BRITISH *MEROMYZA* (DIPT., CHLOROPIDAE)

BY J.W. ISMAY

Meromyza is one of the largest genera of Chloropidae, with perhaps 70 valid species. It is distinguished from other British Chloropinae by the enlarged hind femur, simple arista and bare meso- and pteropleuron (fig. 1). *Meromyza* is apparently monophyletic and the enlarged projecting postgonite (fig. 6) an apomorphic character. Seven species were included in the latest British check-list (Kloet & Hincks, 1976) but there are at least 16 British species. Fedoseeva (1960, 1961, 1962, 1964, 1966b, 1967, 1968, 1969, 1971a, 1971b, 1971c, 1974, 1978), Hubicka (1966, 1967, 1969) and Péterfi (1961, 1962) described new species while Fedoseeva (1966a) summarized knowledge of the larvae. Smirnov & Fedoseeva (1967) discussed the subdivision of the genus.

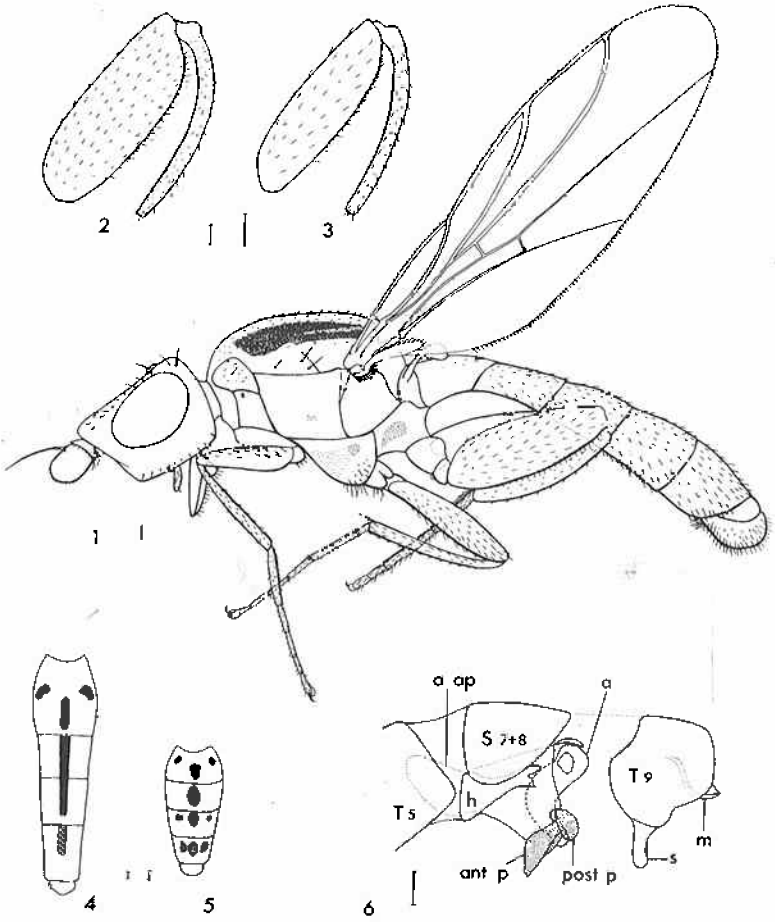
These recent works rely largely on the male genitalia for the identification of adults. Collin (1911) noted that the species may be distinguished by the male genitalia, but never revised the genus; most of the additional British species are separated in his collection under unpublished manuscript names. Many older types have not been critically examined and some older names may have priority; but since the species are of economic importance and further work is needed only one recently described species is synonymized.

The abdomen of male specimens was detached, macerated in 10 per cent potassium hydroxide solution in water, washed in 70, 90 and 100 per cent ethyl alcohol (several changes) and cleared in clove oil. It was then mounted in canada balsam on a plastic slip under the specimen. The terminology and orientation of the male genitalia are shown in fig. 6. In this study the ninth tergite was dissected from the abdomen and mounted in a lateral or apical position, one postgonite mounted laterally and the aedeagus mounted laterally or apically (see fig. 6 for orientation). The key will identify specimens preserved in spirit, with the abdomen macerated or dry if the genitalia are carefully and completely exserted. The postgonites (figs. 7-23) are drawn to the same scale since, with experience, relative size is a useful guide.

The key is artificial and relies mainly on characters of the male genitalia; it is difficult to find other reliable characters but notes on external appearance are given under each species. The females cannot be identified with certainty. Several specimens seen do not key out satisfactorily: two *M. sorocula* Fedoseeva had extensively darkened abdomens and *M. triangulina* Fed. may have pale palpi. Specimens should therefore be checked with the illustrations of male genitalia.

This study is based on numerous specimens but not all records are included; species new to Britain are recorded in full but for the others only the most recent county record is included. Data are given with some alterations; county names have been added where necessary while grid references and other notes appear after the collector's name. Each record is based on a single dissected male unless stated otherwise. The figures for wing length are means with the number of specimens measured (n) in parentheses.

The following abbreviations are used for collectors: J.A., J. Abraham; F.C.A., F.C. Adams; E.E.A., E.E. Austen; K.G.B., K.G. Blair; A.B., A. Brindle; H.B., H. Britten; E.B., E. Brunetti; C.B., C. Brown; P.J.C., P.J. Chandler; R.L.C., R.L. Coe; J.E.C., J.E. Collin; J.C., J. Collins; J.P.D., J.P. Dear; A.D., A. Dixon; A.H.H., A.H. Hamm; W.D.H., W.D. Hincks; A.G.I., A.G. Irwin; J.W.I., J.W. Ismay; J.J.F.X.K., J.J.F.X. King; R.P.L., R.P. Lane; I.F.G.McL., I.F.G. McLean; P.M.M., P.M. Miles; M.G.M., M.G. Morris; R.N., R. Nash; L.P., L. Parmenter (numbers in parentheses after L.P. are collection catalogue numbers); C.R., C. Reid; K.S., K. Side; P.S., P. Skidmore; A.T., A. Thornley; C.R.V., C.R. Vardy; E.T., E. Taylor; G.H.V., G.H. Verrall; J.H.W., J.H. Wood; J.W.Y., J.W. Yerbury.



Figs. 1-6. 1, *Meromyza pratorum* ♂, lateral view; 2-3, hind femur and tibia lateral view, 2, *M. femorata*, 3, *M. triangulina*; 4-5 abdominal markings, dorsal view, 4, *M. pratorum*, 5, *M. variegata*; 6, male genitalia *M. pratorum*, semidiagrammatic lateral view, ninth tergite displaced. a, aedeagus; a ap, aedeagal apodeme; ant p. anterior process of postgonite; h, hypandrium; m, mesolobus; post p, posterior process of postgonite; s, surstylus; S 7 + 8, synsternite 7 + 8; T5, T9, tergites 5 and 9. Scale lines = 0.1 mm.

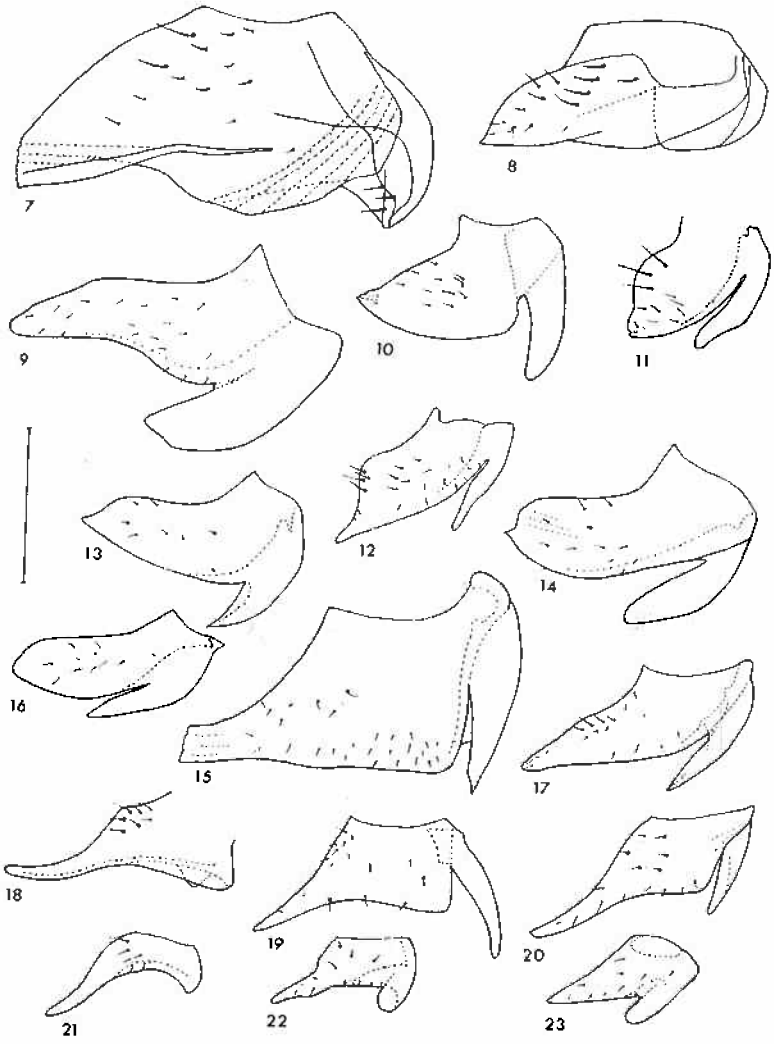
KEY TO BRITISH *MEROMYZA* (MALES ONLY)

1. Palpi pale, rarely obscurely darkened at tip 2
– Palpi partly black at least at tip 8
2. Abdomen with a central dark stripe; no lateral dark spots on tergites 3-5 (fig. 4) 3
– Abdomen with lateral dark spots on tergites 3-5 (fig. 5) 4
3. Aedeagus more swollen at base (fig. 25), postgonite as fig. 7, usually hypopleural mark yellow to reddish and frons more produced . . . . . *pratorum* Meig.
– Aedeagus less swollen at base (fig. 27), postgonite as fig. 8, usually hypopleural mark black and frons less produced . . . . . *sorocula* Fed.
4. Postgonite with anterior process double curved, large (fig. 9), ninth tergite figs. 61-62 . . . . . *pallida* Fed.
– Without the above combination of characters 5
5. Upper margin of anterior process of postgonite almost straight near tip (fig. 10) . . . . . *mosquensis* Fed.
– Upper margin of anterior process convex near tip (figs. 11-13) 6
6. Aedeagus (fig. 38) constricted at middle; postgonite as fig. 13 . . . *variegata* Meig.
– Aedeagus (figs. 34 & 36) not so deeply constricted; postgonite as figs. 11-12 7
7. Postgonite (fig. 11) with posterior process longer in proportion to anterior process, which has a less pointed tip; surstylus (fig. 65) rounded at tip, bent posteriorly . . . . . *rufa* Fed.
– Postgonite (fig. 12) with posterior process shorter in proportion to anterior process, which has a more rounded tip; surstylus (fig. 67) with a more square tip . . . . . *bohemica* Fed.
8. Posterior process of postgonite well developed, broad; apex of anterior process broad, less acutely pointed (figs. 14-17) 9
– Posterior process of postgonite poorly developed or narrow; apex of anterior process finger-like (figs. 18-23) 12
9. Hind femur (fig. 2) very broad, mesonotal stripes reddish centrally, postgonite as fig. 14, surstylus square in lateral view (fig. 73) . . . . . *femorata* Macq.
– Without the above combination of characters 10
10. Postgonite as fig. 15, tip of anterior process expanded laterally, ninth tergite as figs. 71-72. Aedeagus (fig. 42) swollen basally . . . . . *saltatrix* (L.)
– Without the above combination of characters 11
11. Postgonite as fig. 16, aedeagus (figs. 43-44). Mesonotal stripes well separated . . . . . *laeta* Meig.
– Postgonite as fig. 17, aedeagus (figs. 45-46). Mesonotal stripes only narrowly separated . . . . . *depressa* Fed.
12. Postgonite small and not heavily pigmented, posterior process very small (fig. 18), ninth tergite with thickened black setae around base of surstylus (figs. 79-80) . . . . . *coronoseta* Hubicka
– Without the above combination of characters 13
13. Postgonite (fig. 19) with posterior process directed posteriorly, aedeagus with a basal swollen part and a narrow tubular apical part, both sclerotized (fig. 28) . . . . . *curvinervis* (Zett.)
– Without the above combination of characters 14
14. Ninth tergite in apical view (fig. 83) with inwardly hooked surstylus. Postgonite as fig. 20 . . . . . *nigriventris* Macq.
– Surstylus not hooked in apical view (figs. 85, 87, 89) 15
15. Postgonite (fig. 21) with posterior process small, rounded and divergent from anterior process . . . . . *pluriseta* Péterfi
– Postgonite (figs. 22-23) with posterior process more clearly differentiated from anterior one 16
16. Surstylus in apical view (fig. 87) very large . . . . . *palposa* Fed.
– Surstylus in apical view (fig. 89) small and narrow . . . . . *triangulina* Fed.

M. pratorum Meigen, 1830

This species has often been confused with *M. sorocula*.

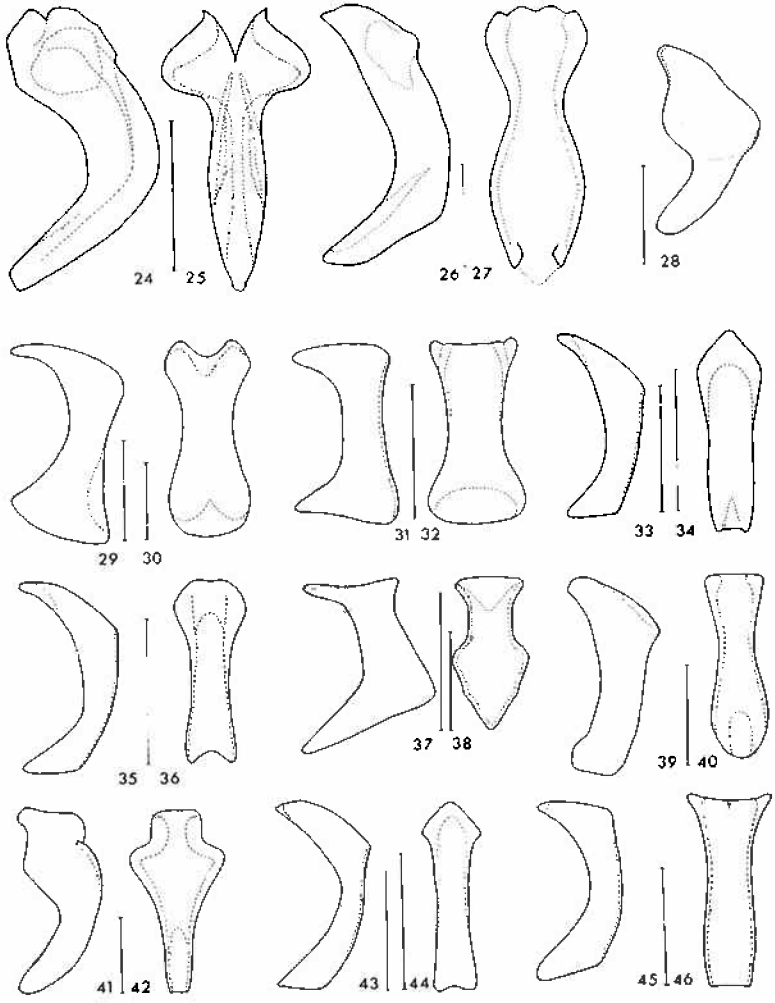
Postgonite (fig. 7) with large cup-shaped posterior process; smaller and less convex in *M. sorocula* (fig. 8), the lower margin of the anterior process more convex in *M. pratorum*. Published figures of the postgonite (Fedoseeva, 1960, 1962, 1970) are slightly different; while this may be partly due to orientation the postgonites of British



Figs. 7-23. Postgonite: 7, *M. pratorum*; 8, *M. sorocula*; 9, *M. pallida*; 10, *M. mosquensis*, 11, *M. rufa*; 12, *M. bohemica*; 13, *M. variegata*; 14, *M. femorata*; 15, *M. saltatrix*, 16, *M. laeta*; 17, *M. depressa*; 18, *M. coronoseta*; 19, *M. curvinervis*; 20, *M. nigriventris*, 21, *M. pluriseta*, 22, *M. palposa*; 23, *M. triangulina*. Scale line - 0.1 mm.

specimens show more individual variation than in other *Meromyza*. Aedeagi the best distinguishing character; in *M. pratorum* aedeagus in ventral view (fig. 25) with base swollen laterally, more than twice as wide as apical part; in *M. sorocula* (fig. 27) the base is not wider than the apical part, the aedeagus being less conspicuously narrowed at the middle.

M. pratorum and *M. sorocula* are difficult to distinguish without dissection. *M. pratorum* is generally larger and the front margin of the frons is more



Figs. 24-46. Aedeagi; 24-25, *M. pratorum*; 26-27, *M. sorocula*; 28, *M. curvinervis*; 29-30, *M. pallida*; 31-32, *M. mosquensis*; 33-34, *M. rufa*; 35-36, *M. bohemica*; 37-38, *M. variegata*, 39-40, *M. femorata*; 41-42, *M. saltatrix*; 43-44, *M. laeta*; 45-46, *M. depressa*. For each species the first figure is in lateral and the second in apical view. Scale lines = 0.1 mm.

produced. The most reliable character is the hypopleural mark, usually orange in *M. pratorum* (but rarely darkened) and black in *M. sorocula*. There is very little variation in colour in *M. pratorum* though some specimens have the mesonotal stripes partly reddish. Wing length 3.4 mm (n = 10).

The type of *M. pratorum* is in Paris; it is a female and closely resembles British specimens. At the time of examination I had not recognized *M. sorocula* as British and did not note the colour of the hypopleural mark. However I have a note 'Pleurae yellow with an orange patch on the sternopleurae' which indicates that the hypopleural mark is not black. *M. pratorum* is probably correctly interpreted.

Dr J. O'Connor of the National Museum of Ireland, Dublin, has kindly sent me a putative syntype of *M. viridula* Haliday, 1833. The specimen is a female, greased and discoloured, with the right hind leg missing, labelled 'Ireland' on green paper and 'Haliday 20.2.82'. It closely resembles British *M. pratorum*, having the frons produced in front and an orange mark on the hypopleuron. The specimen is not selected as lectotype in the hope that a male may be found, but the synonymy of *M. viridula* and *M. pratorum* is probably correct.

M. pratorum has been recorded from England, Scotland, Wales and Ireland. It is almost confined to coastal sand-dunes and may be swept from Marram grass, *Ammophila arenaria* (L.) Link, but one record (Llanbedr, Brecknock) is inland.

ENGLAND: Corn., Hayle, 23.vii.1947, L.P. (23658) Hants, Christchurch, 28.vi.1907, J.W.Y.; Kent, Deal, 10.vii.1905, J.J.F.X.K.; Lancs., Freshfield, 19.vii.1953, A.B.; Norf., Holme Dunes, 2.viii.1978, I.F.G.McL., main dunes; Suff., Minsmere, 3.vi.1952, L.P. (41229); Yorks., Spurn, 22.vii.1953, A.B.

WALES: Breck., Llanbedr, 2.vii.1902, J.W.Y.; Flint., Prestatyn, 5.viii.1922, H.B.; Glam., Porthcawl, 1.vii.1906, J.W.Y.; Mer., Morfa Harlech, 13.vii.1976, P.J.C., dunes.

SCOTLAND: Angus, Barry Links, 3.vii.1977, J.P.D., sand dunes and slacks; Ayr., Gailes, 23.vi.1908, J.J.F.X.K.; Elgin, Findhorn, viii.1899, J.W.Y.; Fife, Tentsmuir NNR, 3.vii.1977, I.F.G.McL., fixed dunes; Kinc., St. Cyrus, 10.vii.1977, 3 ♂♂, J.W.I.; Nairn., Culbin Sands, 10.vii.1943, J.E.C.; Sutherland, Inveraver, 28.vii.1972, P.J.C., sand dune.

EIRE: Clare, Burren, Fanore, 27.vii.1971, M.G.M., dune grassland; Dublin, Portmarnock, 26.vi.1975, P.J.C.

M. sorocula Fedoseeva, 1962

Differs from *M. pratorum* as described. The type was not examined but the original description includes a figure of the postgonite, and I have compared British specimens with one from Poland determined by J. Hubicka. Wing length 2.7 mm (n = 9).

Two specimens of this species, identified from male genitalia, are much darker than usual with the black central stripe on the abdomen enlarged to cover most of the fourth and fifth tergites. Most records are inland.

ENGLAND: Cambs., Chippenham NNR, 28.vii.1979, I.F.G.McL., meadow; Ches., Arnfield, 2.viii.1937, 2.vii.1933, H.B.; Cumb., Skirwith, 21.vii.1920, H.B.; Essex, Epping Forest, 1.vi.1898, E.B.; Loughton, 8.ix.1929, R.L.C.; Hants, Totton, 28.vi.1952, C.R.V. SU 355127, trapped sunhouse; Kent, Hythe, 21.vii.1973, C.R. TR 1435, swept woodland ride; Longrope Wood, 15.vi.1974, P.J.C.; Romsey, Kent's Oak, 8.vii.1962, 2 ♂♂,

C.R.V.; Lancs., Back End Woods, Nelson, 1.vii.1953, A.B.; Norf., Foulden Common, 4.vi.1978, I.F.G.McL., swept grass; Oxon., Marston, Cherwell Meadows, 23.vii.1941, E.T.; Water Eaton, 18.vii.1923, J.C.; Wood Eaton, Prattle Wood, 2.vii. 1941, P.M.M.; Wytham Wood, (formerly Berks.), 23.vii.1977, J.W.I.; Suff., Lakenheath Warren, 18. vii.1965, L.P. (68580); Surrey, Bookham, 26.vi.1960, L.P. (52580); Runnymede, Cooper's Hill fields, 29.vii.1970, P.J.C.; Sussex, Landholt, Lewes, 5.viii.1869, G.H.V.; S.W. Yorks., Bentley Common, 28.vii.1976, P.S. SE/581052; grid ref. 44/6416, 5.vii. 1977, P.S.

WALES: Mer., Cors y Sarnau, 16.vii.1976, A.G.I. 23/9638, basic bog; Cym Bychan, 12.vii.1976, I.F.G.McL., lake margin.

M. pallida Fedoseeva, 1964

This species has rather heavily dusted mesonotal stripes, black or sometimes reddish on the disc. Pleurae yellow with a small black mark low on the mesopleuron; the sternopleural mark is reddish, sometimes black anteriorly and posteriorly. The hind femora are more swollen than in most *Meromyza*, but less so than in *M. femorata* (fig. 2). The abdomen has a black central line and lateral spots on tergites 2-5. Wing length 2.9 mm (n = 7).

Male genitalia of *M. pallida* distinguished by the shape of the postgonite (fig. 9). Anterior process large, narrow, double curved and ends in a rounded tip. Posterior process large, broad and apically rounded, directed anteriorly and ventrally. Aedeagus (figs. 29-30) similar to that of *M. variegata*, but more curved in lateral view. Ninth tergite (figs. 61-62) elongate with rounded surstylus. The winged shape of the mesolobus (fig. 62) was not seen in all specimens and is probably an artefact.

I have swept the species from dry and damp pasture, marsh and the drier edges of saltmarsh. The type has not been examined but British specimens have been compared with Polish specimens determined by J. Hubicka.

ENGLAND: Bucks., Old Slade Woods, 4.viii.1977, P.J.C., adjacent weedy ground; Ches., Wallasey, 23.vii.1927, 3 ♂♂, H.B.; Essex, Benfleet, 19.vii.1936, L.P. (5661); Kirby-le-Soken, 3.viii.1977, 4 ♂♂, J.W.I., saltmarsh; Walton-on-Naze, 14.viii.1977, J.W.I.; Walton-on-Naze, 9.viii.1979, 2 ♂♂, I.F.G.McL. TM 2524; Lancs., Birkdale, 29.vii.1923, H.B.; Kent, Farmingham Wood, 23.viii.1974, K.S. TQ 5468; Gravesend, 2.viii.1907, J.W.Y.; Surrey, Chobham Common, 15.vii.1971, J.W.I.; Yorks., Spurn, 12.vii.1952, W.D.H.; 23.vii.1953, A.B.

WALES: Flint., Prestatyn, 19.viii.1922, A.D.
SCOTLAND: Elgin, Findhorn, 20.vii.1943, J.E.C.
EIRE: Dublin, Donabate, 17.vii.1971, P.J.C.

M. mosquensis Fedoseeva, 1960

Very similar in external appearance to *M. rufa* and *M. bohemica*, but has mainly reddish mesonotal stripes and the face is more upright than in most *Meromyza*. The figures of the postgonite in Fedoseeva (1960, 1970) differ from my fig. 10 but this is due to a slightly different orientation. Wing length 2.2 mm (n = 5).

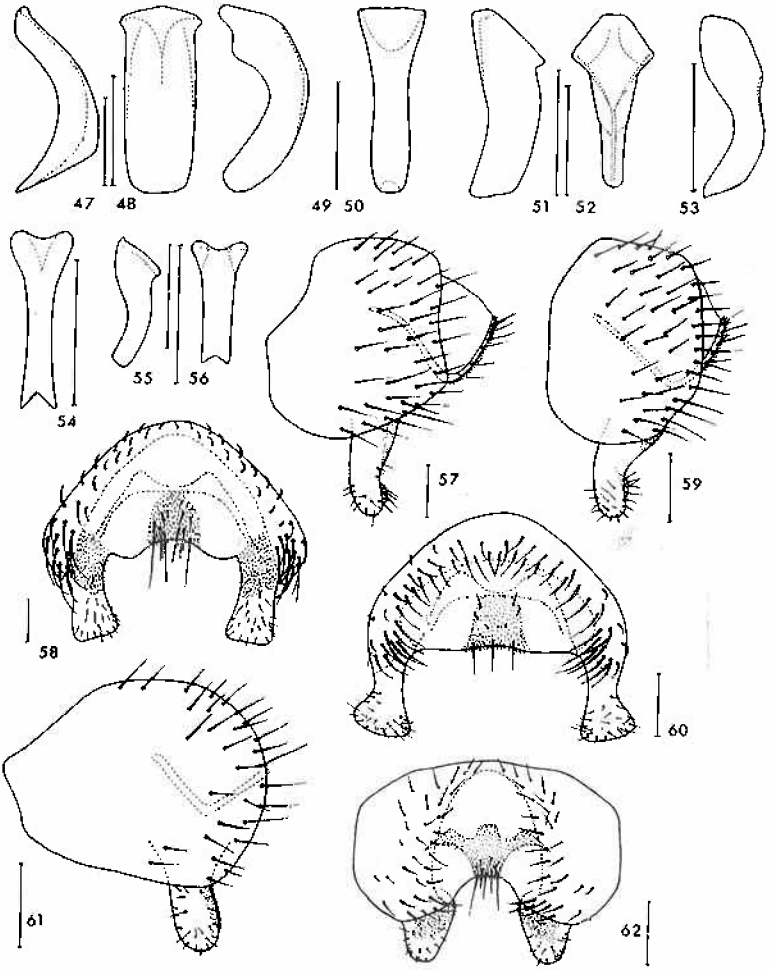
Postgonite (fig. 10) with nearly straight upper margin to anterior process, posterior process large, nearly straight and directed ventrally. Aedeagus (figs. 31-32) similar to that of *M. variegata* but straighter-sided in apical view. Ninth tergite (figs. 63-64) elongate, surstylus small, rounded and curved posteriorly.

A rare species whose preferred habitat is not known.

ENGLAND: Suff., Lakenheath Warren, 18.vii.1965, 2 ♂♂, 27.vii.1965, 2 ♂♂, L.P. (68765, 67124, 67125); Surrey, Thursley, 31.vii.1960, 1 ♂, L.P. (52752); Thursley Bog, 23.vii.1967, 1 ♂, P.J.C., in bog.

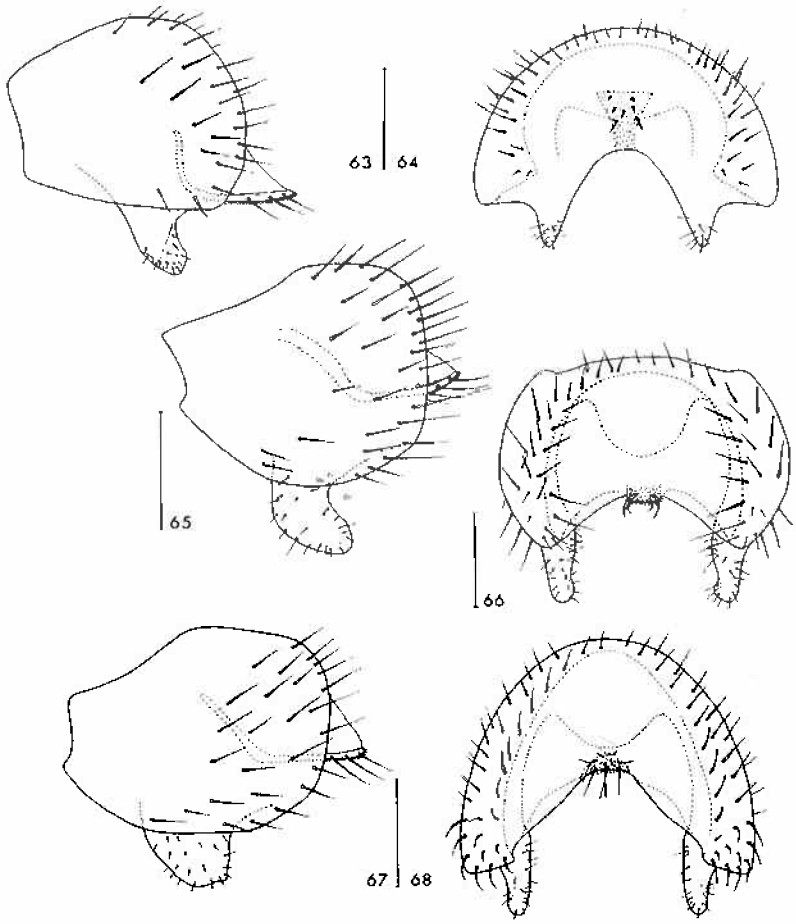
M. rufa Fedoseeva, 1962

M. rufa and *M. bohemica* are difficult to distinguish even by the male genitalia. Both have yellow palpi, rarely slightly darkened at the tip, mesonotal stripes usually extensively reddish centrally, pleurae yellow with



Figs. 47-56. Aedeagi: 47-48, *M. coronoseta*; 49-50, *M. nigriventris*; 51-52, *M. pluriseta*; 53-54, *M. palposa*; 55-56, *M. triangulina*. Figs. 57-62. Ninth tergite: 57-58, *M. pratorum*, 59-60, *M. sorocula*; 61-62, *M. pallida*. For each species the first figure is in lateral and the second in apical view. Scale lines = 0.1 mm.

a black mark on the mesopleuron and a reddish one on the meso- and sternopleuron, moderately enlarged hind femur and lateral spots on tergites 2-5. Hubicka (1967) noted that the setae on the genae of *M. rufa* are pale and those of *M. bohemica* are dark while in *M. bohemica* the central mesonotal stripe extends over the scutellum. None of these characters are constant for the British material studied, though the male genitalia may be distinguished by the illustrations of Fedoseeva (1962). Fedoseeva (1974) considered *M. lolii* Hubicka to be a synonym of *M. bohemica*: some British specimens of *M. bohemica* have genitalia similar to Hubicka's figures. Wing length 2.2 mm (n = 10).



Figs. 63-68. Ninth tergite; 63-64, *M. mosquensis*; 65-66, *M. rufa*; 67-68, *M. bohemica*. For each species the first figure is in lateral and the second in apical view. Scale lines = 0.1 mm.

Postgonite of *M. bohemica* (fig. 12) with proportionally shorter posterior process in relation to the anterior process, which is more pointed and has a more convex upper surface than that of *M. rufa* (fig. 11), in which anterior process rounded at the tip and posterior process proportionally longer. Surstylus of *M. rufa* (figs. 65, 66), in lateral view, usually projecting further beyond margin of ninth tergite than in *M. bohemica* (figs. 67, 68) in which it has a square lower posterior margin; in *M. rufa* surstylus bent posteriorly. Aedeagus of *M. rufa* (figs. 33, 34) and *M. bohemica* (figs. 35, 36) very similar, both narrower than that of *M. variegata* (figs. 37, 38).

The Essex specimens were swept from rough grassland bordering saltmarsh.

ENGLAND: Corn., Carbis Bay, 21.vii.1932, A.T.; Essex, Walton on Naze, 14.viii. 1977, 5 ♂♂, J.W.I.; Hants, Brockenhurst, 2.vi.1950, L.P. (34840); New Forest, 9.viii. 1902, F.C.A.; Oxenbourne Down, 27.vii.1974, A.G.I., SU 7118; Kent, Claygate, 1.ix. 1977, 3 ♂♂, K.S., TQ 6151; (not located) Cappoquin, 25.vii.1908, 2 ♂♂, J.J.F.X.K.

M. bohemica Fedoseeva, 1962

Discussed under *M. rufa*. Wing length 2.4 mm (n = 10).

Most of my records of this species are from dry grassland, but it also occurs in wet grassland.

ENGLAND: Bucks., Stoke Court Park, 2.viii.1970, P.J.C.; Dorset, Lulworth, 21.viii. 1906, J.W.Y.; Essex, Walton-on-Naze, 9.viii.1979, 4 ♂♂, I.F.G.McL., TM 2524; Kent, Monk Wood, 29.vii.1975, K.S., TQ 7363; Reading Street, 22.viii.1977, K.S., TQ 9230; London, Cripplegate, 11.vii.1953, L.P. (44216); Norf., Earlham Woods, 26.vi.1976, I.F.G.McL.; Oxon., Shotover Plain, 22.vii.1977, 2 ♂♂, J.W.I.; Suff., Flatford Mill, 15. viii.1977, 7 ♂♂, J.W.I.; Aldeburgh, 16.vii.1894, G.H.V.; Surrey, Chobham Common, 15.vii.1971, J.W.I.; Mitcham Common, 7.vii.1947, L.P. (22879); Riddlesdown, 13.vii. 1964, 3 ♂♂, L.P. (58216, 58218, 58219); Runnymede, 11.vii.1970), by pond; 12.vii. 1970, field hedge; 29.vii.1970, Cooper's Hill fields; 17.vii.1973, meadow pond, P.J.C.; Sussex, Cuckfield, 24.viii.1968, 2 ♂♂, R.P.L.

WALES: Carm., Llandeilo, 27.viii.1967, P.J.C.

M. variegata Meigen, 1830

The mesonotal stripes vary from black to reddish, darkened laterally, while the pleural markings vary from mainly reddish to black. Tergites 2-5 have three black spots each, varying in intensity. Wing length 2.3 mm (n = 9).

Postgonite (fig. 13) resembles that of *M. femorata* but anterior process has more pointed apex. Aedeagus distinguished by a stronger median constriction (figs. 37, 38) than in *M. saltatrix* (figs. 41, 42) or *M. femorata* (figs. 39, 40). Surstylus (figs. 69, 70) squared apically, but more narrowly so than in *M. femorata* (fig. 71).

British specimens agree with the illustrations of the postgonite in Fedoseeva (1960, 1970). The type is in Paris; it is a male and I have dissected it. The genitalia agree with Fedoseeva's figure of *M. femorata*, so that under the International Code *M. variegata* Meigen, 1830 is a senior synonym of *M. femorata* Macquart, 1835. Both species are of minor economic importance and therefore no action is taken until the remaining older specific names in *Meromyza* have been elucidated by examination of their types.

M. variegata is an uncommon species found in a variety of grasslands.

ENGLAND: Ches., Dunham Massey, 25.vi.1949, 2 ♂♂, H.B.; Essex, Walton-on-Naze, 14.viii.1977, J.W.I.; Hants, Keyhaven, 9.vii.1966, 2 ♂♂, L.P. (73436); Herts., Panshanger, 29.vi.1952, L.P. (42353); Kent, Ashford, 24.vi.1945, L.P. (17896); Norf., Holme Dunes, 2.viii.1978, 2 ♂♂, I.F.G.McL., main dunes; Oxon., Shotover Plain, 22.vii.1977, 3 ♂♂, J.W.I.; Surrey, Egham, 22.vi.1971, J.W.I., swept; Sussex, Woolbedding Common, 26.vii.1974, R.N.; Yorks., Bentley Common, 12.viii.1976, P.S., Don banks.

M. femorata Macquart, 1835

This large species is principally distinguished by its very broad hind femora (fig. 2); the mesonotal stripes are reddish, darkened laterally, while the pleural markings are usually reddish (rarely darkened) except for a small black mark on the mesopleuron. Wing length 2.8 mm (n = 10).

Anterior process of postgonite (fig. 14) broader apically than in *M. variegata* and with a small protuberance near the base of the ventral side. Aedeagus moderately curved in lateral view (fig. 39) and nearly parallel-sided in apical view (fig. 40). Ninth tergite (figs. 73, 74) somewhat square in outline with large, square surstylus. British specimens have been compared with the figures in Nartshuk (1970).

The type of *M. femorata* has not been located; the collections of Paris Museum and the Bigot collection at Oxford have been searched. Mr A.C. Pont (pers. comm.) considers that it should be in Lille Museum, but these collections have been extensively destroyed. The type of *M. nigriventris* Macquart, 1835, has probably suffered a similar fate. Macquart (1835) did not note the colour of the palpi but compared the species with *M. saltatrix* (which he described as having darkened palpi) so Duda (1933) may have been in error in describing the palpi as yellow.

The type of *M. rufescens* v. Roser, 1840, is in Stuttgart Museum; it is a female labelled 'Wurttemburg v. Roser 1872-75' 'Meromyza rufescens R' 'Meromyza variegata Meig. det Becker' 'Typus'. The right hind femur (the left is missing) is enlarged as in British *M. femorata*, the mesonotal stripes are reddish without black lateral markings and the palpi are black apically. Although the specimen cannot be identified with certainty, it is probably *M. femorata*. The types of v. Roser were examined by Becker (1903).

M. femorata is a common and widely distributed species; it is often associated with *Dactylis glomerata* L. from which it has been bred on the Continent.

ENGLAND: Beds., Tottenhoe, 22.vi.1974, I.F.G.McL., field; Berks., Marcham (B) 8.vii.1970, P.J.C., marshy field above spring; Cambs., Chippenham NNR, 28.vii.1979, 6 ♂♂, I.F.G.McL., meadow; Ches., Dunham Massey, 25.vi.1949, H.B.; Corn., Hayle, 9.viii.1949, L.P. (32927); N. Devon., Croyde, 21.vi.1927, K.G.B.; Essex, Walton-on-Naze, 9.viii.1979, I.F.G.McL., beside sea wall; Glos., Tewksbury, 11.vi.1928, H.B.; Here., Woolhope, Fishpool Hill, 28.vii.1902, J.H.W.; Herts., Royston Heath, 5.viii.1978, I.F.G.McL.; Kent, Church St., 24.vii.1976, P.J.C., by ditch; Norf., Holme Dunes, 2.viii.1978, I.F.G.McL.; Oxon., Hogley Bog, 10.vii.1915, A.H.H.; Som., Sedgemoor, Stoke St. Gregory, 7-8.vii.1925, J.W.Y. & E.E.A.; Suff., Sussex Lodge, Newmarket, 5.vii.1942, J.E.C., dry pond; Surrey, Riddlesdown, 13.vii.1964, L.P. (58222); Sussex, Winchelsea, 18.viii.1975, K.S. TQ 9217.

WALES: Anglesey, Cors Godh, 5.vii.1976, J.W.I. (23/5081); Caer., Criccieth, 16.vii.1976, K.S. 23/5137; Flint., Prestatyn, 5.viii.1922, A.D.; Mer., Maentwrog NNR, 16.vii.1976, I.F.G.McL.

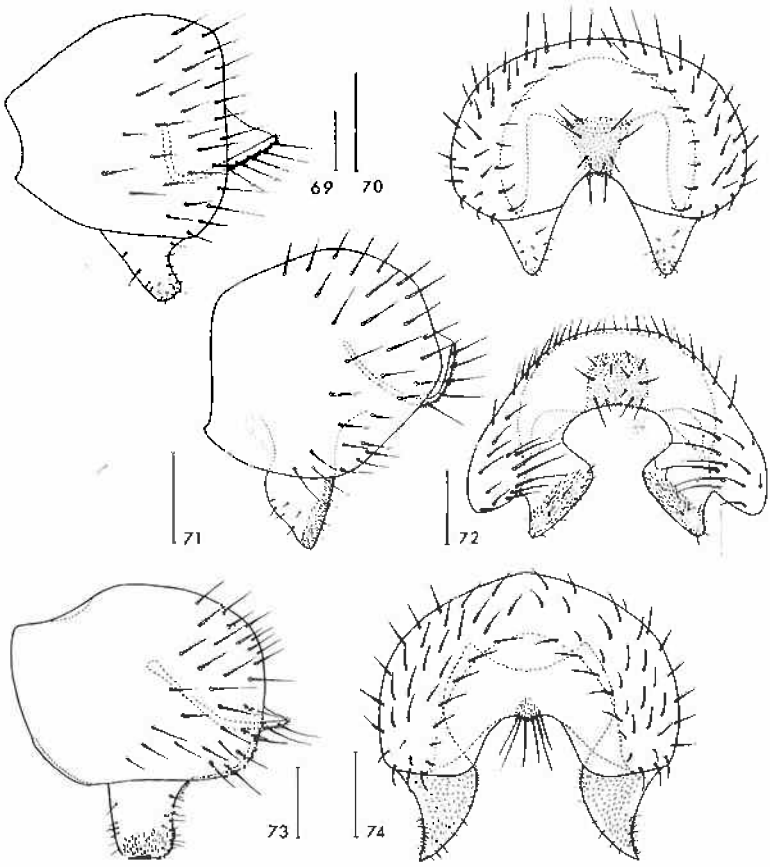
SCOTLAND: Wig., Borrow Moss, 20.vii.1979, 5 ♂♂, I.F.G.McL., Old railway track, NX 427581.

EIRE: Co. Clare, The Burren, Ballyvaughan, Lough Rask, 3-8.vii.1960, R.L.C., swept from rushes and silverweed, typical furlough.

M. saltatrix (Linnaeus, 1767)

In this small species the palpi are broadly darkened at the tip and the mesonotal bands are black and heavily dusted. The abdominal tergites have central and lateral marks on segments 2-6 and the markings on the pleurae vary from reddish to black. Wing length 2.3 mm (n = 10).

Postgonite (fig. 15) larger in proportion than in any other British *Meromyza*, anterior process having a straight lower margin and expanded laterally at the tip, so that it appears to have been turned at the tip which is broadly truncated in ventral



Figs. 69-74. Ninth tergite; 69-70, *M. variegata*; 71-72, *M. saltatrix*; 73-74, *M. femorata*. For each species the first figure is in lateral and the second in apical view. Scale lines = 0.1 mm.

view. Posterior process smaller and directed ventrally and slightly posteriorly. Aedeagus curved in lateral view (fig. 41) and swollen basally in apical view (fig. 42). Surstylus (figs. 71, 72) somewhat pointed.

The type of *Musca saltatrix* is in the Linnean Collection in London. The specimen is in good condition though the left wing is damaged and there is some mould on the mesonotum. There is a label 'saltatrix', probably in Linnaeus' handwriting (M.G. Fitton, pers. comm.) on the same pin as the specimen and there are also holes at the ends of the label. Many of Linnaeus' specimens were originally arranged above the species name and the label was later placed on the specimen's pin; since there are no further holes it is likely that this is the only specimen. The specimen agrees with the original description except that it has narrow hind femora; Linnaeus (1761) states 'Femora postica crassa' but this is omitted in Linnaeus (1767). It is a female of the species currently considered as *Chlorops pumilionis* (Bjerkander, 1778). *Musca saltatrix* was designated type of *Meromyza* Meigen by Macquart (1835), so the designation may have been based on a misidentification. The species currently considered as *Meromyza saltatrix* and *Chlorops pumilionis* are of some economic importance and no formal action is proposed here since there is doubt about the authenticity of the specimen in Linnaeus' collection; it may be advisable to apply to the International Commission on Zoological Nomenclature to retain current usage.

The type of *Meromyza cerealium* Reuter 1902 was not located; specimens standing above this name in Helsinki Museum's collection were lent by Dr. B. Lindeburg, but none were labelled, or are considered to be, types.

M. saltatrix is not uncommon on dry and wet grassland and also on sand-dunes.

ENGLAND: Beds., Tottenhoe, 22.vi.1974, I.F.G.McL., field; Cambs., Fleam Dyke, 19.vii.1937, J.E.C.; Glos., Tewksbury, 11.viii.1928, H.B.; Here., Monnow, 15.vi.1911, J.H.W.; I.o.W., Whitecliff Bay, 11.viii.1963, J.A.; Lancs., Birkdale, 29.viii.1923, 2 ♂♂, H.B.; Norf., S. of Ormesby Broad, 26.vii.1978, 4 ♂♂, I.F.G.McL., rough grass; Staffs., Madeley, 17.vi.1939, 2 ♂♂, H.B.; Suff., Lakenheath Warren, 12.viii.1977, J.W.I.; Westmoor., Melkinthorpe, 10.vii.1920, H.B.; Yorks., Spurn, 16.vi.1947, W.D.H.

WALES: Glam., Porthcawl, 12.vi.1906, J.W.Y.; Mer., Morfa Dyffryn, 12.vii.1976, 3 ♂♂, A.G.I., rear of dunes.

SCOTLAND: Angus, St. Cyrus, 10.vii.1977, 1 ♂, I.F.G.McL., NO 7463, main dunes and hollows.

EIRE: Wex., 1.vii.1902, 1 ♂, J.J.F.X.K.

M. laeta Meigen, 1838

Although this species has been on the British list for many years, no specimens were identified during the present survey. Most specimens standing as *M. laeta* in British collections proved to be *M. bohemica*. The following notes are taken from a series in the British Museum (Natural History) collected by V.F. Eastop at Zuel, nr. Cortina, Italy, 13.viii.1969 and determined by J. Hubicka.

The species is rather smaller than *M. saltatrix*, with red mesonotal bands, blackish laterally. The palpi are yellow with the tip narrowly black. The

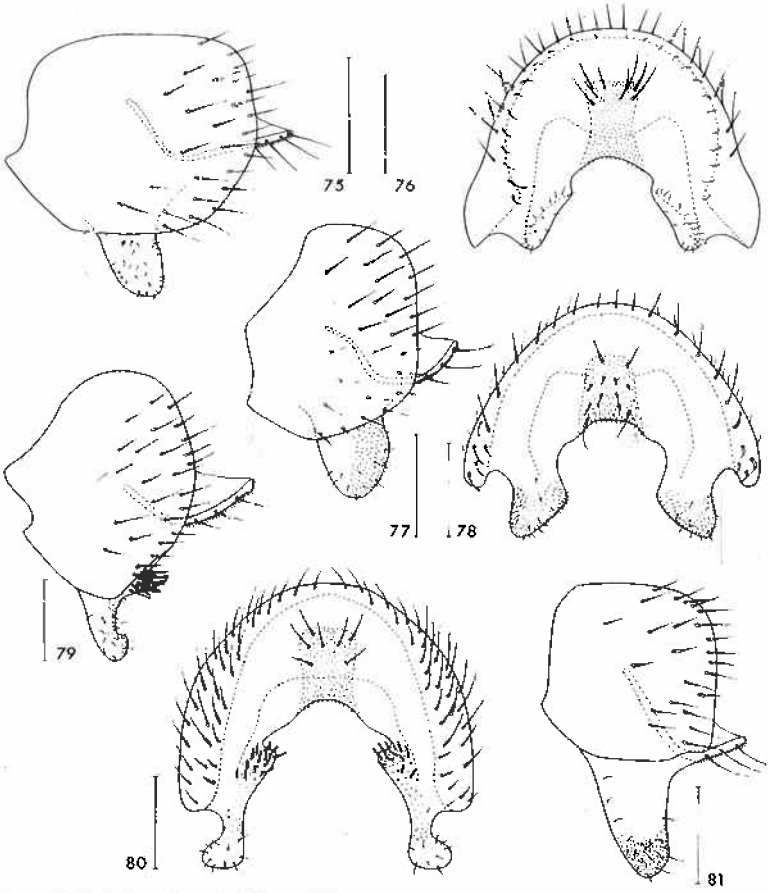
pleurae are yellow with reddish marks on the sterno- and hypopleuron. Wing length 2.0 mm (n = 3).

Postgonite (fig. 16) smaller than in *M. variegata* (fig. 13) or *M. femorata* (fig. 14) and anterior process straighter and more rounded at the tip. Aedeagus (figs. 43, 44) narrow and strongly curved. Ninth tergite (figs. 75, 76) with rounded surstylus.

The type is in Paris; it is a female but agrees with the notes above. The species could well occur in Britain and is therefore regarded as of uncertain status.

M. depressa Fedoseeva, 1971

This species resembles *M. nigriventris* but the head and thorax are usually paler while the abdomen is brownish, the femora are broader and the frontal



Figs. 75-81. Ninth tergite; 75-76, *M. laeta*; 77-78, *M. depressa*; 79-80, *M. coronoseta*; 81, *M. curvinervis*. For each species the first figure is in lateral and the second in apical view. Scale lines = 0.1 mm.

triangle has shining patches lateral to the ocelli. The mesonotal stripes are only narrowly separated. Wing length 2.2 mm (n = 10).

Postgonite (fig. 17) similar to that of *M. variegata* (fig. 13) but anterior process longer and narrower apically. Aedeagus curved in lateral view (fig. 45) and nearly parallel-sided in apical view (fig. 46). Ninth tergite moderately flattened and surstylus rounded in lateral view (fig. 77) and resembles that of *M. saltatrix* in apical view (fig. 78).

The type has not been examined. The species is abundant where it occurs in southern England. My specimens were swept from saltmarsh; the record from 'Flatford' may also be from saltmarsh since other typical saltmarsh species labelled 'Flatford' are in Parmenter's collection.

ENGLAND: Essex, Fingeringhoe, 8.vii.1972, P.J.C., saltmarsh; Kirby le Soken, 3.viii.1977, 5 ♂♂, J.W.I., saltmarsh; R. Deben, 28.vi.1908, 2 ♂♂, J.E.C.; Walton-on-Naze, 17.vii.1957, 14.viii.1907, J.E.C.; Suff., Flatford, 10.vii.1951, L.P. (38534).

M. coronoseta Hubicka, 1969

Introduced to the British list by Cogan & Dear (1975), but the male specimen from Brancaster taken by Mr. J.H. Cole has been dissected by him (pers. comm.) and proved to be *M. nigriventris*. *M. coronoseta* is green when alive, with broad dark tips to the palpi, a central black stripe down the abdomen and mainly or wholly black mesonotal stripes. Wing length 2.3 mm (n = 6).

Male genitalia distinctive. Short ninth tergite (figs. 79, 80) with an elongate rounded surstylus; basal, posterior parts of surstylus, partly concealed by ninth tergite in lateral view, bear dense thickened black setae. Scarcely darkened postgonite (fig. 18) elongate with posterior process reduced to a small projection scarcely as long as wide, anterior process long and curved, bearing a cluster of setae dorsally near base. Aedeagus (figs. 47, 48) slightly and evenly curved, triangular in cross-section.

M. coronoseta was compared with *M. nigriseta* Fed. by Hubicka (1969) and the species are closely related. British specimens have numerous thickened black setae in several rows on the base of the surstylus, as noted in the original description of *M. coronoseta*, while *M. nigriseta* has about ten setae in two rows (Hubicka, 1969). Specimens of both species from eastern Europe, identified by Hubicka, have been examined, but the types have not been seen.

The species is known only from Flatford Mill in Suffolk, where I swept it from mixed *Agropyron* sp. and *Phragmites communis* Trin. on Middle Marsh (grid reference 62/081329).

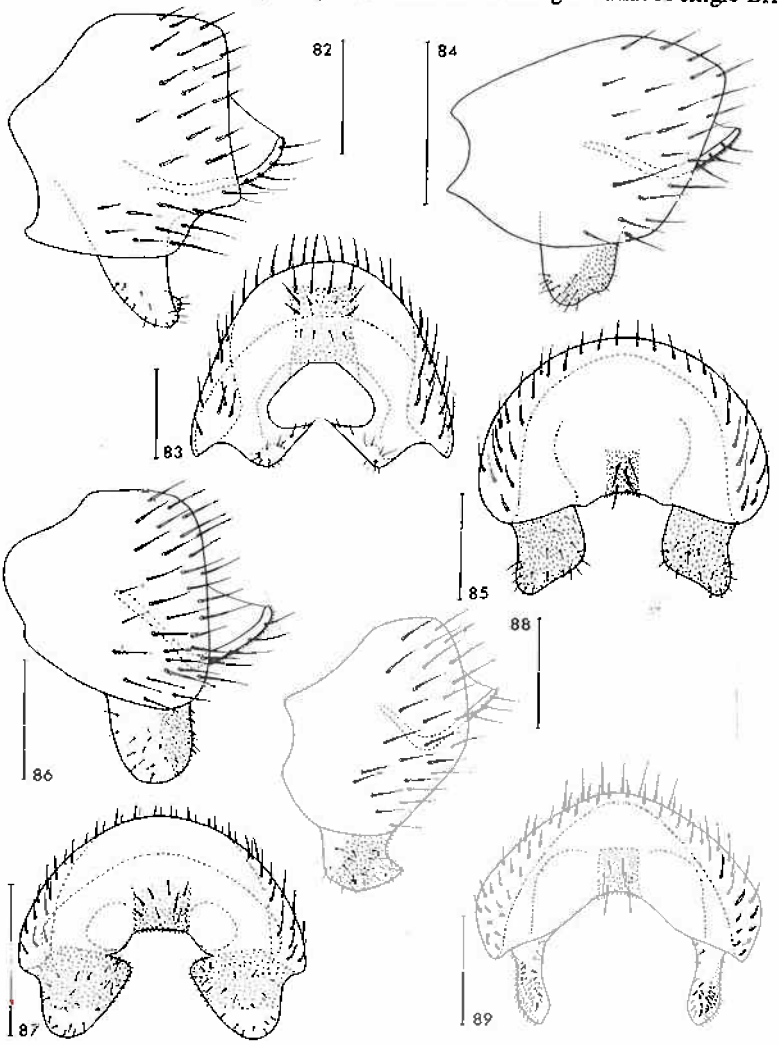
ENGLAND: Suff., Flatford, 15.vii.1951, L.P. (39191); 5.viii.1977, 15.viii.1977, 4 ♂♂, J.W.I.

M. curvinervis (Zetterstedt, 1848)

The single British specimen has heavily dusted mesonotal stripes (the central one ending before the scutellum), the hind femur less enlarged than in *M. femorata* and the central markings on the abdominal tergites elongate. Wing length 3.0 mm (n = 1).

Postgonite (fig. 19) with large square anterior process, produced into a curved point anteriorly, the posterior process elongate, slightly curved and directed ventrally and slightly posteriorly. Ninth tergite (fig. 81) square in lateral view and surstylus large and rounded. Aedeagus (fig. 28) with large swollen basal and narrow apical portion; but there is a membraneous distiphallus distal to this narrow part, therefore the swollen and the narrow sclerotized parts form the basiphallus.

Zetterstedt (1848) described this species from a single male; this was re-examined by Andersson (1966) who illustrated the genitalia. A single British



Figs. 82-89. Ninth tergite: 82-83, *M. nigriventris*; 84-85, *M. pluriseta*; 86-87, *M. palposa*; 88-89, *M. triangulina*. For each species the first figure is in lateral and the second in apical view. Scale lines = 0.1 mm.

male, labelled 'Lakenheath Warren, 18.vii.1965, L. Parmenter 68773' is in the British Museum (Natural History). The illustrations of *M. hybrida* Péterfi, 1961, and Fedoseeva, 1970, show that this is the same distinctive species (syn. n.).

M. nigriventris Macquart, 1835

This is one of the most variable British species. The frontal triangle is very rugose, usually dark basally and yellow apically but it may be mainly pale or entirely dark. The palpi are extensively black. The mesonotal stripes are usually black and narrowly separated, but may be fused, leaving the mesonotum black with small marginal yellow marks, or in pale specimens the mesonotal stripes are replaced with red from the centre of the mesonotum. The pleurae are yellow with black meso-, plero- and sterno-pleural marks, the latter red centrally in pale forms. In dark specimens the legs are infuscated. The abdomen varies from yellow with three black marks on each tergite to black with the posterior margins of the tergites yellow or completely black. Wing length 2.4 mm (n = 10).

Postgonite (fig. 20) small with trapeziform anterior process ending in a narrow projection, posterior process narrow and pointed, directed antero-ventrally along the base of the anterior process. Aedeagus strongly curved in lateral view (fig. 49) and nearly parallel-sided in ventral view (fig. 50). Most distinctive feature the inwardly hooked surstyli when seen in apical view (fig. 83). In lateral view (fig. 82) surstylus small and rounded at tip, with a small posterior projection.

The type has not been examined; see discussion under *M. femorata*.

The male type of *M. basalis* v. Roser, 1840, is in Stuttgart Museum and is labelled 'basalis n.sp.' '14' 'Meromyza nigriventris Mcq det. Becker' and 'Typus'. The frontal triangle is rugose, darkened on the ocellar area and posteriorly, the palpi black except for the extreme base and the abdominal tergites black with narrow pale posterior margins. The genitalia are exposed and the characteristic postgonites are the same as those of *M. nigriventris* sensu Fedoseeva (1960). *M. basalis* is therefore a synonym of *M. nigriventris*.

The female type of *M. virescens* v. Roser 1840 is in Stuttgart Museum and is labelled 'virescens' 'Meromyza virescens R !. 3' 'Type !. v. Roser' 'Meromyza nigriventris Macq. de. Beck.' and 'Typus'. The specimen resembles the type of *M. basalis*, but the frontal triangle is more extensively darkened and the frons is more produced. It is probably also a synonym of *M. nigriventris* but the type cannot be interpreted with certainty.

M. nigriventris is one of the most common and widely distributed British species and is found in fens, damp and dry grassland, verges up to moors at high elevations. It has been reared from many species of grass.

M. nigriventris, M. pluriseta, M. palposa and *M. triangulina* form a small group distinguished by their small size, relatively narrow hind femora and usually very dark coloration.

The type of *Meromyza pratorum* var. *decora* Frey 1907 is in Helsinki Museum and is labelled 'Kangasala' 'R. Frey' 'spec. typ.' 'Mus. Zool. H:fors spec. type No 43333 Meromyza decora Frey'. It is a small female *Meromyza* with narrow hind femora, darkened abdominal tergites, extensively black

palpi and the frontal triangle is not heavily rugose. The specimen cannot be identified with certainty but probably belongs to the *Meromyza palposa* complex.

ENGLAND: Bucks., Old Slade, 19.vii.1970, P.J.C., Costain's Ground; Cambs., Bassingbourn, 20.viii.1979, I.F.G.McL., swept from lawn, garden; Essex, Walton-on-Naze, 9.viii.1979, I.F.G.McL., beside sea wall; Here., Tram Inn, 12.ix.1910, J.H.W.; Herts., Royston Heath, 5.viii.1978, I.F.G.McL., chalk grass; Hunts., Wood Walton, 9-11.vii.1939, R.L.C., heath, mixed tree area east; Kent, Pond Wood, 11.ix.1977, K.S. TQ 9036; Lancs., Chat Moss, 22.viii.1930, H.B.; Lincs., Spurn, 13.viii.1949, W.D.H. Phrag. A; Middx., Ruislip, 8.ix.1956, L.P.; Norf., Foulden Common, 4.vi.1978, C.B., grass etc.; Suff., Benacre, 8.viii.1972, I.F.G.McL., cliff top path, YM 5382; Surrey, Bookham Common, 10.vi.1979, I.F.G.McL.; War., S. of Warwick, 26.vi.1978, J.W.I. SP.35; Wilts., Figsbury Rings nr. Salisbury, 14.viii.1977, J.P.D., 41/189337; S.W. Yorks., Bilham Quarry, 28.vii.1976. C.A.H.

M. pluriseta Péterfi, 1961

Postgonite (fig. 21) remarkable for reduction of posterior process, a small rounded projection hardly separated from the anterior process. Anterior process curved ventrally and anteriorly, bearing setae at its base. Aedeagus only slightly curved in lateral view (fig. 51); in ventral view (fig. 52) base swollen. Surstylus very large, rounded and broad in lateral (fig. 84) and apical (fig. 85) views. Wing length 2.1 mm (n = 3).

The type has not been examined but British specimens have been compared with a Polish specimen determined by Hubicka.

The species is apparently rare in southern England.

ENGLAND: Kent, All Hallows, 20.viii.1950, L.P. (35830); Suff., Flatford, 15.vii. 1951, 8.vii.1951, L.P. (39190, 38319).

M. palposa Fedoseeva, 1960

A small species resembling *M. nigriventris* but not as dark in extreme forms. Wing length 1.9 mm (n = 9).

Postgonite (fig. 22) very small, anterior process narrow and curved ventro-anteriorly, posterior process small, narrow, rounded, directed ventrally and slightly anteriorly, in nearly the same direction as the anterior process. Aedeagus strongly curved in lateral view (fig. 53); in apical view (fig. 54) base swollen. Surstylus very large in both lateral (fig. 86) and apical (fig. 87) views, without a projection on the inner surface.

The type of *M. palposa* has not been examined but British specimens agree with Polish ones determined by Hubicka.

M. palposa is widely distributed in England, Wales and Scotland. My specimens were mostly swept from the grass *Festuca* with the more common *M. triangulina*.

ENGLAND: Cumb., Skirwith, 29.vi.1929, H.B.; Lundy Is., Pondsbury, 20-27.vii. 1972, tillage field, 20-27.vii.1972, R.P.L.; Som., West Sedge Moor, 19.vi.1979, I.F.G.McL., beside open water dykes; Suff., Flatford, 19.vii.1951, L.P. (39853); Surrey, Mitcham Common, 7.vii.1947, L.P. (22880).

WALES: Caer., Llyn Ogwen, 10.vii.1976, J.W.I., 23/6560; Llyn Ystumlym, 8.vii. 1976, J.W.I. 23/5238; Snowdon, 14.vi.1939, H.B.; Glam., Porthcawl, 19.vi.1906, J.W.Y.; Mer., Nat y Groes, 16.vii.1976, I.F.G.McL., 23/7540.

SCOTLAND: Aber., Glen Ey Gorge, 11.vii.1977, I.F.G.McL.; Loch Callater, 28.vii. 1937, R.L.C., 1500 ft.; Morrone Birk Wood NNR, Braemar, 11.vii.1977, I.F.G.McL.,

heath; Angus, Braedownie, 7.vii.1977, I.F.G.McL.; Kinordy Loch, 6.vii.1977, I.F.G.McL., NO/3554, general bog; Argyll, Camuscore, 14.vii.1937, H.B.; Dumf., nr Devil's Beef Tub, 9.vii.1977, 3 ♂♂, J.W.I.; Kinc., Redstone Hill, Fettercairn, 10.vii.1977, I.F.G.McL., 37/651797, moor; Midloth., nr Leith Hill, 25.vi.1868, G.H.V.; Moray, Spey Bay, 5.vi. 1908, J.W.Y.

M. triangulina Fedoseeva, 1960

This species closely resembles *M. palposa* and is easily confused with it. It shows much the same range of variation as *M. nigriventris*, but varies also in the colour of the palpi which are normally black for the apical half but in a few specimens are only slightly infuscated at the tip. Wing length 1.8 mm (n = 10).

Postgonite (fig. 23) rather similar to *M. palposa* but orientation differs. Posterior process closer to anterior process and lower margins of anterior process straighter in *M. triangulina*. Great care is necessary in distinguishing the postgonites of these two species since from certain orientations the postgonite of *M. palposa* can be mistaken for that of *M. triangulina*. Most reliable difference between the species is in the surstyli; in *M. triangulina* these are very narrow in apical view (fig. 89) and small with a posterior process in lateral view (fig. 88), while in *M. palposa* (figs. 86, 87) they are very large and rounded in both views. In *M. triangulina* ninth tergite more flattened anteriorly – posteriorly than in *M. palposa*.

The type has not been examined but I have seen specimens determined by Hubicka.

M. triangulina is one of the commonest species of *Meromyza* in Britain, particularly in upland areas. My records indicate a preference for *Festuca* grassland.

ENGLAND: Cambs., Fleam Dyke, 19.vii.1934, J.E.C.; Ches., Tatton Park, 17.vi. 1978, 2 ♂♂, J.W.I.; Tintwistle, 24.vi.1947, 10 ♂♂, H.B.; Essex, Walton-on-Naze, 14.viii. 1977, 2 ♂♂, J.W.I.; Here., Tram Inn, 17.vii.1902, J.H.W.; Herts., Wheathampstead, Nomansland Common, 16.vii.1974, I.F.G. McL.; Norf., East Barsham, 8.vii.1974, J.W.I.; Holme, 8.vii.1978, 2 ♂♂, J.W.I.; Holme Dunes, 8.vii.1978, 2 ♂♂, I.F.G.McL., main dunes; New Costessey, 16.vi.1974, J.W.I.; Lancs., Rampside, Barrow, 18.v.1921, A.D.; Oxon., Aston Rowant NNR, Bald Hill, 13.vi.1970, P.J.C.; Shotover Plain, 22. vii.1977, J.W.I.; Salop. Whixall Moss, 8.vii.1936, 2 ♂♂, H.B.; Som., Shapwick NNR, 21.vi.1979, I.F.G.McL.; Suff., Boyton, 28.vi.1908, J.E.C.; Flatford Mill, 4.viii.1977, J.W.I., grassland; Lakenheath Warren, 12.viii.1977, 3 ♂♂, J.W.I.; Raylands, Newmarket, 12.vii.1941, J.E.C.; Westleton Heath NNR, 4.vi.1976, A.G.I., 62/4569, grass heath; Worlington, 5.vii.1944, J.E.C.; Surrey, Limpsfield Common, 21.vii.1946, L.P. (19791).

WALES: Anglesey, Cors Godh, 5.vii.1976, 3 ♂♂, J.W.I.; Caer., Rhyd – Dhu, 11.vii. 1976, I.F.G.McL., SH/5533; Mer., Barmouth, 27.vi.1902, J.W.Y.; Morfa Dyffryn, 12.vii.1976, A.G.I., rear of dunes; Pemb., Newport, 10.vii.1958, J.E.C.

SCOTLAND: Angus, Barry Links, 3.vii.1977, 2 ♂♂, J.P.D., sand dunes and slacks; Whitingness Cliffs, 6.vii.1977, J.P.D., 37/6641; Dumf., Caerlaverock NNR, 15.vii.1979, 6 ♂♂, I.F.G.McL., mid marsh; Nr. Devil's Beef Tub, 9.vii.1977, J.W.I.

EIRE: Co. Clare, Burren, Black Head, 26.vii.1971, P.J.C.; Burren, Kilnaboy, Lough Inchiquin, Slaty Island, 20.vii.1960, R.L.C., swept from mixed vegetation.

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May 30th, 1980.

Damage to car paintwork by Ephemeroptera. – During the second week of July an unusual enquiry was received at the British Museum (Natural History) from a car-sales company: 'What are these insects eating the paintwork on our cars?'. I visited the site, a large fenced area containing 50-60 cars adjacent to a very large reservoir. The immediate thought was the possibility of Chironomidae causing the damage as they have been recorded doing so in South Africa by Theron (1972, *J. ent. Soc. sth. Afr.* 35: 361).

The nature of the damage was small circular areas, 0.5-1.0 cm diameter, of pitted, bubbled and corroded paintwork. The patches were isolated, mainly on the roof and bonnet. Severe damage had been caused to at least six cars and all were models which had arrived from the manufacturer without a protective grease coating. Those with a matt grease coating were unaffected.

At night the yard was lit by ultra-violet lamps which attracted numerous insects, especially Chironomidae which were found dead in large numbers under the covers of strip-lights in nearby offices and in the air-vents of the cars. Chloropidae were also collected from the air vents, and from spider webs spun across them; an ephydrid was seen to alight on the glossy paintwork. The two cars most seriously damaged were green and red. The green one was found to have not only pitted and corroded patches but also small encrusted circles of a pale brown substance. The latter were collected, later reconstituted and found to be egg-masses. On a second green car I found a large egg-mass (2.0 cm diameter) attached to a dead, adult mayfly, which had obviously become stuck whilst trying to oviposit on the car. This specimen was collected and later identified by my colleague S.J. Brooks as *Caenis moesta* Bengtsson, a species that occurs in lakes, rivers and streams of either acid or alkali nature between June and September. It is also commonly attracted to light. Eggs of this species are laid in a cluster form which is washed from the abdomen of the ovipositing female by 'dipping' into the water.

It appears that mayflies are attracted to the ultra-violet lamps at night, alight on the shiny surfaces of the cars, mistaking them for water, and attempt to oviposit on them. The female becomes stuck to the paintwork as the abdomen cannot be 'dipped' away without the lubrication of the water surface. Eventually the mayfly dies, dries, and is washed for blown away. The eggs become baked on to the paintwork by the sun, and with rain or dew a chemical reaction takes place between the enamel paint and the egg-matrix, causing corrosion and bubbling of the surface. – JAMES P. DEAR, British Museum (Natural History), Department of Entomology: *September 1st*, 1980.

Bledius annae Sharp (Col., Staphylinidae) in Kent. – About 1971 the Southern Water Board undertook extensive ditch clearing and deepening in the Maytham area of the Rother Valley. The ditches were left walled at an angle of about 45° with clean river silt. In the interval between clearance and reestablishment of vegetation there was a heavy infestation of *Bledius annae* (= *pallipes* Grav.) for about three years. Splashing the bare banks at the height of the outbreak (about June 1972) produced about 30 beetles per foot over about a mile of cleared ditches. Since then sporadic infestations have occurred where the Water Board has undertaken small works, and the species appeared in numbers on the bank of the R. Rother last year near Maytham, seen by myself and Mr. Peter Hodge of Lewes visiting in September.

I was prompted to record the above by Mr. Allen's note on the species (1976, *Entomologist's mon. Mag.* 111 (1975):228). The other two species he mentions, *Anthicus bimaculatus* Ill (Anthicidae) and *Cercyon bifenestratus* Küst (Hydrophilidae) are both apparently established at Castle Water, Rye, where I and others have taken them on several occasions. – JOHN PARRY, 38, Heather Drive, St. Michaels, Tenterden, Kent: *September 16th*, 1980.

REVIEW

'CATALOGUE OF THE DIPTERA OF THE AFROTROPICAL REGION' Edited by R.W. CROSSKEY. 24.0 x 16.5 cm. 1437 pp., 1 map. British Museum (Natural History). 1980. Price £55.

There is a vogue for recording the taxonomic work on Diptera in the form of catalogues or check-lists. Two comparable catalogues cover the Nearctic (*A Catalog of the Diptera of America north of Mexico*, 1965, Stone et al., eds., U.S. Dept. of Agriculture) and the Oriental Region (*A Catalog of the Diptera of the Oriental Region*, 1973-7, Delfinado & Hardy, eds., University Press of Hawaii). The Nearctic catalogue defines the most important functions of a catalogue as 'to list all published names with a reference to the original publication of each, to distinguish between valid and synonymous names, to present as sound a classification as possible, and to give an indication of the distribution of the species'. These objectives are admirably met by the present volume, which covers the Diptera of the Afrotropical region, formerly the Ethiopian region. The region is defined as extending from the northern borders of Mauritania to the Sudan, the Yemen and South Yemen, including the islands of Ascension, Tristan da Cunha and Gough. Names published up to 31 July 1978 are included though some taxa described later are included in the appendix. True fossil Diptera do not appear to have been recorded from the Afrotropical region. A total of 16,318 species in 2009 genera is listed and there are 4,700 entries in the bibliography. The classification adopted is commendably conservative. The distributional data indicate the vast amount of work yet to be undertaken.

The catalogue contains a foreword, list of contributors, introduction, acknowledgements, explanation of the text, outline of classification and a list of new names. The catalogue text is followed by the bibliography, list of full names of authors, appendix and index.

In the explanatory information the taxonomic notes (p. 17-26) are fuller than in the two catalogues cited above and differ in some details. In particular the convention of placing parentheses around the names of authors of species that are no longer in their original genera is not adopted, on the grounds that the original genus has been cited in such cases. This decision could lead to some confusion since in my opinion a catalogue such as this will be used by non-taxonomists to check citations. There is a list of alternative family-group names in Afrotropical Diptera. The geographical information includes a list of former names of countries and islands with a map: there is also a short list of place names that have or may cause confusion.

The catalogue has been in preparation by forty specialists for nearly ten years, more than two-thirds of the work being done by staff of the British Museum (Natural History). It does not rely entirely on existing literature; many new synonyms and combinations are recorded and 21 replacement names for preoccupied homonyms published. Genera without described Afrotropical species are included, but undescribed species in known Afrotropical genera omitted. Adult and larval biology, comments on the state of taxonomy and key works for identification are included in the introduction to each family. The bibliography is complete, accurate and includes annotations to clarify difficulties. The list of full names of cited authors by K.G.V. Smith is a useful complement to '*A Compendium of the Biographical Literature on Deceased Entomologists*' by Pamela Gilbert (1977), while there is also a list of references later than or omitted from the above compendium. The huge index contains all valid and invalid names in the body of the catalogue.

For any work of this scope there are certain to be critics who would wish it contracted to a check-list without references or expanded to include every reference to every species, but in my opinion it contains the maximum of information in a rather large space. The catalogue is well printed and bound, with no obvious mistakes and although expensive the price does not reflect the years of work its compilation has entailed. Dr. Crosskey and his assistant editors B.H. Cogan, P. Freeman, A.C. Pont, K.G.V. Smith and the late H. Oldroyd are to be congratulated on an excellent production. – J.W. ISMAY.