


452

Figs 449–452. *Megaselia* ♂♂. 449, *M. brevior* right wing. 450–452 *M. berndseni*. 450, right wing. 451, hypopygium. 452, posterior face of hind femur.



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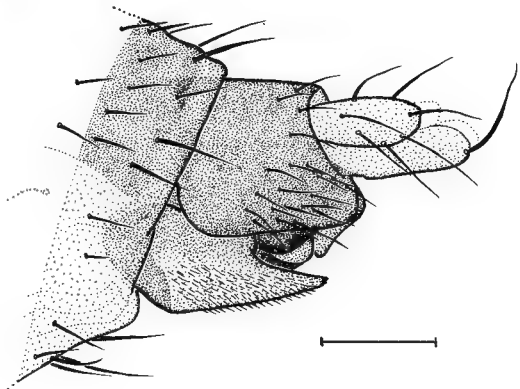

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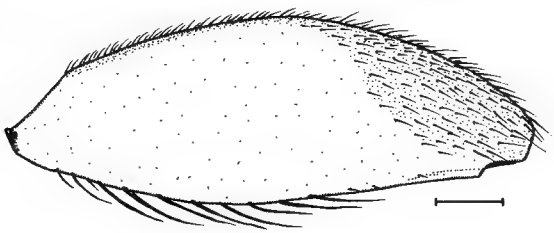
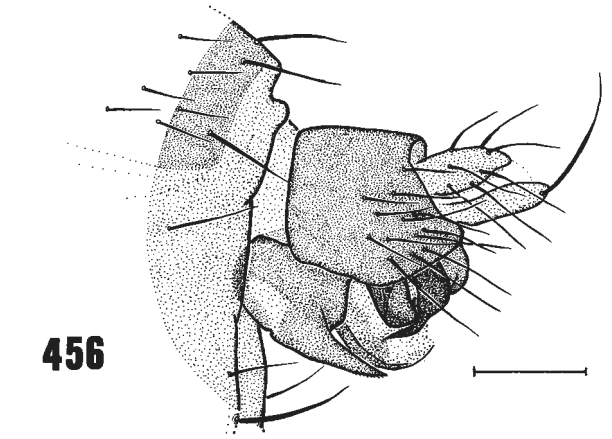
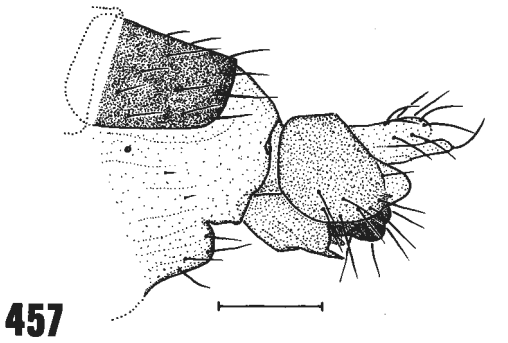
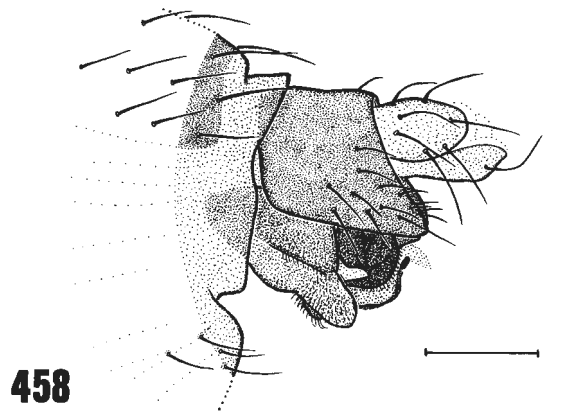


455

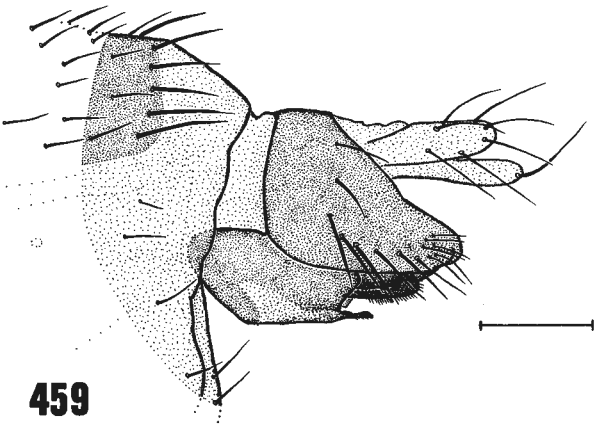
Figs 453–455. *Megaselia* ♂♂. 453, *M. nigrescens* hypopygium. 454, *M. hayleyensis* hypopygium. 455, *M. badia* posterior face of hind femur.

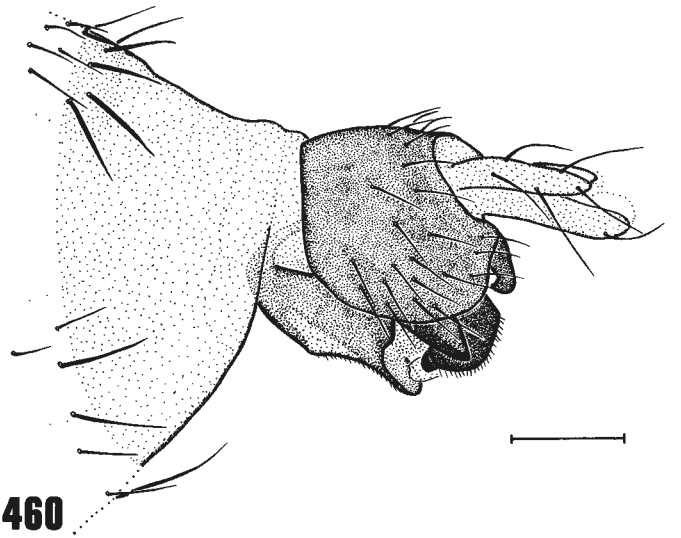


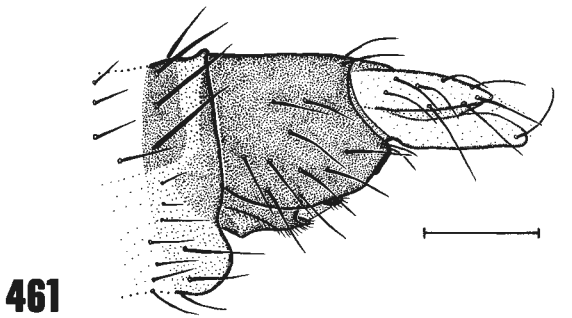




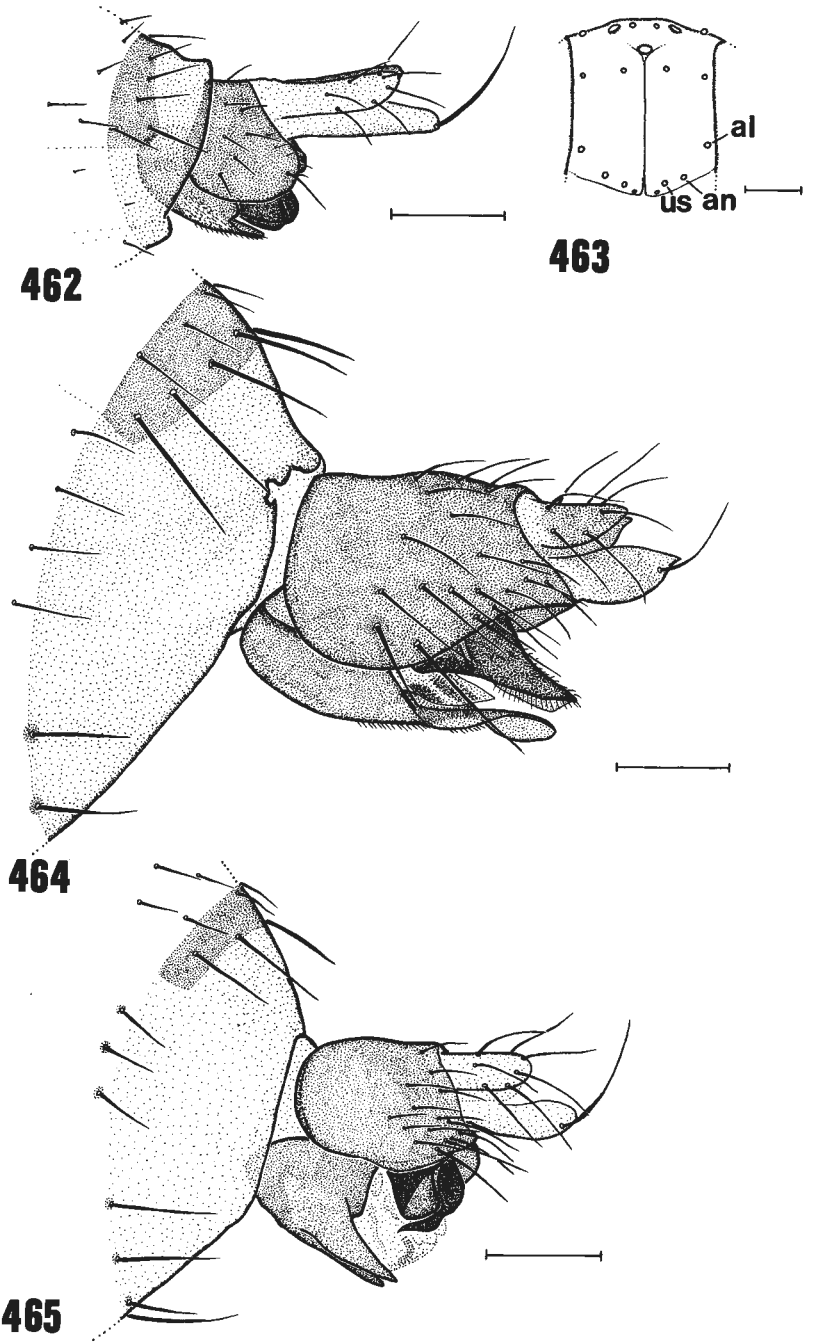
Figs 456–458. *Megaselia* ♂♂ hypopygia. 456, *M. badia*. 457, *M. hilaris*. 458, *M. perdistans*.



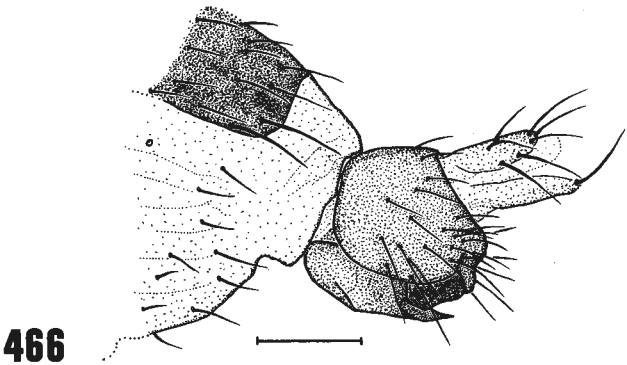


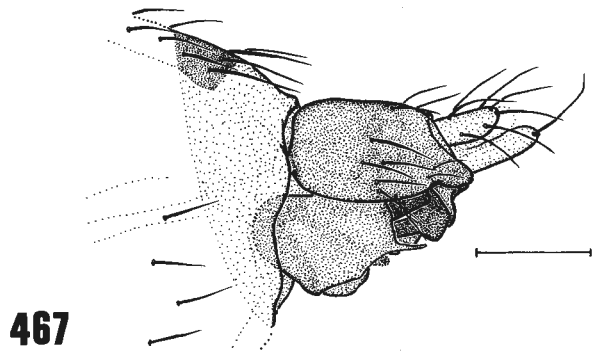


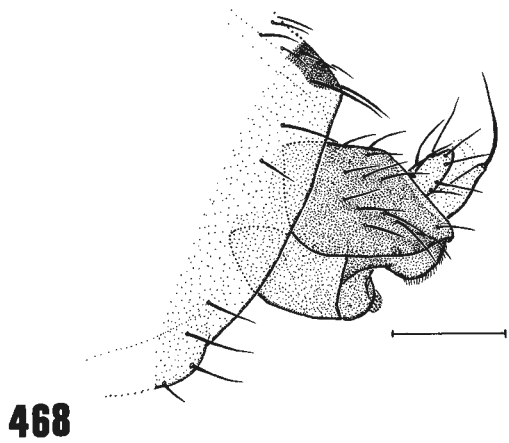
Figs 459–461. *Megaselia* ♂♂ hypopygia. 459, *M. lata*. 460, *M. eisfelderae*. 461, *M. lutescens*.



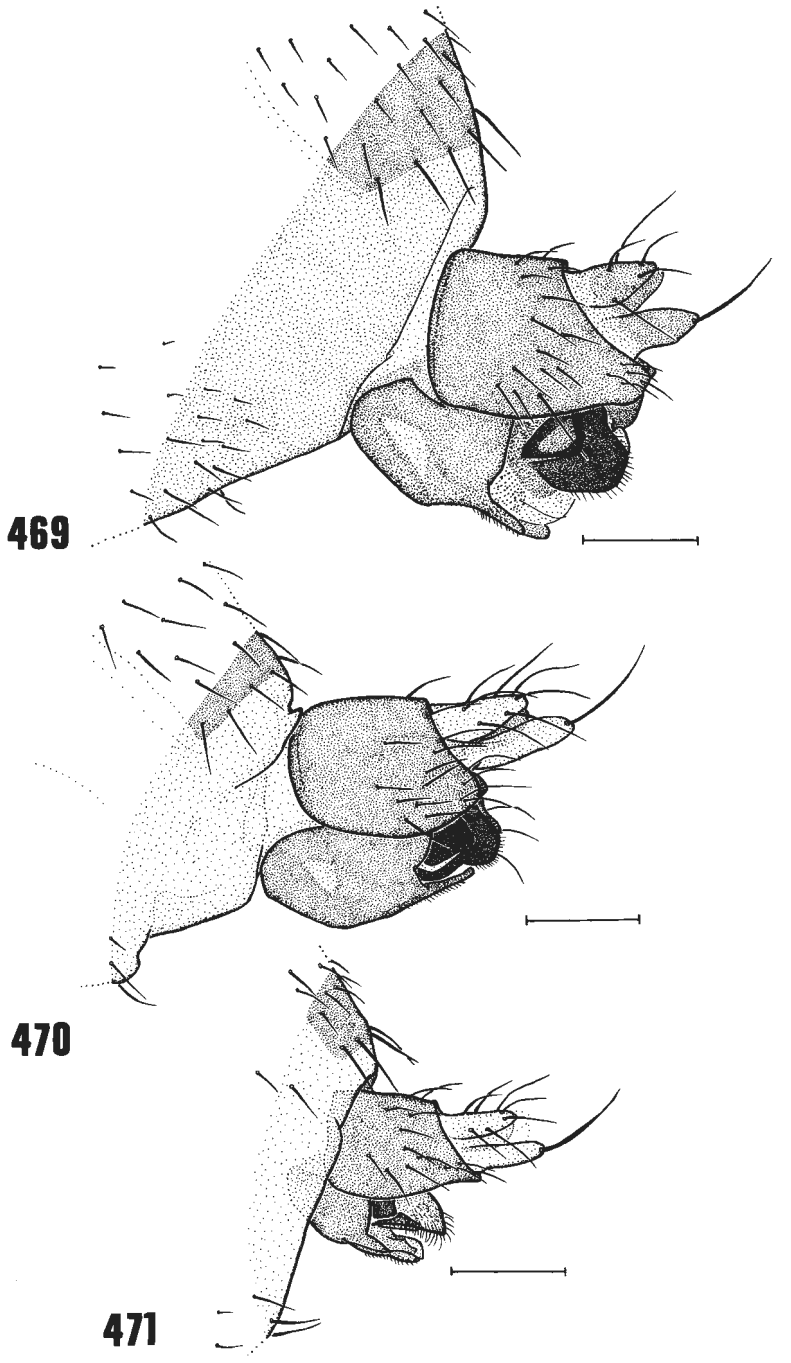
Figs 462–465. *Megaselia* ♂♂. 462–463 *M. minor*. 462, hypopygium. 463, frons showing ocelli and positions of bristles (al = antero-lateral, an = antial, us = upper supra-antennal). 464, *M. vernalis* hypopygium. 465, *M. coulsoni* hypopygium.



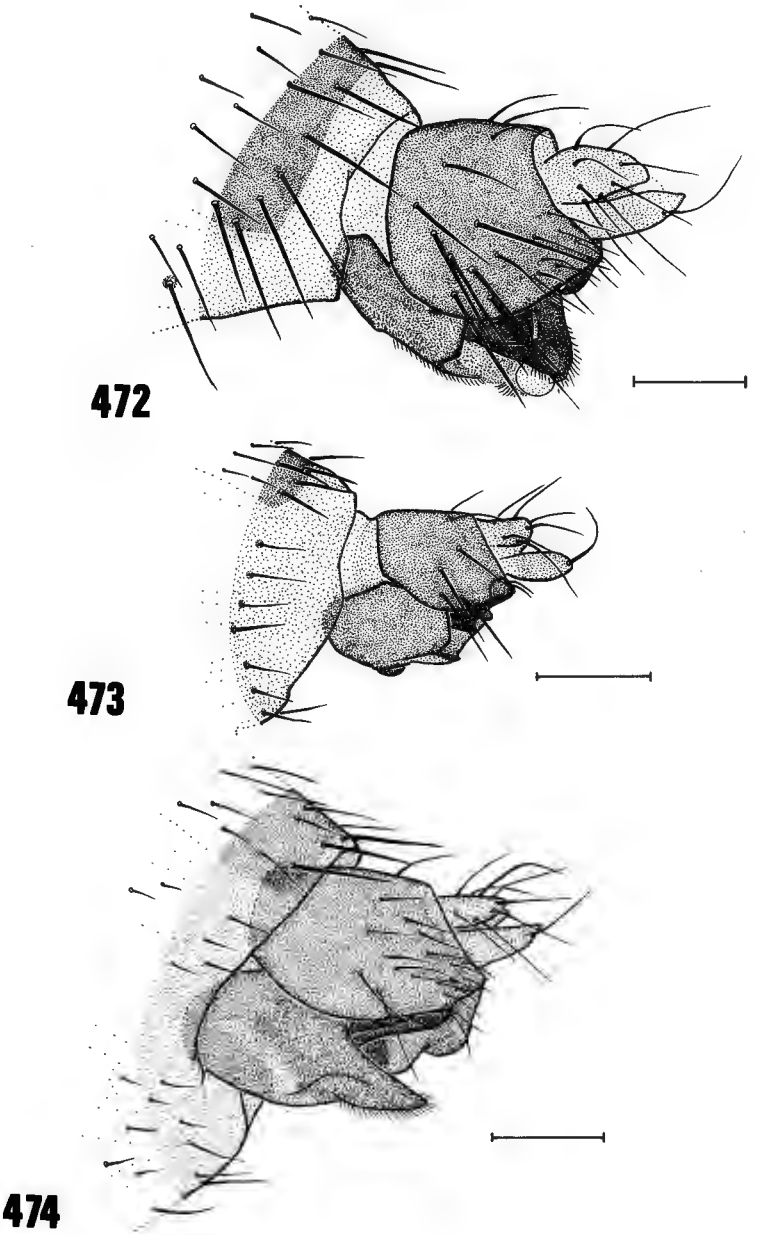




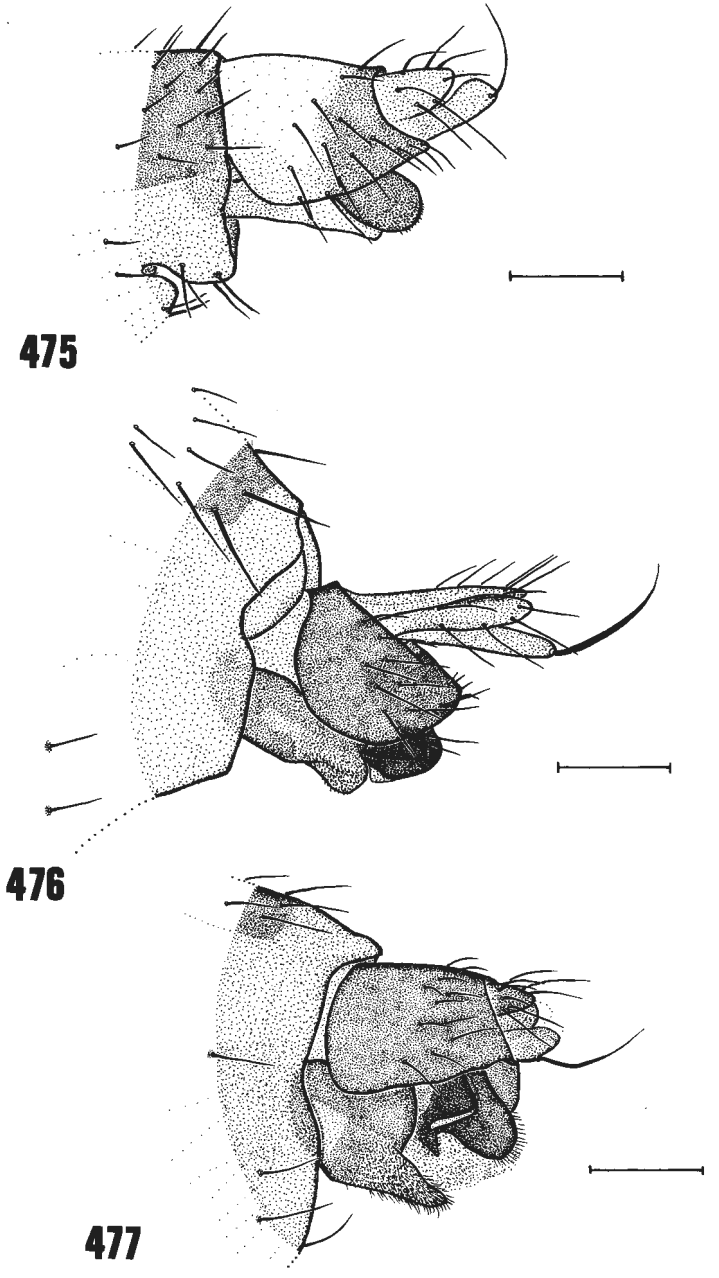
Figs 466–468. *Megaselia* ♂♂ hypopygia. 466, *M. clemonsi*. 467, *M. oligoseta*. 468, *M. unwini*.



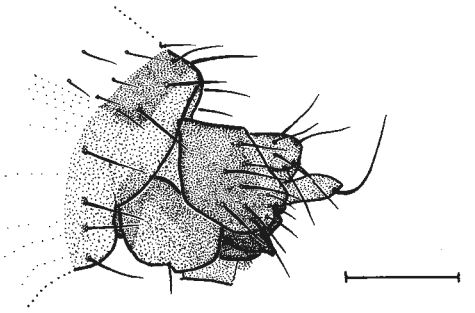
Figs 469–471. *Megaselia* ♂♂ hypopygia. 469, *M. abdita*. 470, *M. bovista*. 471, *M. tarsalis*.



Figs 472–474. *Megaselia* ♂♂ hypopygia. 472, *M. verna*. 473, *M. angelicae*. 474, *M. uliginosa*.



Figs 475–477. *Megaselia* ♂♂ hypopygia. 475, *M. albicaudata*. 476, *M. melanostola*. 477, *M. mallochi*.



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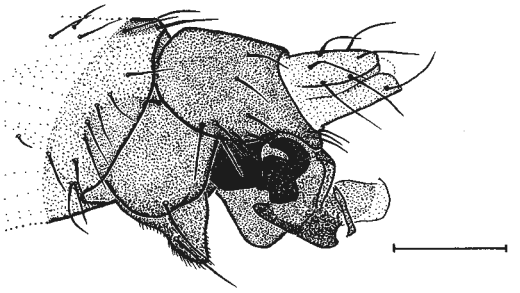

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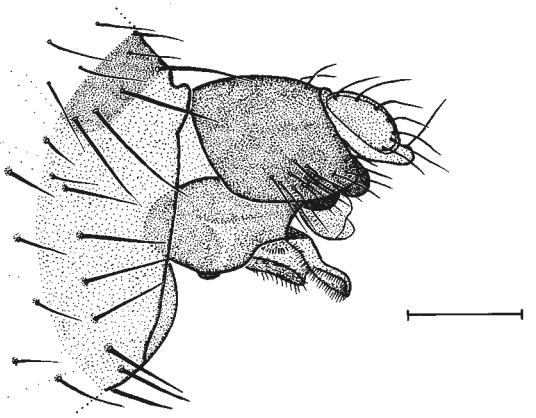

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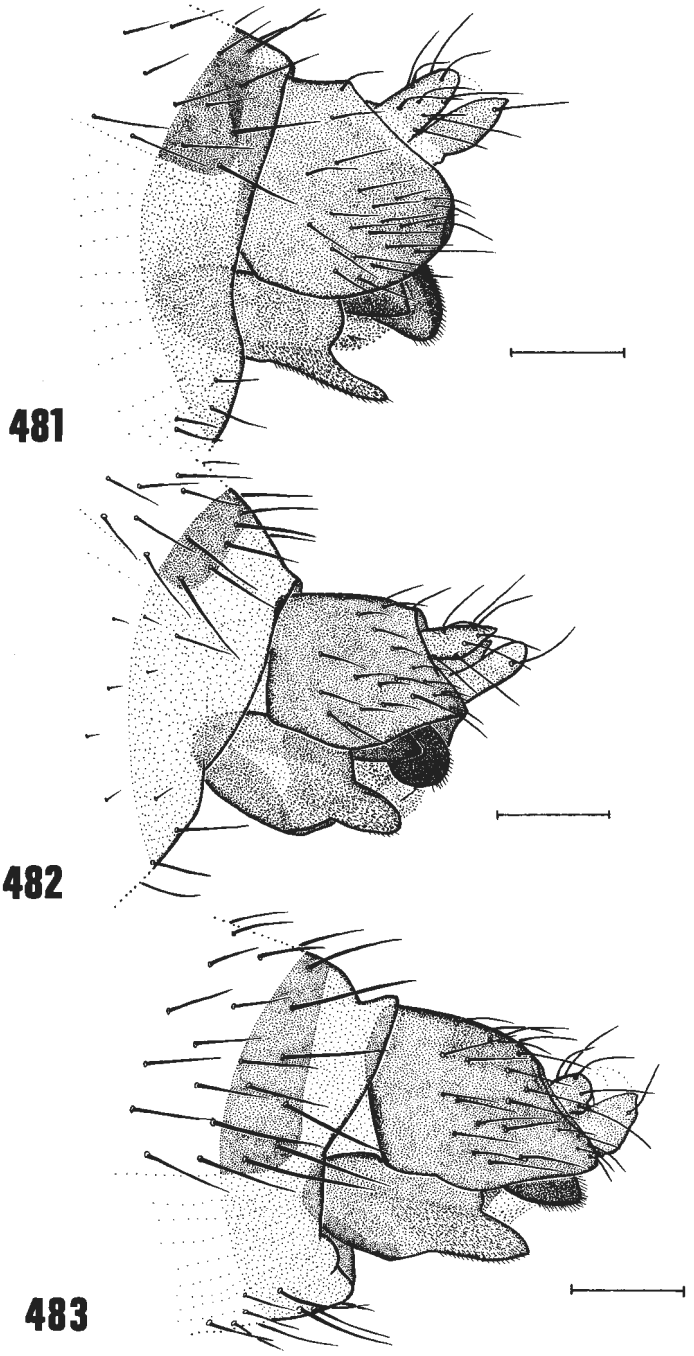
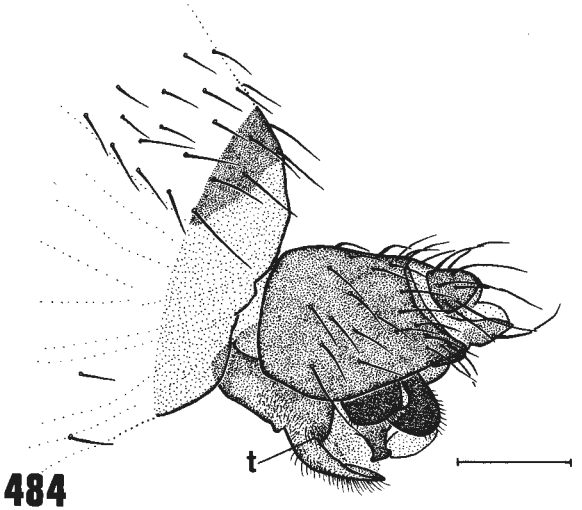
Figs 478–480. *Megaselia* ♂♂ hypopygia. 478, *M. gregaria*. 479, *M. surdifrons*. 480, *M. parva*.



Figs 481–483. *Megaselia* ♂♂ hypopygia. 481, *M. crassicosta*. 482, *M. fusca*. 483, *M. villicauda*.



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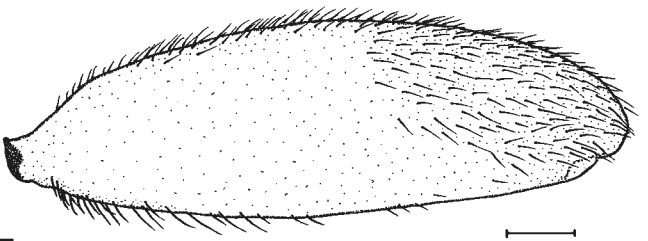

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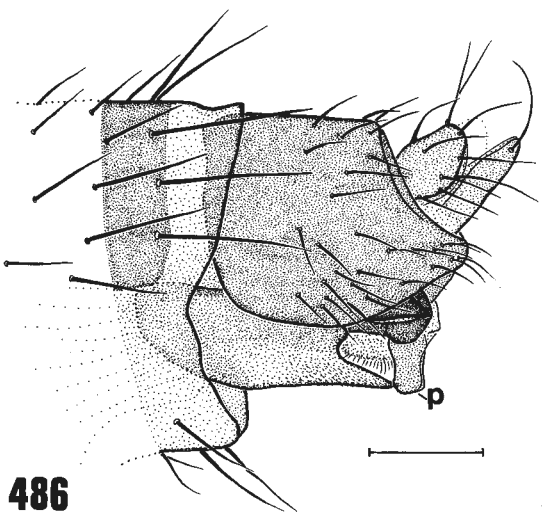

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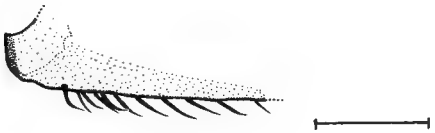

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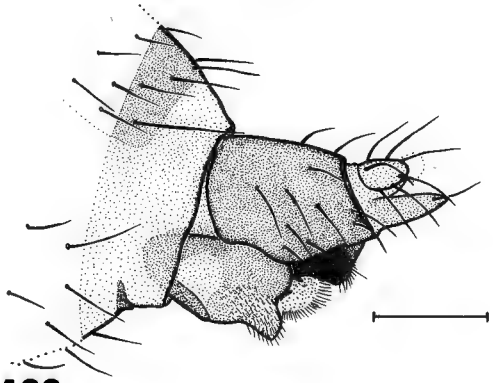

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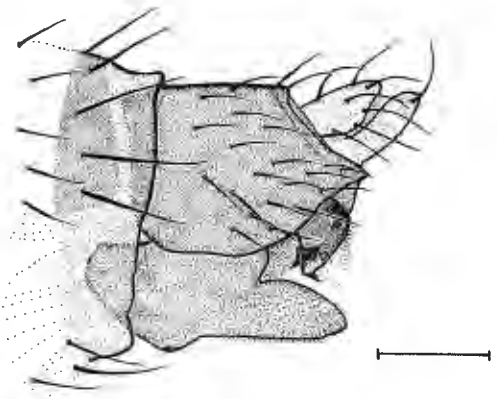

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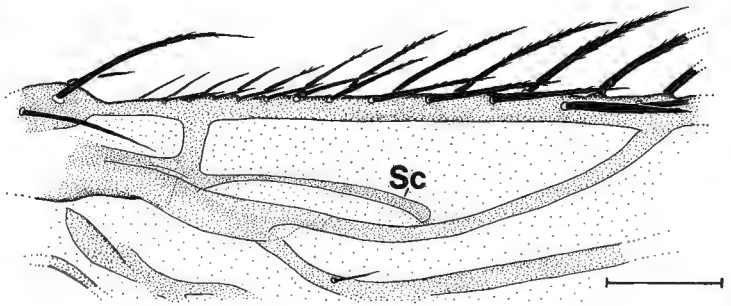

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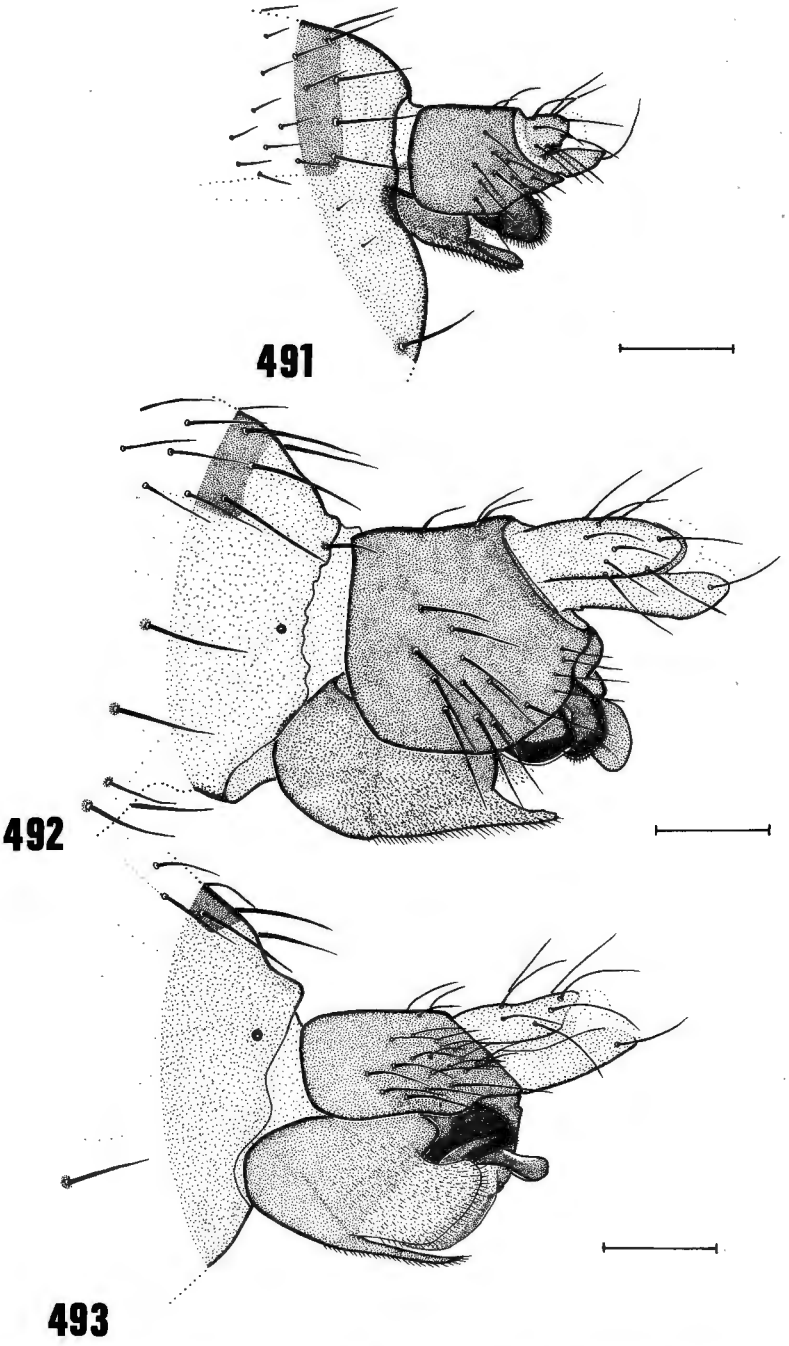

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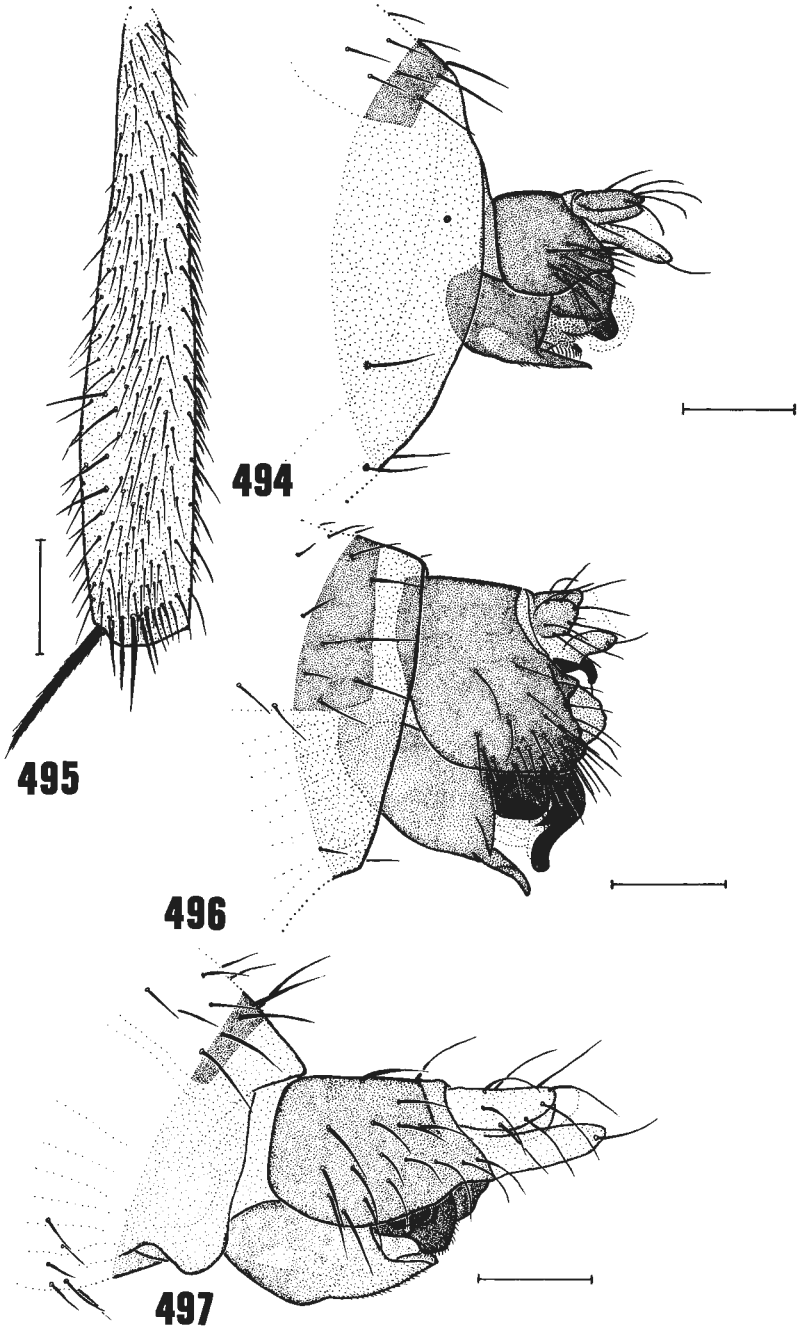

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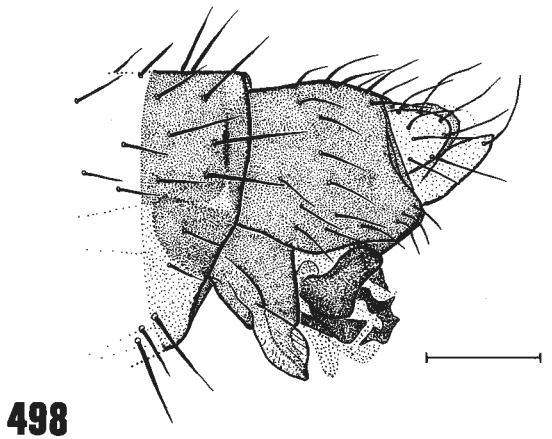

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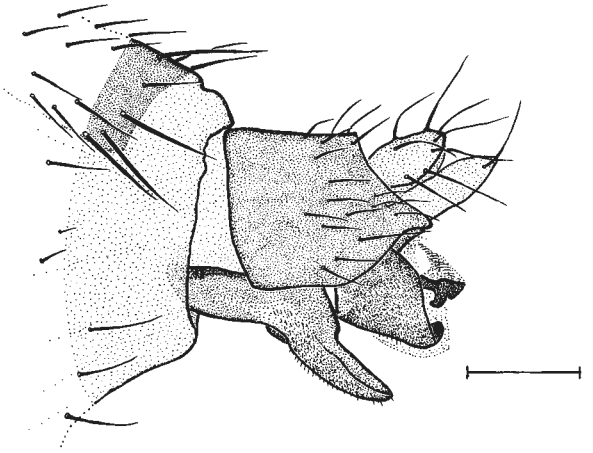

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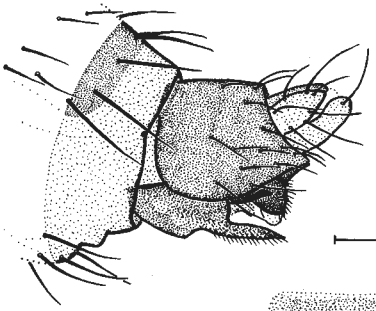

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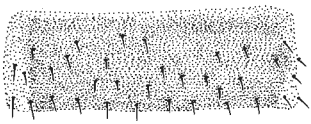

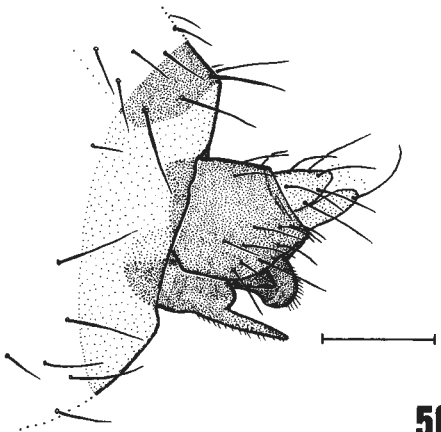

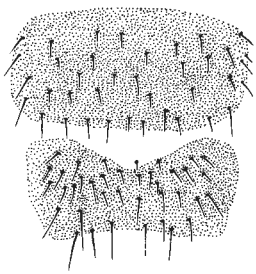

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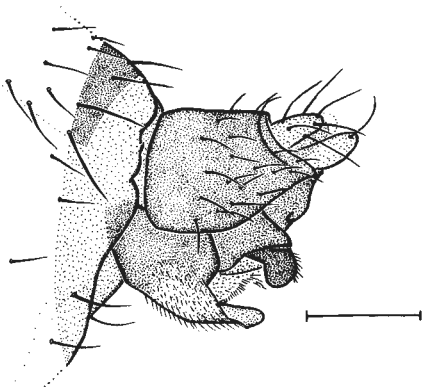

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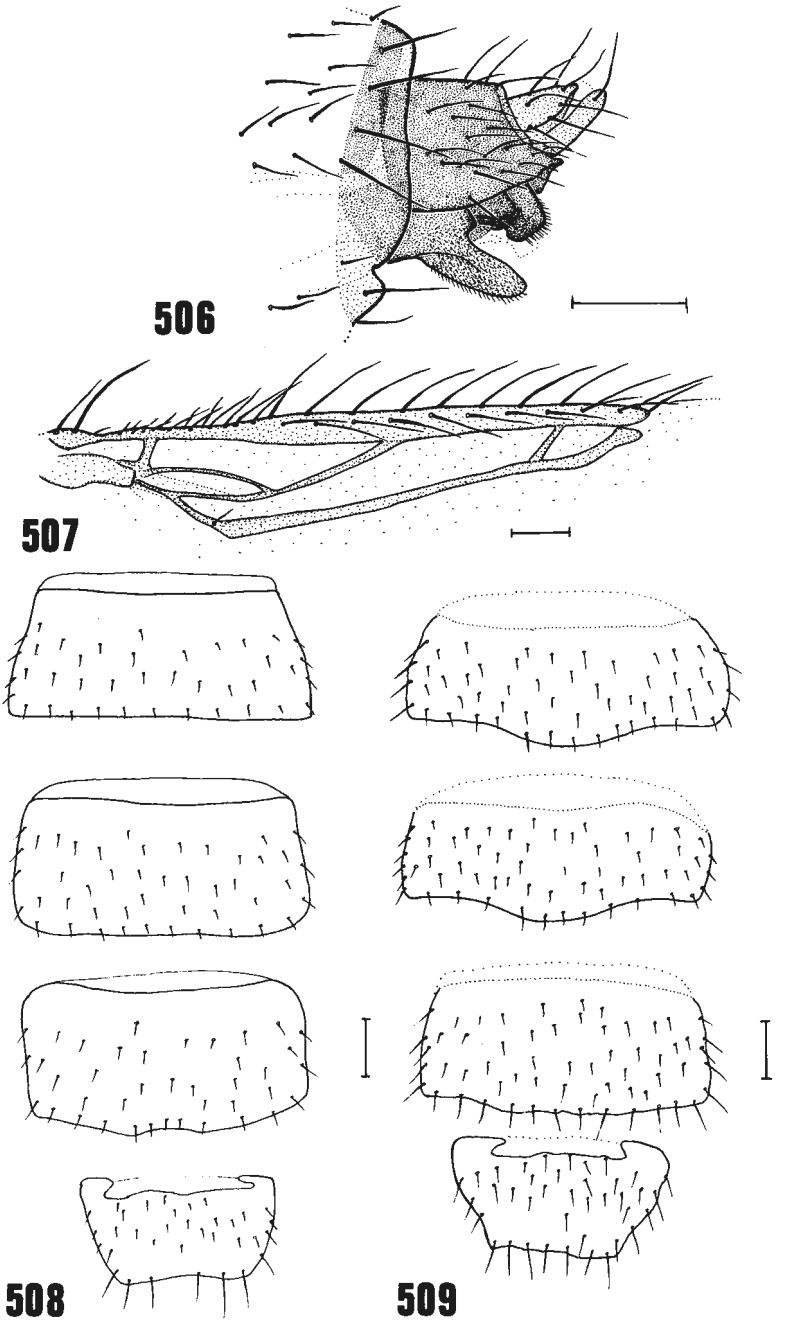

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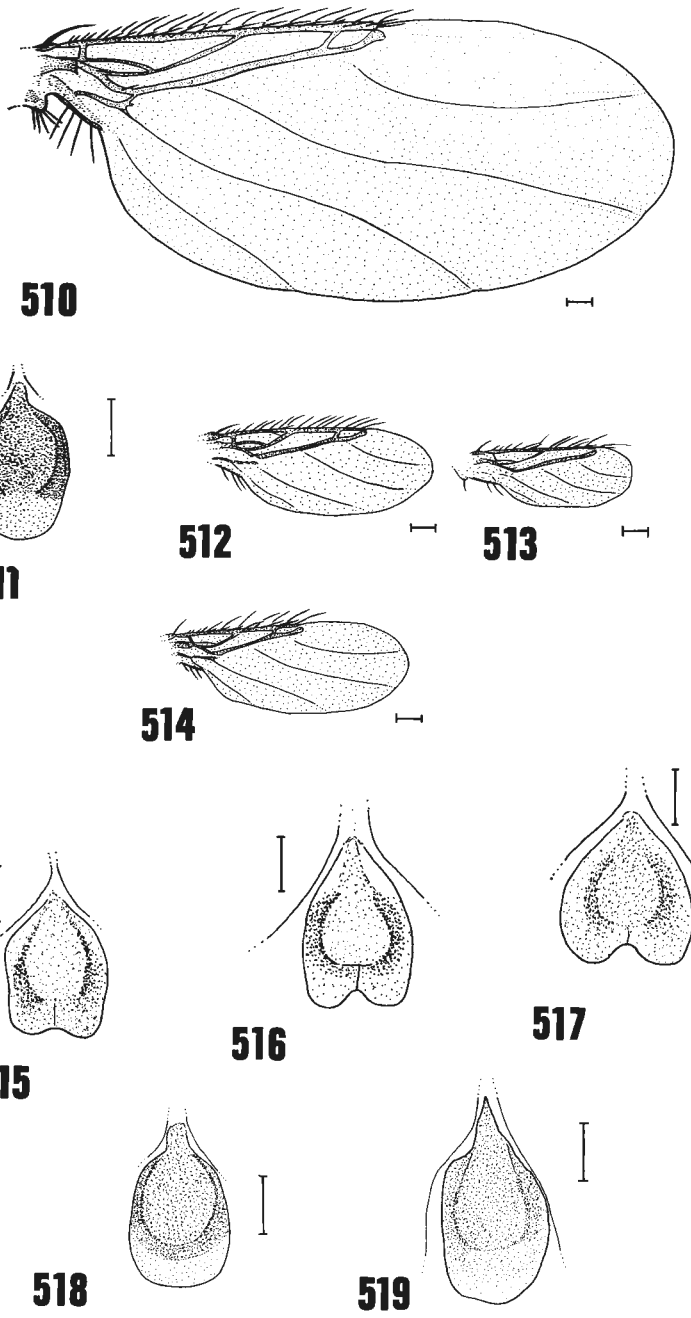

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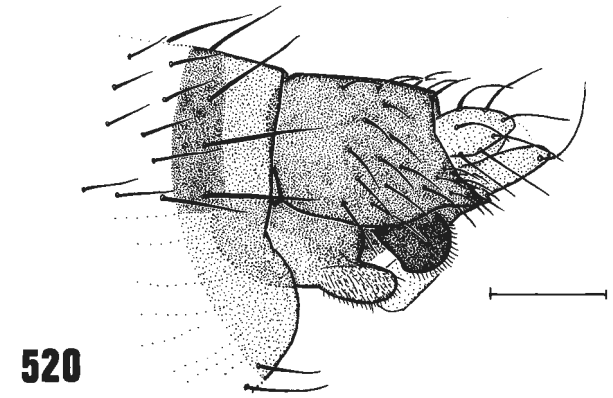

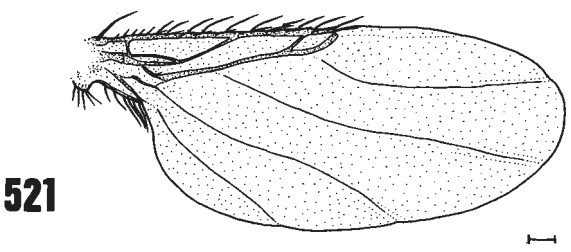

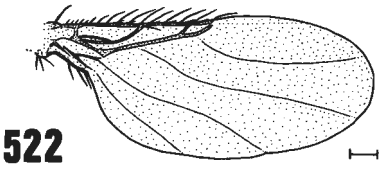

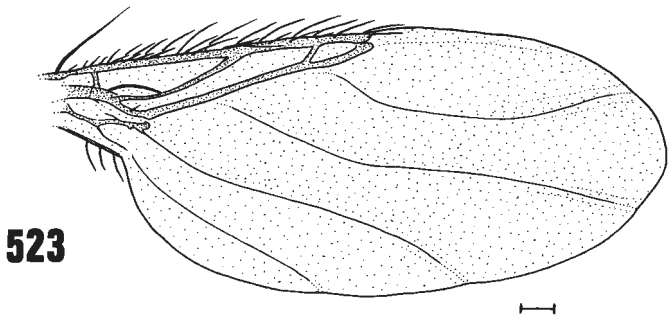

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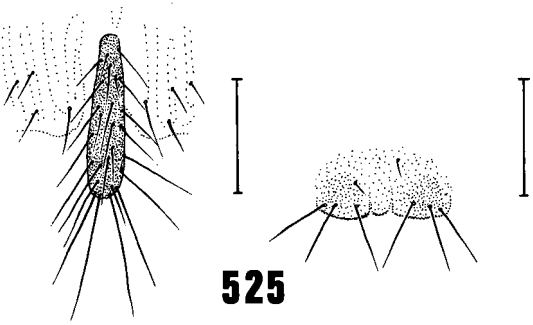

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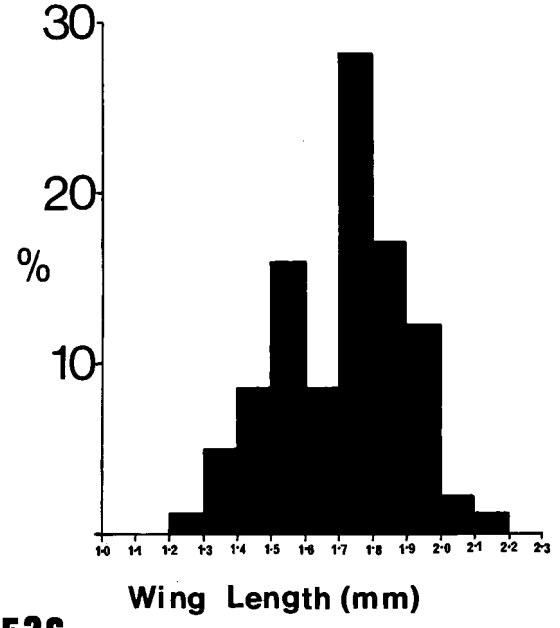

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