Obituary.

Frederick Wallace Edwards.—The death on 15th November of Dr. F. W. Edwards after a short illness is a severe and unexpected blow to entomological science. Born on 28th November, 1888, Edwards was educated at Cambridge County School and Christ's College, Cambridge. He joined the staff of the Natural History Museum in November, 1910, and at once turned his attention to the Nematoceran Diptera, a group that was in a sadly neglected state. Studying first the Culicidae, a family upon which the War was shortly to focus the studies of medical entomologists the world over, he soon came into prominence as a leading authority upon the family, a position he has ever since retained. Subsequently he took up the study of other families, Mycetophilidae, Chironomidae and Tipulidae successively, at the same time thoroughly reviewing the British representatives of these groups. For this purpose he collected extensively in many out-of-the-way places of the British Isles, usually by cycle camping and frequently accompanied by his wife. The latter also accompanied him on a more extended collecting expedition in the Argentine and S. Chile (1926). In 1935 he collected in Kenya and Uganda with the special purpose of investigating the Dipterous fauna of the different mountain massifs.

He joined the Entomological Society of London in 1911 and served on the Council from 1929 to 1931. In the latter year he was granted the Sc.D. degree of Cambridge and in 1938 was accorded the honour of election to the Royal Society, a timely recognition of taxonomy. He was a careful and discriminating worker, at the same time producing a vast volume of work, and in the course of his revisionary work, to take the British list alone, probably added more new species than any other worker of his generation; many of his papers were illustrated by the clever pencil of his wife. Of a quiet and retiring disposition, his excellent qualities were perhaps too little known outside the immediate circle of his associates; nevertheless, he held firm convictions and had the courage to stand by them even were it to his own detriment. He formed no private collection, placing all his captures, whether of private or official collecting trips, in the National Collection. To his widow and three daughters we would respectfully offer our very sincere sympathy in their, and our, grievous loss.—K.G.B.

The Range and Status of Pieris napi L. (Lep.) in the Outer Hebrides.—The first record of the Green-veined White in the Outer Isles was due to my son, Dr. G. Heslop Harrison, who took it in Barra. Subsequently, I have captured it myself at many points in the same island from Eoligarry in the north to Castlebay in the south, wherever the various species of *Cardamine* and their allies grew. It is particularly abundant on the swampy area just west of Eoligarry House, where I counted just under a hundred specimens in a very limited area on the edge of a field. Moreover, this concentration was equalled at other stations. On South Uist, it seems common enough northward as far as Loch Altabrug and its satellites, and on these stations observation revealed that its eggs were being laid upon the Common Water Cress. As far as the status of the species is concerned, it seems necessary once and for all to insist that it is a genuine native. We have taken it and its ova and larvae in many Hebridean Islands and in both broods from April to September. Moreover, it can be relied upon to occur with great regularity in the same habitats season after season. Thus the idea that, in some mysterious way, it turns up as an immigrant should be completely disregarded.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne: *December 20th, 1940.*

NOTES ON BRITISH FUNGUS-GNATS (DIPT., MYCETOPHILIDAE).

BY F. W. EDWARDS, F.R.S.

Since 1925, when I revised the classification of the British fungus-gnats (*Trans. ent. Soc. Lond.*, **1924**:505-670), the occurrence in Britain of a not inconsiderable number of additional species has been ascertained, but only a few of these discoveries have been placed on record. Some changes in nomenclature have also been found to be desirable. In this paper I have collected together all these additions and corrections to the list of our fungus-gnat fauna, excluding the subfamily Sciarinae, of which I am preparing a more detailed revision for publication elsewhere.

Two genera little known in Europe have been added to our list: *Manota* and *Eudicrana*. Both these remarkable and unexpected discoveries were made by Mr. J. E. Collin, and I am most grateful to him for kindly allowing me to place his captures on record.

I am also indebted to Drs. C. G. Lamb and G. C. Varley for the opportunity to examine the extensive undetermined material of this family in the Cambridge Museum collected by the late Francis Jenkinson, and to Prof. E. Hindle for a similar opportunity regarding undetermined material in Glasgow collected by the late J. J. F. X. King.

In the following notes species now recorded as British for the first time are marked with an asterisk. Types are deposited in the British Museum (Nat. Hist.).

Bolitophilinae.

Bolitophila dubia Siebke (n.syn. *B. disjuncta* Lw.). The male type of *B. dubia* was lent to me by Mr. Natvig of the Oslo Museum in 1936. It agrees with the description of *B. disjuncta* Lw. and must, I think, be the same species. A British male of *B. dubia* Lw. (the only one I have examined, from Glen Lochay, Perth) agrees with the Norwegian type in almost all respects, but differs in having a sharp spine on the outer side of the style of the hypopygium near the tip (fig. 1, d), other parts of the hypopygium being alike in the two specimens; this seems unlikely to be a specific difference. Fifteen females (from Glen Lochay, Glen Roy, Rydal and Tilberthwaite) agree with these two males in having the first segment of the antennal flagellum almost entirely yellow and the thorax largely yellow with the mesonotal stripes separate, and the vein Cu_1 widely interrupted, its base not traceable.

* B. fumida sp.n.

Allied to *B. dubia*, differing as follows:—Antennae with only the base of first flagellar segment rather narrowly yellowish. Thorax much darker, the mesonotal stripes completely fused. Vein Cu_1 with its base just traceable (at least in one of the two specimens), though very faint. Hypopygium (fig. 1, c) of similar type but aedeagus quite different; style lacking the spine.

Type and one other male from Aviemore, INVERNESS, vi.1931 (*F.W.E.*). This is perhaps the dark form of *B. disjuncta* noted, but not named, by Landrock.

B. pseudohybrida Landr. I find I have confused two species under this name; perhaps Landrock did the same as he described the thorax as striped, which is not the case in our species. I regard our commoner species as the true *pseudohybrida*, as its hypopygium (fig. 1, b) agrees well with Landrock's figure. Diagnostic points are:—Mesonotum somewhat shining, with scarcely a trace of grey dust, stripes completely fused; scutellum dark. Front tarsi of ♀ with second, third and fourth segments about equally thickened. I have examined many specimens from HERTS., BEDS., CAMBS. and HANTS.

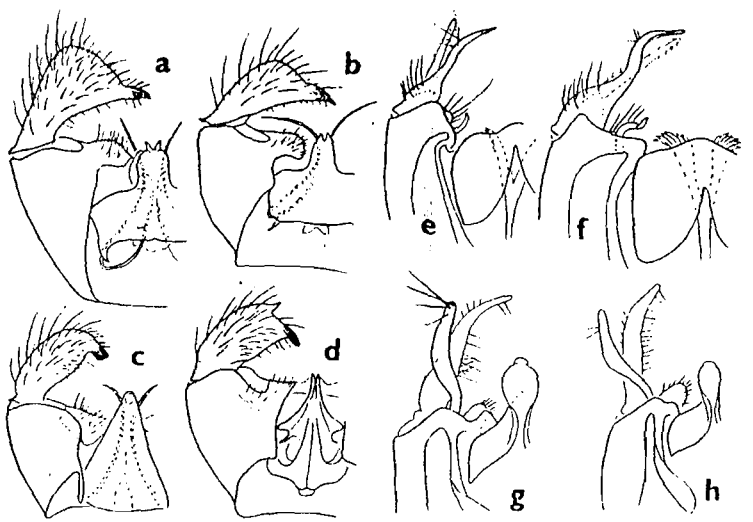


FIG. 1.—Hypopygia (half) with tergite removed: a—d, *Bolitophila* spp.; e—h, *Platyura* spp.: a, *triangulata*; b, *pseudohybrida*; c, *fumida*; d, *dubia*; e, *tristis*; f, *fasciata*; g, *unicolor*; h, *discoloria*.

* B. triangulata sp.n.

Resembles *B. pseudohybrida* in venation and appearance, differing as follows:—Mesonotum not shining, with slight grey dusting noticeable in front view and especially along the dorso-central lines (though the integument is not paler here, the stripes being fused as in *pseudohybrida*); scutellum pale. Front tarsi of ♀ with second and third segments thickened but not the fourth. Hypopygium of ♂ (fig. 1, a) with the style broader in middle, almost triangular; the thread-like parameres shorter.

CORNWALL: Sheviock, 13.ix.12, type ♂ (*Yerbury*). SUSSEX: Crowborough, x.08, 1 ♂ (*Jenkinson*). MIDDLESEX: Harrow Weald Common, 16.x.15, 1 ♂ (*F.W.E.*). HERTS: Baldock, x.17, 1 ♀, x.18. 1 ♂; Waterford, xi.17, 1 ♂ (*F.W.E.*).

CEROPLATINAE.

In this subfamily I now include the genus *Macrocera*. W. Mansbridge has shown that there are no important differences in the early stages between *Macrocera* and *Ceroplatus*, and the adult distinctions are not great and are bridged by some exotic genera. Three further British species of *Macrocera* have been recorded since 1925: *M. fastuosa* Lw. and *M. longibrachiata* Landr. from Clovelly (1927, *Ent. mon. Mag.*, **63**:257) and *M. setterstedti* Lundst. from PERTHSHIRE (*Scot. Nat.*, **1933**: 87).

* *Macrocera pusilla* Mg. One female of this species was taken in Dr. C. B. Williams' light-trap at Harpenden, HERTS., 22.ix.32. It is markedly smaller than the allied *M. tinglica* Edw., with relatively shorter antennae and with striped mesonotum. The vein *Sc* is as short as in *anglica* and the hind coxae are darkened (according to Landrock *Sc* should be somewhat longer and the coxae yellow).

M. parva Lundst. Specimens taken at Aviemore are much darker than the usual form of this species, having the mesonotal stripes more or less fused, pleurae wholly dark, middle and hind coxae darkened, and abdomen entirely dark, without pale hind margins to tergites. These are possibly *M. nigricoxa* Lundst., but I do not think the form is specifically distinct from *parva*.

* M. propleuralis sp.n.

Allied to *M. fasciata* Mg., which it resembles in its bare, unmarked wings and broad dark bands at bases of abdominal segments, differing in thoracic markings and in other respects. Antennae dark, not thickened at base, not or very little longer than the body, which is much less elongate than in *fasciata*. Mesonotum with the median dark stripe much widened on front margin; lateral stripes largely obsolete, but their front ends turned down and connected with a dark brown patch on and above the paratergite or notopleura (this is never the case in *fasciata*). Scutellum blackish. Pleurae with a blackish area occupying nearly the whole of the anepisternite and anterior part of sternopleura, more narrowed in middle than is usual in *fasciata*. Propleura blackish (in *fasciata* and other related species it is yellowish). Coxae yellow, the hind pair only with a dark spot which is smaller than the corresponding spot in *fasciata*. Wings with vein R_1 thickened at tip, though to a less extent than in *M. vittata*

Mg., the only other European species of the bare-winged group of *Macrocera* in which this thickening has been observed. Length of body, wing or antenna each about 4.5 mm.

Type, a unique female taken on window of beach-shelter, Sidmouth, DEVON, 11.vi.1938 (*F.W.E.*).

* *M. estonica* Landr. A very distinct species characterised by the pubescent wings with slightly thickened tip of R_1, shining black thorax with yellow scutellum, and shining black abdomen with narrow yellow hind margins to segments. 1 ♀, Catfield, NORFOLK, 16.viii.1920 (*J. J. F. X. King*); 1 ♀, Laddow Rocks, CHESHIRE, 22.ix.1931 (*H. Britten*).

Asindulum Latr. The two British species represent two distinct subgenera or genera, *A. nigrum* belonging to *Asindulum* s.str. and *A. flavum* to *Macrorrhyncha* Winn., the former being closely related to *Urytalpa* and the latter to *Neoplatyura*.

Monocentrota Edw. According to information supplied by Tonnoir regarding Skuse's types, it appears almost certain that this is a synonym of *Pseudoplatyura* Skuse.

Isoneuromyia Brun. In a révision of the genera and subgenera of Ceroplatinae (1929, *Proc. Linn. Soc. N.S.W.*, **54**:162-175) I created several new groups for species which I had included in *Isoneuromyia* in 1925. Although these new groups were proposed as subgenera of *Platyura*, it would perhaps be better to treat them as full genera, as they are about equivalent to other groups of this subfamily which have been so treated. The only true *Isoneuromyia* in the British fauna is *semirufa* Mg., the other species placed here in 1925 being now assigned as follows:—*Neoplatyura* Mall. (*biumbrata, nigricauda, modesta, flava*); *Pyratula* Edw. (*zonata, perpusilla*); *Urytalpa* Edw. (*macrocera, atriceps, ochracea*).

Platyura Mg. As now restricted this genus includes the five British species *nemoralis, pallida, nigricornis, fasciata* and *discoloria*. *P. ruficornis* Zett. belongs to *Rutylapa* Edw.

* *Platyura tristis* Lundst. Described by Lundström (1911) from several specimens from Hungary; though at first regarded as a distinct species it has subsequently been treated as a black variety of *P. fasciata*. I have seen four British males of a black *Platyura* which may be *P. tristis*, though I am not certain of this as they have the thorax and abdomen somewhat shining, whereas Lundström described these parts as 'glanzlos.' I believe the British specimens belong to a species distinct from *P. fasciata*, as they not only differ strikingly in colour, but all show a small

but constant difference in the hypopygium, the upper style being less sinuous and the small tooth-like process on the inner side of the coxite being smaller and less curved (fig. 1, e and f). The British specimens are from Letchworth, HERTS. (*F.W.E.*) and Barton Mills, SUFFOLK (*J.E.C.*).

P. discoloria Mg. and *P. unicolor Staeg.* These names have been treated as synonymous, but I now believe they represent distinct species, as there is a slight but apparently constant difference in the hypopygium: *P. discoloria* (with black bands at bases of abdominal tergites) has the outwardly-directed hairs on the upper style inconspicuous and well removed from the tip (fig. 1, h) whereas in *unicolor* (with unbanded abdomen) these hairs are stronger, black, and placed at the extreme tip (fig. 1, g). Of *discoloria* I have examined males from Aldeburgh (*Jenkinson*) and from New Forest and Wexford (*King*).

SCIOPHILINAE.

Mycomyiini.

Mycomyia Rond. One additional British species has been recorded: *M. clavigera* Lundst. from PERTHSHIRE (*Scot. Nat.*, **1933**:88).

Good specific distinctions are often to be found in this genus in the trichiation of the wings. Nearly all the British species have macrotrichia (fine setulae) on the distal part of *Sc* and in fairly close-set rows on all branches of *M* and *Cu*, but the following exceptions are noteworthy:—*M. kingi* sp.n., *lambi* sp.n., and *melanoceras* Edw. have *Sc* bare; *M. maura* Walk. and *trilineata* Zett. have the macrotrichia on Cu_1 and Cu_2 very scanty; *M. flava* Stan. has some macrotrichia on *Sc* but all branches of *M* and *Cu* bare. These features may assist in the determination of females.

* *M. punctata* (Mg.) Lundst. A single male in the King collection labelled '3 mile W, 30.viii.21' (probably taken near Glasgow) has a hypopygium agreeing well with *punctata* as figured by Lundström. Although the name *punctata* Mg. appeared in italics in Verrall's list, no other British specimens of the species are extant. Lundström (1909) calls attention to the resemblance between the hypopygia of *punctata* as determined by him and the common *marginata* Mg. (*limbata* Staeg.; *punctata* Dz. *nec* Mg.) and enumerates the differences which are indeed well-marked; Landrock (1927) wrongly gives the two as synonymous. The two species resemble one another and differ from all other British *Mycomyia* in the form of the eighth tergite of the male, which

consists of two large lobes connected by a linear bridge, each lobe bearing 20 or more hairs (instead of at most 6) on its posterior margin. The Scottish specimen differs from *marginata* in having no obvious darkening in the small cell of the wing; the abdominal coloration is also distinctive, segments 4 and 5 being mainly yellow, each with a small black basal median triangle on the tergite, and 6 and 7 entirely black (both tergites and sternites); this does not agree very well with Meigen's description of the female abdomen, hence there is some doubt as to the correctness of the identification.

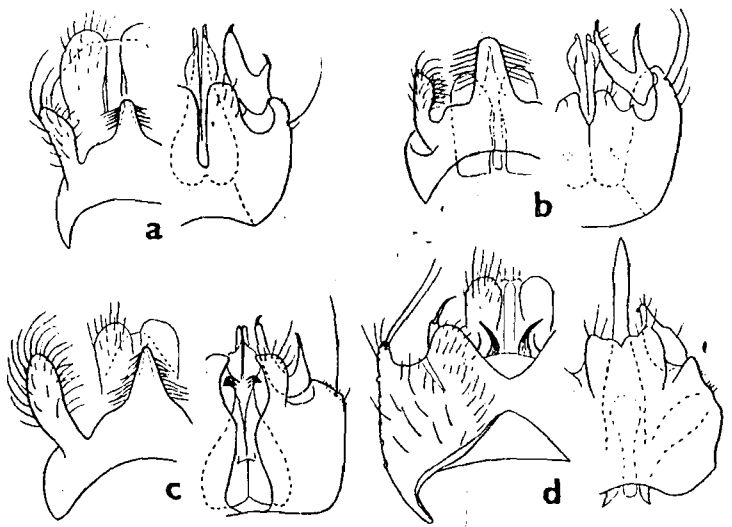


FIG. 2.—Hypopygia of *Mycomyia* spp.; left, tergal view; right, sternal view: a, *cinerascens*; b, *trivittata*; c, *kingi*; d, *collini*.

M. trivittata Zett. The specimens I previously recorded as this species prove to have been wrongly named, but I have examined three females from Logie, ELGIN (*Jenkinson*), one male from Brodie, Elgin (*Verbury*), and one female from Nethy Bridge, INVERNESS (*Sharp*), which certainly belong to the true *trivittata* as redescribed and figured by Dziedzicki. In all these specimens the shoulders and scutellum are yellow, though the mesonotal stripes are subconfluent; abdominal tergites with posterior borders conspicuously yellowish; *Sc* ending in *R* and with fairly numerous macrotrichia distally; wing-length 4-5 mm.

*** M. kingi** sp.n.

Allied to *cinerascens* and *trivittata*, which it resembles in having front basitarsus markedly longer than tibia, two scutellar bristles, and a long mid-coxal spur in male; differs in being smaller (wing-length 3.5—4.5 mm.) and much darker, the thorax almost wholly dark greyish (even including scutellum), and the abdomen either wholly dark (♂) or with posterior margins of tergites only narrowly pale (♀); *Sc* variable in development (Sc_1 present or absent, even on the two wings of the same specimen, though it is more often absent), but in all cases but one there are no macrotrichia on this vein. Hypopygium (fig. 2, c) differing in several details from either *cinerascens* or *trivittata*, which are figured for comparison (fig. 2, a and b) as the published figures of these species are not very clear.

INVERNESS: Aviemore, vii-viii.03, 6 ♂♂ (including type), 1 ♀ (*King*).

M. ornata Mg. In 1925 I recognised only one species of *Mycomyia* with a dense 'brush' on the front coxae of the male and small bristles on the postnotum; this I identified as *ornata* Mg. and quoted *tumida* Winn. as a synonym. Landrock (1927) followed me in this. I now find that we have in Britain at least five distinct species which all show the above two characters. One of these five is evidently the true *ornata* Mg.; it differs from the other four in having the mesonotum shining and the hind coxae all yellow; the first flagellar segment is pale, thoracic stripes more or less fused in male, separate in female, postnotum and pleurotergites yellow basally, black apically; vein *Sc* with numerous setulae distally. I had not examined any specimens of this species in 1925, but can now record it from the following localities: Crowborough, SUSSEX, and Newtonmore, INVERNESS (*Jenkinson*); Aviemore and Nethy Bridge, INVERNESS (*King*).

Hypopygial differences between the five species are best seen in the sternite and its appendages, as shown in fig. 3; there are also small differences in the tergite.

M. tumida Winn. This and the following are the commonest British species of the *ornata* group. I have seen specimens of *tumida* from DEVON, New Forest, HERTS, YORKS and PERTH; there are specimens in the King collection labelled Gorge of Avon and Gailes. First flagellar segment only indistinctly pale at base; thorax wholly dusted greyish; mesonotal stripes fused at least in male, but shoulders more or less yellow; scutellum dark; postnotum and pleurotergites wholly dark; abdominal tergites broadly yellow at sides posteriorly; legs longer than in *ornata*, but as in that species the front tibia and basitarsus are subequal in length; hind coxae dark in middle; *Sc* setose distally. Hypopy-

gium (fig. 3, c) with the parameres moderately long, flattened, densely pubescent along their inner edge.

Some specimens (2 ♂♂, 1 ♀) from Crowborough, Sussex (*Jenkinson*), differ in some respects. The males have the thorax more heavily dusted and wholly dark (no yellow on shoulders), and the ninth tergite on the part just external to each comb has 4-6 instead of only 2-3 inwardly curved bristles; both sexes have the hind coxae dark externally for their whole length instead of only in the middle.

**M. prominens* Lundst. A species with dusted thorax and long legs as in *tumida*, but colouring of thorax as in *ornata*; mesonotal stripes more or less separate, scutellum yellow, and postnotum and pleurotergites yellowish basally; hind coxae dark in middle as in *tumida*. Hypopygium (fig. 3, d) much as in *tumida*,

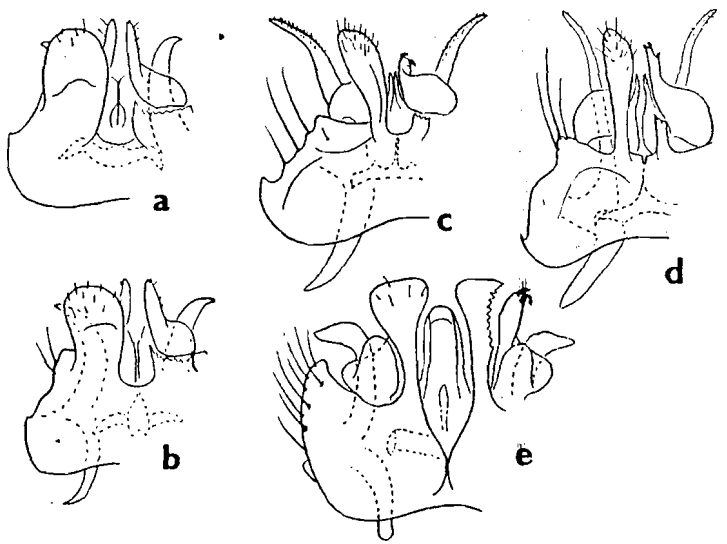


Fig. 3.—Hypopygia (half, sternal view) of *Mycomyia spp.*: a, *ornata*; b, *lambi*; c, *tumida*; d, *prominens*; e, *fuscata*.

but parameres longer, more slender, and scarcely pubescent. Specimens examined from Crowborough, Sussex, and Logie, Elgin (*Jenkinson*); Bettws y Coed, N. Wales, and Lodore, Cumberland (*Verrall*); Gorge of Avon and Gailes (*King*); Knebworth and Radwell, Herts, Buckden, Yorks, and Rannoch, Perth (*F.W.E.*).

**M. fuscata* Winn. I propose to use this name for a species the hypopygium of which I figured in 1925 as a variety of *M. ornata*. Winnertz's type was in Van der Wulp's collection

in Holland, but is not mentioned in Barendrecht's recent paper and is, therefore, presumably lost; however, the description agrees rather well with the specimens before me. The species differs from the others of the *ornata* group in having vein *Sc* completely bare and the claws longer and straighter, with three small teeth in a row instead of only one or two. Legs shorter than in *tumida* or *prominens*, with front basitarsus slightly shorter than tibia; *fCu* just before *rm* instead of below this point as in *tumida* and *prominens*. Thorax wholly dark and heavily grey-dusted, at most the scutellum sometimes obscurely yellowish. Abdomen darker than in the other species, with hind margins of tergites only narrowly yellowish or all dark (female paler than male, with tergites broadly yellow-margined and scutellum yellow). Hind coxae and sometimes also the middle pair dark outwardly. Hypopygium (fig. 3, e) with submedian processes of sternite narrow at base, widened at tip; parameres short and rather broad; more hairs on sternite than in related species.

Inverness: Nethy Bridge, 3 ♂♂ 1 ♀, and Aviemore, 2 ♂♂ (*King*). Ross: Dingwall, 1 ♂ (*King*). Elgin: Logie, 1 ♂ (*Jenkinson*).

*** M. lambi** sp.n.

A dark species resembling *fuscata* in having the thorax entirely dark grey dusted, except for the more or less yellowish scutellum, and abdominal tergites with posterior margins only indistinctly pale, but claws with only two small teeth, *fCu* scarcely before *rm*, and (in seven of the eight available specimens) several macrotrichia are present on distal part of *Sc*; hind coxae much less obviously darkened than in *fuscata*. Hypopygium (fig. 3, b) more resembling *ornata* (fig. 3, a) than *fuscata*, especially as regards the short and broad submedian processes of sternite; parameres very short and sickle-shaped, bare.

Inverness: Nethy Bridge, vi.06, type ♂ in British Museum (*C. G. Lamb*), 4 ♂♂ in Cambridge Museum; Ardentinny, 13.vi.03, 2 ♂♂ (*King*). Andorra: Port de Siguer, ix.35, 1 ♂ (*F.W.E.*).

I sent the type to Lundström many years ago suggesting it might be *fuscata* Winn.; he returned it as '*tumida* Winn. Hyp. abnorm.' Having now examined eight nearly identical specimens from three localities I am satisfied that it is a distinct species and not a mere variation of *tumida*. One of the two males from Ardentinny has *Sc* bare on one wing and with only a single setula on the other.

**M. vittiventris* Zett. (*elegans* Lundst.). A male of this very distinct species was taken by J. J. F. X. King at Nethy Bridge, Inverness, and is now in the British Museum. It resembles

M. melanoceras Edw., *digitifera* Edw. and *parva* Dz. in having simple coxae and front basitarsus shorter than tibia, but differs from these in having only two scutellar bristles and the postnotum and pleurotergites yellow basally, black apically.

* **M. collini** sp.n.

♂. Head blackish, including face. Palpi and scape light brownish, flagellum black. Thorax slightly dusted, with fused dark stripes, shoulders extensively yellow; scutellum dark, with two bristles; postnotum and pleurotergites uniformly dark, latter bare. Abdomen blackish above, tergites with only the lateral margins pale. Hypopygium (fig. 2, d) simpler than usual in this genus, very different from all other figured European species, though apparently with some slight resemblance to *M. brunnea* Dz. Legs yellow; coxae all simple; first front tarsal segment very slightly shorter than tibia. Wings clear; trichiation normal. Sc_2 practically opposite base of small cell instead of well beyond base or near middle of cell as in most or all other British species; Sc_1 fairly long and ending in costa; costa produced very slightly beyond tip of R_5 instead of ending abruptly at tip of R_5 as usual in this genus; *fCu* below *rm*. Wing-length 3.5 mm.

Type, a unique male from Wormsley, BERKS, 16.v.28 (*J. E. Collin*); in Mr. Collin's collection. The peculiarities of hypopygium and venation noted are most distinctive and obviate comparison with any other species.

M. digitifera Edw. I described this from a single male lacking front legs. Two perfect males are now available, from Nairn, vi.05 (*Verbury*) and Aviemore, vii.33 (*Collin*). These have the front basitarsus markedly shorter than the tibia, as in *melanoceras* Edw. and *parva* Dz. The dark scutellum and noticeably shining abdomen distinguish the species from *parva*, and the banded tergites from *melanoceras*. Sc_1 is very short, not quite reaching costa in either the Nairn or Aviemore specimens, though it does so in the type.

Sciophilini.

* *Eudicrana nigriceps* Lundst. This was described by Lundström (1909) from a single male taken by Frey in Finland; though at first referred to the genus *Neoempheria*, the species was subsequently (1912) correctly recognised by the describer as belonging to the genus *Eudicrana* Lw., of which only one other species was then known, the North American *E. obumbrata* Lw. A second specimen of *E. nigriceps* has been recorded by Lackschewitz from Esthonia, and Mr. J. E. Collin collected a third male by Loch Garten, INVERNESS-SHIRE, 21.vi.1933. The Scottish specimen agrees well with Lundström's description and figures except as regards the shape of the ninth tergite of the hypopygium, which is evenly rounded and lacks the peculiar bilobed process

shown in the figure; I do not suppose that this is a real difference, but think it more likely that Lundström's specimen was damaged or that he showed the cerci as though they were lobes of the tergite. The only other British fungus-gnat at all resembling *E. nigriceps* is *Leptomorphus walkeri* Curt., which differs obviously in the position of the ocelli and lack of the small 'sciophiline' cell.

Having compared *E. nigriceps* with a male of *E. obumbrata* Lw. collected by myself at Liverpool, Pa., U.S.A., I think it probable that the two forms are to be regarded as at most subspecies of a single species. The hypopygium has quite the same structure in the two males, and the only difference appears to be that in the Scottish specimen, as in Lundström's type, the three stripes of the mesonotum are blackish, whereas in the American one, as described by Loew and Johannsen, they are light brown.

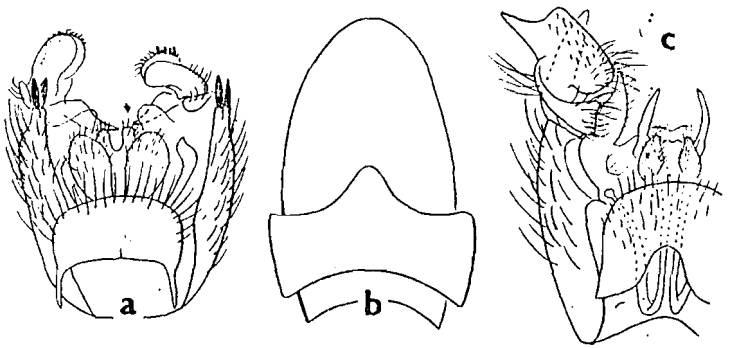


FIG. 4.—a, *Neuratelia nigricornis* sp.n., hypopygium from above; b, ditto, 8th tergite and sternite; c, *N. nemoralis* Mg., hypopygium from above.

* **Neuratelia nigricornis** sp.n.

Resembles the common *N. nemoralis* in almost all respects except that it is somewhat smaller (wing-length 3.5-4 mm. instead of 4-5 mm), and the antennae are wholly black, whereas in *nemoralis* the third (first flagellar) segment is yellow at the base. Hypopygium (fig. 4, *a*) of very different structure, its most striking feature being a pair of small spines at the tip of each coxite dorsal to the small styles; eighth tergite and sternite (fig. 4, *b*) of peculiar shape, the latter unusually large.

SUSSEX: Crowborough, vii.10, viii.12, vi.13, 4 ♂♂ including type (*Jenkinson*). Co. DOWN: Newcastle, 17.vii.12, 1 ♂ (*King*).

The published figures of the hypopygium of *N. nemoralis* are not good, and I therefore give a fresh one (fig. 4, c) for comparison with *N. nigricornis*; among the peculiar features of *nemoralis* is the deep excavation of the proximal margins of the

eighth and ninth tergites. I do not know either of the other two described European species (*minor* Lundst. and *sintenisi* Lack.).

Paraneuralelia Landr. From examination of Meunier's specimens I have now established the identity of this genus with *Anaclileia* Meun., thus confirming the suspicion I expressed in 1925. Meunier's name has priority.

(*To be continued.*)

Larvae of Actebia praecox L. (Lep., Agrotidae) in the Isle of Tiree.—In early June, whilst working along the dunes fringing Vaul Bay on the north-west of Tiree, I came across a landslip on the seaward face of the dunes which had resulted in the exposure of endless roots of marram grass. On these roots numbers of larvae were swinging about. Most of these were representatives of *Nyssia zonaria atlantica* Harrison, but others were those of *Actebia praecox*. Some of the latter were taken home and successfully reared, to produce only the most ordinary of forms.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne: *December 20th*, 1940.

The Wheatear (Saxicola oenanthe L.) taking Aglais urticae (L.) (Lep., Nymphalidae) on the Isle of Benbecula).—This butterfly, on account of the high winds, was rarely observed this season. However, as we were working on the west coast of Benbecula, just south of Nunton, a specimen arose from a head of ragwort to be seized almost immediately by a wheatear from a pile of rocks not far away.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne: *October 2nd*, 1940.

Craniophora ligustri F. (Lep., Agrotidae) in Glenmoriston, N. Inverness-shire.—Some time ago, we camped for some time in Glenmoriston, a beautifully wooded glen striking north-west from the lower stretches of Loch Ness, and advantage was taken of the fact to test the possibilities of the various trees from the larva standpoint. The most noteworthy species taken was *Craniophora ligustri* which occurred in some abundance on ashes.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne: *December 20th*, 1940.

Neuraphes carinatus Muls. (Col., Scydmaenidae) in Berks.—On the 25th August last I found one example of this very scarce beetle by sieving rotten wood and frass from an old birch stump on the Ascot side of Windsor Forest. Of the few recorded British captures of the species I believe that this is the first for Berkshire.—A. A. Allen, 27 Church Field Path, Cheshunt, Herts.: *January 14th*, 1941.

The occurrence of the female of Euplectus carolae Allen (Col., Pselaphidae).—As this species was described (1940, *Ent. mon. Mag.*, **76**: 84) on two male specimens only, the capture of two further specimens, which prove to be females, is worth placing on record. These were found in moist frass from the decayed trunk of a beech in Windsor Forest on the 28th July, 1940. (A single specimen of the very rare *Euthia formicetorum* Reitt. occurred at the same time.) The sexual differences are slight and appear to be much as in *E. nanus* Rchb.; from which species *E. carolae* may be easily distinguished in both sexes by its conspicuously larger size, longer lateral margins of head and relatively shorter eyes, which normally are more prominent at the base, and broader head especially across the front margin.—A. A. Allen, 27 Church Field Path, Cheshunt, Herts.: *January 14th*, 1941.

A CONTRIBUTION TOWARDS THE LIST OF AQUATIC COLEOPTERA OF HERTFORDSHIRE.

BY RAYMOND R. U. KAUFMANN.

A recent perusal of the Hertfordshire County List and of the *Transactions of the Hertfordshire Natural History Society* is the excuse for the preparation of these separate remarks. In the County List the following quotation is particularly striking: 'The aquatic Coleoptera are but poorly represented at present . . .' Indeed, there appear to be no further references to them at all in the occasional additional Coleoptera lists published in the *Transactions*.

The writer has had much opportunity for recording the Totteridge fauna, but it is only within recent months that he has settled in the county, so that the riparian fauna may well be further augmented. As has already been recorded elsewhere, the lack of suitable marshlands, and, for that matter, of cattle drinking pools and ponds, seriously restricts any large amplification of the list. There is another impediment, and a common one. The main streams are difficult of access, since their banks are often in private ownership, and there is a certain reluctance to grant the necessary permission to fish and dredge along the banks. Happily, such permission has been granted for one quite long stretch of the River Lea, and next season's collecting will probably produce even better results.

As regards the localities under discussion, the Totteridge Ponds lie just beyond the Middlesex-Hertfordshire boundaries, in the neighbourhood of Whetstone and almost opposite Totteridge Park; the largest and most productive of insects is adequately furnished with vegetation. In high summer it tends to become very dry round the edges, making fishing an awkward matter. That part of the Lea which has been fished is well bordered with aquatic vegetation. The site of operations has been the southern and northern banks from East Hyde towards Cold Harbour, and permission has now been granted, as stated, to take in the northern bank at Cold Harbour as far as the Almagem Mill. This latter region has not yet been visited, as the leave to work there came too late to do anything this year. Existing records of the County's water-beetles appear to be few and restricted to the districts of Hastoe, Tring, Wigginton and Wilstone Reservoir.

In conclusion, gratitude is expressed to Professor F. Balfour-Browne and to Dr. K. G. Blair for their help in checking determinations.

Below appears the list of aquatic Coleoptera taken at Totteridge

supplies, the desirability of reducing the wastage by locusts is even more important than before.

Lord Lloyd, the Secretary of State for the Colonies, has therefore formulated under the Colonial Development and Welfare Act, 1940, a scheme for the establishment in Northern Rhodesia of a Control Organisation, and a free grant of a sum not exceeding £3,000 has been made available to meet the capital cost. The scheme will be administered by the Government of Northern Rhodesia, but the Governments of Kenya, Uganda, Tanganyika Territory and Nyasaland, being interested in the control of the Red Locust, will contribute to the annual cost of its maintenance. The Government of Southern Rhodesia and the High Commissioner for Basutoland, the Bechuanaland Protectorate and Swaziland have also been approached as regards the participation of Southern Rhodesia and the High Commission Territories in the scheme.

The new organisation will take some time to develop. The work is of such a nature that it cannot be carried out except under the direction of a full-time expert in locust problems provided with the necessary assistance and equipment. In proposing the immediate realisation of the scheme on a reduced scale in comparison with the original project, full consideration has been given to the fact that the present swarming cycle of the Red Locust is still continuing, though there are indications that this cycle is declining and breeding is gradually concentrating in the most favoured areas. There is, however, always the possibility that from the known permanent outbreak areas new swarms will emerge and reinforce those swarms of the present cycle which are dispersed. While it is not proposed that the new organisation should undertake practical control in the temporary breeding areas, steps will be taken to organise observation in case such areas should develop into permanent breeding places and investigations will be carried out into the natural conditions under which locusts breed, etc., in order that methods of prevention and control may be improved.—COLONIAL OFFICE: *January 28th*, 1941.

The larval habits of Rhingia campestris Mg. (*Dipt., Syrphidae*).—In an article on the second British record of *Rhingia rostrata* L., Mr. R. L. Coe (1939, *Ent. mon. Mag.*, **75**: 227) stated that 'the metamorphoses of flies of this genus are unknown.' I have recently noted that Mr. R. C. Muirhead Thompson in a paper entitled 'Observations on the biology and larvae of the Anthomyidae' (1937, *Parasitology*, **29**: 304), after recording the fact that the female of *Polietes hirticrura* Mdc. did not lay her eggs on, or in, the cake of cow-dung, but deep among the grass roots on the damp shaded ground beside the dung-cake, added: 'In this respect it is interesting to note that the common Syrphid *Rhingia campestris*, whose habits I have studied, lays dense masses of eggs on the underside of clover leaves and blades of grass overhanging the edge of cowdung cakes. The larvae on hatching immediately drop, often a distance of several inches, on to the hard surface skin of the dung and, after finding a crack or fissure to burrow into, they spend the larval stages as coprophagous types.' This note confirms the suspicions of Réaumur, recorded in 1740 (*Mémoires pour servir à l'histoire des Insectes*, Amsterdam, **4** (1): 300), owing to the appearance of a fly which, according to his figures, was certainly a *Rhingia*, in a receptacle in which he had enclosed some cowdung containing various larvae.—J. E. COLLIN, Raylands, Newmarket; *January 27th*, 1941.

Editorial

It is with pleasure the Editors announce that the damage to their stock owing to enemy action now turns out to be almost negligible.

Commencing with this volume, all *subscribers* will be entitled to receive 25 free reprints of their papers—except in the case of papers with coloured plates, where six only would be allowed of these and the remaining 19 copies of the text only—provided that a request for these is made *at the time manuscripts are submitted for publication.*

NOTES ON BRITISH FUNGUS-GNATS (DIPT., MYCETOPHILIDAE).

BY F. W. EDWARDS, F.R.S.

(*Continued from p. 32.*)

Gnoristini.

Coelophthinia gen.n. In 1925 I included *Phthinia thoracica* Winn. in the genus *Coelosia*, but I now find that it differs from the three other British species of *Coelosia* in several important respects and therefore propose the above generic name for it. The main distinctions are as follows:

Coelophthinia gen.n. (genotype *Phthinia thoracica* Winn.): Empodium absent; Sc_2 present; *rm* subequal to base of *Rs*.

Coelosia Winn. (genotype *Boletina flava* Staeg.): Empodium well developed; Sc_2 absent; *rm* many times as long as base of *Rs*.

I have taken *thoracica* in Mark Ash, New Forest, and at Offley Holes, HERTS.

Palaeodocosia Meun. I have recently shown (1940, *Proc. R. Ent. Soc. Lond. B.*, **9**: 124) that Strobl's *Syntemna alpicola* (which in 1925 I placed in *Dziedzickia*) belongs to this genus, which was founded on an amber insect. A closely allied species was described by Dziedzicki (1923) as *Heteropygium janickii*, and this species occurs in Britain in addition to the one I had determined as *alpicola*. *D. flava* (Edw.) may also be referred here.

P. alpicola (Strobl). Pending the re-examination of Strobl's type I retain his name for the species of which I recorded a male and female in 1925. Both these specimens have the scutellum pale, fine hairs of scutum black, and postnotum partly pale; a female from Mark Ash, New Forest, 13.viii.39 (*Collin*), agrees. The male hypopygium (fig. 5, a) has the tergite uniformly hairy, hairs on the distal margin not unusually stout; outer lobe of style not much swollen and with very few fine hairs, comb of inner lobe small.

* *P. janickii* (Dzied.). Of this species I have taken the following specimens:—1 ♂, Welwyn, Herts, x.36; 1 ♂, Ivinghoe Common, Bucks, x.37; 1 ♂, Mark Ash, New Forest, x.37; 3 ♀♀, Killarney, Eire, v.29. These have the scutellum mainly dark, fine hairs of scutum pale, postnotum dark. The male hypopygium (fig. 5, b), which agrees with Dziedzicki's figures, has a regular row of spine-like bristles across the tip of the tergite, which is bare for some distance before the row of spines; outer lobe of style very much swollen and with many minute hairs, comb of inner lobe much stronger. A male from Chippenham Fen, Cambs. (*Collin*) has the hypopygium quite as in the above males, but the fine hairs of scutum are dark and postnotum largely pale.

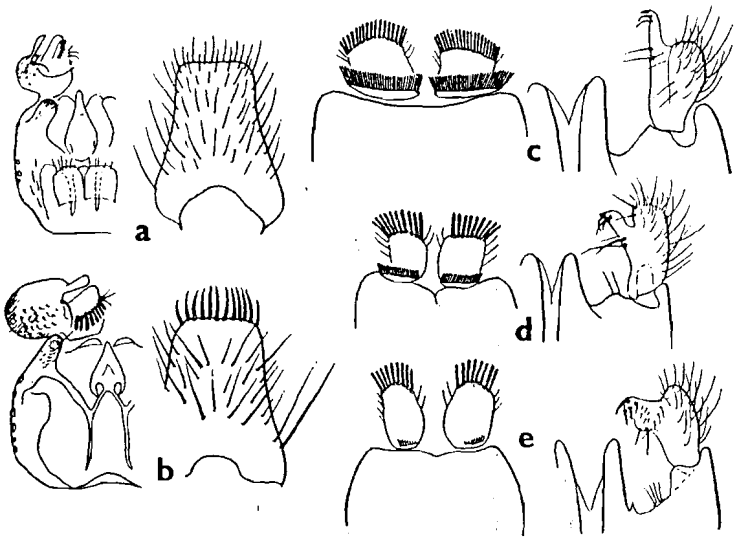


Fig. 5.—a, b, *Palaeodocosia* spp., hypopygia from above, with tergite removed and shown on right; a, *alpicola*; b, *janickii*; c-e, *Boletina* spp., cerci (left) and style with tip of coxite (right): c, *dispecta*; d, *rejecta*; e, *nitida*.

Synapha Mg. Both British species of this genus have the tip of the hind tibia somewhat flattened and provided with a well-marked comb on the inner side, in this respect differing from *Boletina* and most other genera of Gnoristini. They agree with *Boletina* in having a well-developed empodium and *Sc* bare. In *S. fasciata* the middle tibia of the male has an oval sense-organ on the dorsal surface; this is absent in the male of *vitripennis*.

Crzegorzekia gen.n. This new genus is proposed for *Sciophila collaris* Mg. (*Palaeoempalia stylifera* Grzegorzek). Having examined the genotype of *Palaeoempalia* (*P. brogniarti* Meun. of Baltic amber) I find that its characters are quite different from those of *collaris*, and the two species are certainly not congeneric.

Grzegorzekia differs from *Boletina* and most other genera of Gnoristini in having the empodia rudimentary or absent (as in *Coelophthinia*, described above); it resembles *Apoliphthisa* and differs from *Boletina* in having *Sc* setose; lateral ocelli more than their own diameter distant from eye-margins; no definite hind tibial comb.

Boletina Staeg. All species of this genus have the empodium about as long as the claws, hind tibial comb indefinite or absent; *Sc* is bare in all except *plana* Walk., which has the vein sparsely setose. Two additional British species have been recorded since 1925: *B. groenlandica* Staeg. and *B. pectinunguis* Edw. (*Scot. Nat.*, **1932**: 43).

B. pallidula Edw. I took a pair of this species in Denny Wood, New Forest, vi.39. The male hypopygium has almost the structure figured by Landrock (in Lindner, 1927, *Flieg. Palaearct. Reg.*, **2** (1) (8, Fungivoridae, pl. 6, figs. 12-13) for *B. flaviventris* Strobl; the two are evidently allied, but according to Landrock *flaviventris* has a shining thorax with yellow scutellum, whereas in *pallidula* the thorax is not shining and the scutellum is dark.

* *B. sylvatica* Dz. I took a male of this species at Symond's Yat, Glos., ix.36. It differs from *B. sciarina* Staeg. only in hypopygial structure and may well have been overlooked in this country heretofore.

B. dispecta Dz. In 1925 I knew only one British species of *Boletina* with hairy pleurotergites, uniformly shining black thorax without any trace of dusting even on shoulders, and yellow tibial spurs. Apart from the specimen from Ardentinny, which I have not re-examined, I have seen three males of this species, all of which have a hypopygium as in fig. 5, c, with short and broad cerci bearing two dense and well-developed combs, and style shaped somewhat as in *B. gripha* Dz. Although the structure is not quite as depicted by Dziedzicki, especially in the longer median ventral processes of the coxites, it seems probable that this species is correctly identified as *B. dispecta* Dz. The three males mentioned are from Stoke Wood, Hereford, ix.30 (*Wood*), Wilverley, New Forest, vi.07 (*C. Morley*), and Leigh Woods, Bristol, ix.30 (*F.W.E.*). Females with thickened front tarsi from several other localities may belong either to this species or to one of the two allied forms noted below.

* *B. nitida* Grz. According to Landrock this differs from *dispecta* in having the second antennal segment yellow, but if I

have identified them correctly both species have the first two (scape) segments black and the third largely or all yellow. I took a single male in Leigh Woods, Bristol (in the same sweep of the net as the male of *B. dispecta* noted above), which is probably *B. nitida*. Its hypopygium agrees fairly well with Lundström's figure and differs from *dispecta* in the form of the style and in the longer cerci with rudimentary proximal comb (fig. 5, e). The abdomen has sternites 2-4 all yellow (instead of dark as in *dispecta*) and tergites 2-4 also extensively yellow.

*** B. rejecta** sp.n.

Resembles *B. dispecta* and *nitida* except in details of hypopygium (fig. 5, d): style differently shaped from that of either of the allied species; cerci with two combs as in *dispecta*, but not so broad, distal comb with fewer and stronger teeth. Third antennal segment yellow at base only. Abdomen all black.

HANTS: Denny Wood, New Forest, viii.39 (*F.W.E.*), type ♂. KERRY: Killarney, v.29, 1 ♂ (*F.W.E.*).

Leiini.

* *Leia strobli* Landr. This very distinct species differs from most of the British species in having a dark spot in the base of cell R_5; in this respect it resembles *L. winthemi* Lehm. but differs in lacking the apical wing-spot. As with some other species of the genus it appears to be subject to much variation in body colour. According to Landrock the thorax of the typical form is yellow with a dark spot above the wing-root, the abdomen is mainly yellow in the male and has at least the first segment almost entirely yellow in the female. British specimens which I have examined differ in having little trace of the supra-alar spot in the male, but the thorax of the female has two divergent blackish stripes, the abdomen of the male has conspicuous black bands, and the first abdominal segment in both sexes is almost entirely black The male hypopygium is constructed as in Landrock's figures, and I therefore assume that the British examples are conspecific with those from Styria. British records are:— Bransgore, HANTS., viii.33, bred from dray of red squirrel, 1 ♂, 1 ♀ (*E. B. Basden*); Tormorton, SOM., v.26, 1 ♂ (*H. Audcent*); Rostherne, CHES., vii.39, 1 ♀ (*F.W.E.*).

L. piffardi Edw. Mr. E. B. Basden bred a pair of this species from the nest of a magpie at Temple, BERKS, vi.33. These agree with the type ♂ in having the first abdominal segment yellow and the black bands of the following segments somewhat broader at the sides, that on the second segment tending to be interrupted

in the middle. This appears to provide a good distinction from *L. bimaculata* var. *fasciola* Mg., which even in the palest specimens I have examined has the first abdominal segment mainly black and the bands on the following segments broader in the middle than at the sides. In all three specimens of *piffardi* the subapical wing-band is fairly distinct, but not broad, and does not reach the hind margin; there is a small dark cloud below Cu_2 at some distance before its tip, but no dark spot in base of cell R_5.

Two other females from Bransgore, HANTS, viii.33, bred from dray of red squirrel in company with *L. strobli* (*E. B. Basden*), may represent a variation of *L. piffardi* or possibly a new species. They resemble *L. piffardi* in most respects, notably in having the thorax and first abdominal segment all yellow, narrow black bands on segments 2-5 somewhat widened at sides, that on 2 widely interrupted in middle, and segment 6 all black, but differ in wing-markings: the subapical band is unusually broad, reaches the hind margin and includes the tip of Cu_1; the cloud below Cu_2, though not very dark, is quite large and extends both to the hind margin and to the tip of the vein, which is not the case, so far as I have observed, in even the most strongly marked specimen of any of the other British species of the genus.

Docosia Winn. Mr. Collin has pointed out to me that some of the species of this genus are distinguishable by the hairing of the pleurotergites: the normal condition for the genus is to have the pleurotergal hairs moderately long, but in *sciarina* (*valida*) these hairs are very short and in *fuscipes* they are entirely absent. In all the British species except *gilvipes* there are constant differences in the colouring of the legs.

D. gilvipes Hal. Apart from the incomplete vein *Sc* this species shows two peculiarities which distinguish it from the other six British members of the genus: (1) the hypopygium is of distinctive structure, the ninth tergite being divided into two separate plates by a transverse suture near the base; and (2) the legs show a seasonal difference in colour, as is the case in some species of *Allodia* and *Phronia*, specimens taken in summer and autumn having the coxae and femora entirely yellow, those taken in winter or early spring having the hind coxae darkened at the base and the hind femora dark at the tip and with a dark streak at the base beneath.

D. fuscipes v. Ros. This species is most like *sciarina*, both having the wings more or less darkened at the tip, coxae largely dark, and hind femora with ventral edge dark from base to tip,

but apart from the bare pleurotergites *fuscipes* may usually be distinguished by having the whole length of the *dorsal* edge of hind femora darkened, whereas in *sciarina* only the tip is dark. The male hypopygium of British *fuscipes* does not quite agree with Landrock's figure, all the specimens examined having the upper style much broader (fig. 6, g) and the sternite shorter. I have seen specimens from New Forest (*Adams, Sharp*); Stoke Wood, HEREFORD (*Wood*); Lustleigh, Horrabridge, Cader Idris and Bettws y Coed (*Collin*).

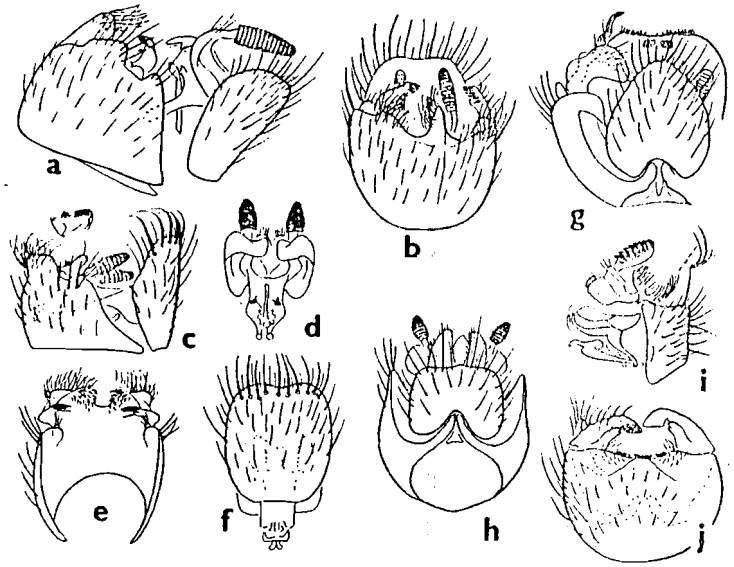
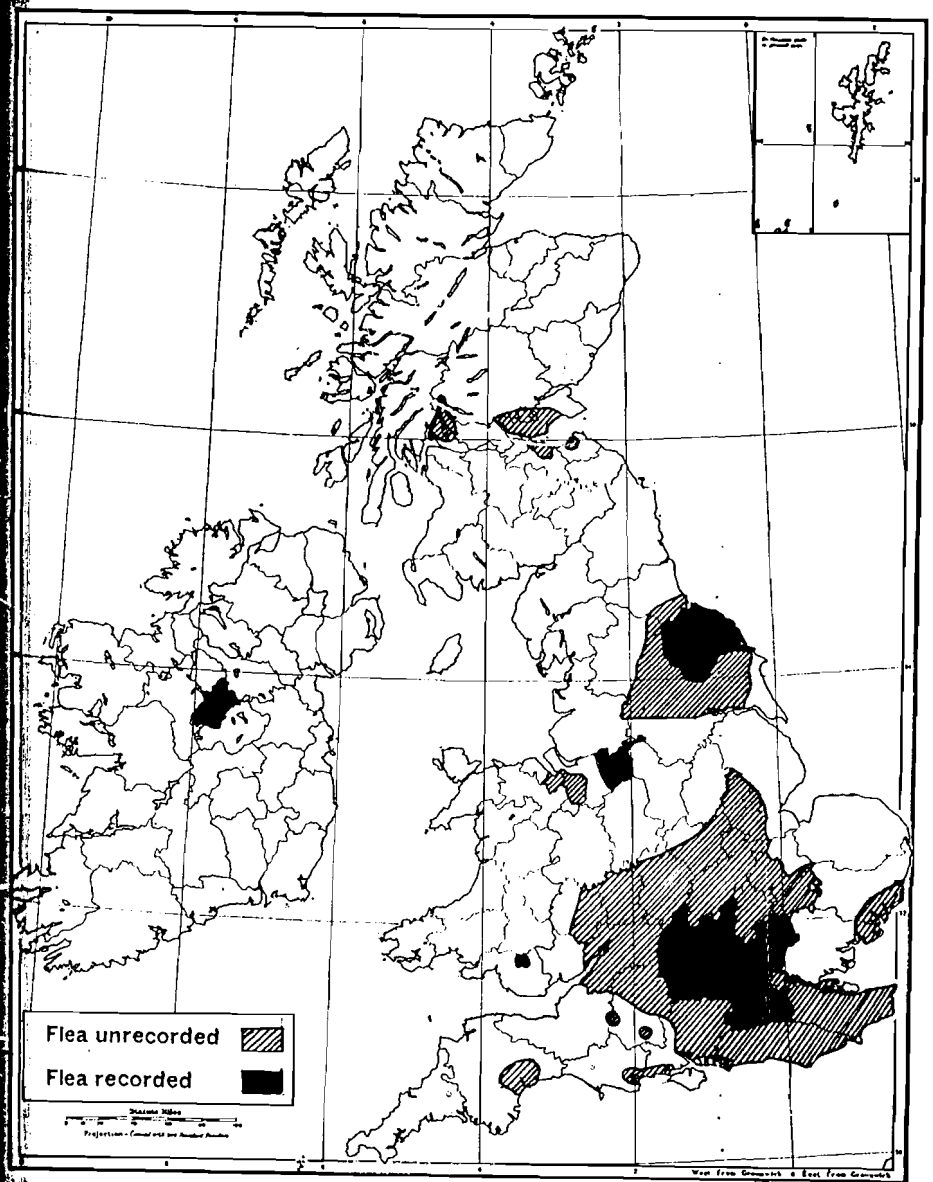


FIG. 6.—Hypopygia of *Docosia* spp.: a, b, *moravica*, British form; c-f, *pallipes*; g, *fuscipes*, British form; h-j, *carbonaria*. a, c, i, from side; b, j, from beneath; g, h, from above; d, anal segment and aedeagus; e, sternocoxite and styles, inner view; f, tergite.

* *D. moravica* Landr. I recorded this as British from a single male from Scotland, which I now find to have been incorrectly named. There is, however, another British species which is very near to, if not a form of, Landrock's *moravica*: this has a hypopygium essentially as figured by Landrock, though apparently with some small differences (fig. 6, a, b); the legs are yellow, but the hind femora are darkened at base beneath. Specimens examined from Barton Mills, SUFFOLK, and Aston Rowant Hill, OXON (*Collin*); Bagley Wood, BERKS (*Hamm*); Letchworth, HERTS, and Ffrith, FLINTSHIRE (*F.W.E.*); all taken in May and June.



(*To face p. 84.*)

DISTRIBUTION OF THE SQUIRREL *SCIURUS CAROLINENSIS* GM. AND OF ITS FLEA, *ORCHOPEAS WICKHAMI* (BAKER) IN 1937.

D. pallipes sp.n.

This is the species I previously took to be *moravica*, but it has a very different hypopygium (fig. 6, c-f) and the coxae and femora are completely yellow. Wings almost clear, venation as in *sciarina*; palpi yellow; second antennal segment partly or all yellow.

ELGIN: Logie, numerous specimens of both sexes, including type ♂ (*Jenkinson*). INVERNESS: Aviemore, 1 ♂ (*Verbury*). GLAMORGAN: Porthcawl, 1 ♂ (*Verbury*). NORFOLK: Fowl Mere, Thetford (*Collin*). SUFFOLK: Barton Mills (*Collin*). BEDS.: Shefford (*F.W.E.*). All specimens taken in September or late August.

* **D. carbonaria** sp.n.

Black, including whole of antennae, palpi, coxae and hind femora; front and middle femora largely yellowish except on dorsal and ventral edges; hind tibiae brownish, darker above; spurs yellow; halteres wholly yellow; bristles and hairs of thorax and abdomen pale yellow. Wings quite clear, with black anterior veins. *Sc* bare and ending in *R* as in other members of the *sciarina* group. Hypopygium, fig. 6, h-j.

SUFFOLK: Barton Mills, numerous specimens of both sexes, including type male, taken in copse with many rotting birch trunks, v.1938 (*Collin*); Timworth, 1 ♀, 20.v.12 (*Nurse*).

This species resembles *D. fumosa* Edw. in its black hind femora, differing obviously in its clear wings and hypopygial structure. It cannot be *D. morionella* Mik or *sciarina* var. *nigrifemur* Strobl, both of which are described as having all the femora black and halteres partly or all black.

MANOTINAE.

* *Manota unifurcata* Lundst. (1913). This species is the sole representative known of the subfamily Manotinae in Europe, and so far as I am aware is still only known from Lundström's type female collected by Krompaszky in Hungary. All the species of *Manota* appear to be rare and are known from very few specimens. I have examined the types of all except *unifurcata* and find them very much alike, the main specific differences occurring in the structure of hypopygium, length of vein R_1, and colour of hind femur.

On July 22nd, 1940, J. E. Collin captured a male *Manota* in Forty-acre Wood, Chippenham Fen, CAMBS.; this is probably the hitherto unknown male of *M. unifurcata*. It agrees with Lundström's figure of the wing of his type in that vein R_1 reaches distinctly beyond the level of the base of the free vein M_3, which is also the case in *M. maorica* Edw. of New Zealand, though in all the tropical species R_1 is shorter. Lundström describes his

specimen as having an indistinct median yellowish-brown stripe on the thorax, which is not visible in Mr. Collin's male, but this difference, if significant, may be sexual; he also describes the hind tibia as having only a single long spur, but this is doubtless an error, as all other *Manota* have two hind tibial spurs, including the one here recorded. The hypopygium of the Chippenham male differs notably from those of the other species in having the styles (claspers) conspicuously projecting and hairy. The middle and hind femora are darkened on about the basal fourth, but not at the tips.

Since writing the above I have found that a male of *M. unifurcata* was recorded by Bukowski in 1934 (*Konowia*, **13**: 184) from the Crimea. Bukowski mentions the same two points of disagreement with Lundström's description as I have noted in the Chippenham specimen; he also figures the hypopygium, which is like our male except that the hairs on the ventral margin of the clasper are shown as more numerous, and there is a notch on this margin which is not present in the British example. Comparison of specimens might reveal other small differences, but for the present at least it seems best to regard the three known specimens as appertaining to one species.

Mycetophilinae.

Anatella Winn. The paper published on this genus by Dziedzicki (1923) was not available when I revised the British species in 1925, and two of my names prove to be synonyms; *A. incisurata* Edw. is *simpatica* Dz. and *piligera* Edw. is *longisetosa* Dz. According to Dziedzicki's figures, *flavicauda* Winn. and *gibba* Winn. are quite distinct from any of the seven British species at present known, and it is very likely that these and others will be found in Britain.

**A. turi* Dz. (1923). A single male from Coombe Valley, Staffs., 6.x.40 (H. Britten). The peculiar hypopygium agrees with Dziedzicki's figures. Another peculiarity is the presence of but a single spur on each middle tibia, instead of two as in all the other British species (the specimen is perfect, and I do not think the lack of the second spur is an abnormality). Palpi yellowish but prothoracic lobes dark; abdomen with segments 2 and 3 yellowish at sides; middle femur without fringe.

Exechia parva Lundst. In 1925 I mentioned two forms of the hypopygium of this species. Barendrecht (1938) found the same two forms in Holland, and figured them as distinct species, in

which he appears to be correct. The true *E. parva* appears to be the commoner of the two in Britain.

**E. repanda* Joh. This is the species which has been confused with *E. parva*, from which it is distinguished by the longer claspers and sternal processes of the hypopygium. Among British specimens which I have examined the following may be noted:— Cambs.: Chippenham, ix.94 (*Verrall*). N. Lancs.: Grange (*Wright*). Yorks.: Goathland (*H. Britten*, jr.). Staffs.: Manifold Valley, iii.38 (*H. Britten*, sen.). The last-mentioned specimens were taken in stems of *Myrrhis Odorata* Scop. together with a male of *E. parva*.

**E. pseudofestiva* Lackschewitz (1937). Mr. H. Britten took a pair of this species at Madeley, Staffs., 21.ix.36. Apart from the distinctive hypopygium the male may be distinguished from *exigua* Lundst., *parva* Lundst. and similar species by the colour of the abdomen, which has yellow lateral marks on tergites 2-4. The female, not hitherto recorded, has much larger yellow lateral areas on tergites 2-4, a small one on 5, and a fairly large one on 6.

**E. furcata* Lundst. The late Mr. F. Jenkinson took a single male of this large and distinct species at Logie, Elgin, 12.ix.04. It most resembles *E. clypeata* Lundst., but has less yellow on the shoulders.

E. spinuligera Lundst. I quoted this as a synonym of *spinigera* Winn., but this was almost certainly an error. Dziedzicki's figures of the typical *spinigera* probably indicate another species of the group, distinct from both *spinuligera* and *frigida*, the two which have been found in Britain.

Rhymosia domestica Mg. The composite nature of this species was already indicated by the fact that Dziedzicki figured four or five different forms of the median sternal processes of the hypopygium; Lackschewitz (1937) has described one of these as a new species, *R. pseudodomestica*. I now find that we have two closely allied species in Britain, both common. Of these two, the one which I provisionally regard as the true *domestica* is somewhat smaller than the other and has the femora completely yellow; its hypopygium is relatively smaller and has the sternal process much as in Dziedzicki's fig. 81; other structures as in fig. 7, d-f. Many specimens examined from Hants., Herts., Cambs., Notts., Arran, Inverness.

*** R. rustica** sp.n.

Closely resembles *R. domestica*, but on the average rather larger, and the hind femora in both sexes with a dark patch at base beneath; hypopygium larger relatively to the size of the insect and differing in various small details as shown

in fig. 7, a-c: cerci more hairy, and the blackened lower style less expanded at tip and provided with a row of short hairs on ventral margin, these latter being absent in *domestica*.

Type ♂ from Llangammarch Wells, BRECKNOCK, 25.vii.13 (*Verbury*); many other specimens examined from CORNWALL, HANTS., SUSSEX, SALOP, BEDS., HERTS., CAMBS., SUFFOLK, ARRAN, INVERNESS, ELGIN, KERRY.

R. macrura Winn. The type male, the hypopygium of which has never been described or figured, was described as having the second abdominal segment all yellow, a feature which should be distinctive. In the British species which I determined as *macrura* in 1913 there is always an extensive dark area at the base of the second abdominal segment, and I therefore now consider my determination must have been incorrect; on the other hand, our species is certainly the same as *R. excogitata* Dz., of which *R. simulatrix* Lackschewitz (1937) is a synonym (**n.syn.**).

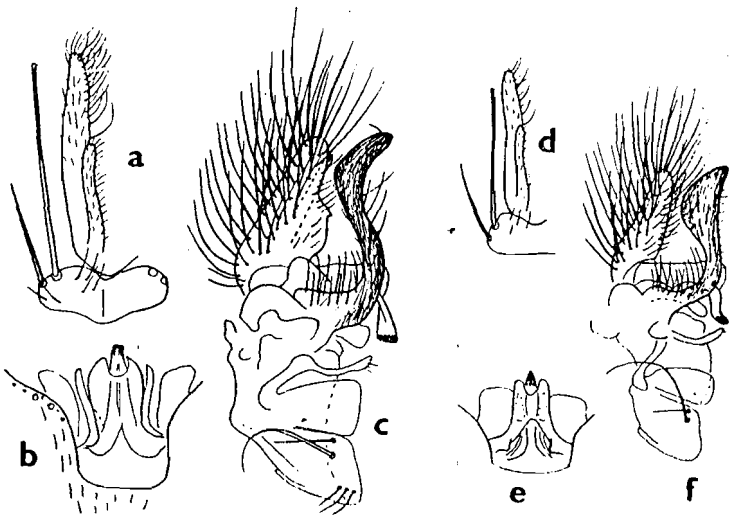


FIG. 7.—a-c, *Rhymosia rustica* sp.n.; d-f, *R. domestica* Mg.; a, d, tergite and cerci; b, e, sternal processes; c, f, styles from side. Same scale.

* R. rufilatera sp.n.

Allied to *R. excogitata* Dz., which it resembles in the following features:—Thorax devoid of discal bristles, the fine decumbent hairs of mesonotum pale grey on sides, dark in middle, with a short median grey stripe extending forwards in front of scutellum; two strong scutellar bristles; two strong propleural bristles. Abdominal tergites with posterior margins pale. Coxae and femora all yellow; front tarsi simple. Wings with *Sc* ending in *R*; *An* only just reaching *fCu*. Hypopygium with simple cerci and one long blunt-tipped bristle on each half of tergite. Differs from *excogitata* as follows:—Sides of abdomen in both sexes more extensively orange-yellow, the dark areas of tergites 2-5 in ♂ forming oblong patches rather than triangles. Wings with vein *An* rather faint (so that the species might easily be taken to be an *Allodia*). Hypopygium (fig. 8, a-c) with style and sternal processes differing in several respects from those of *excogitata* (fig. 8, d, e).

CAMBS.: Chippenham Fen, 13.ix.1920, 2 ♂♂ (including type), 1 ♀ (*J. E. Collin*).

This species is evidently nearly allied to, and may perhaps prove to be the same as *R. sintenisi* Lack. (1937), but Lackschewitz's figures indicate some small differences in the hypopygium.

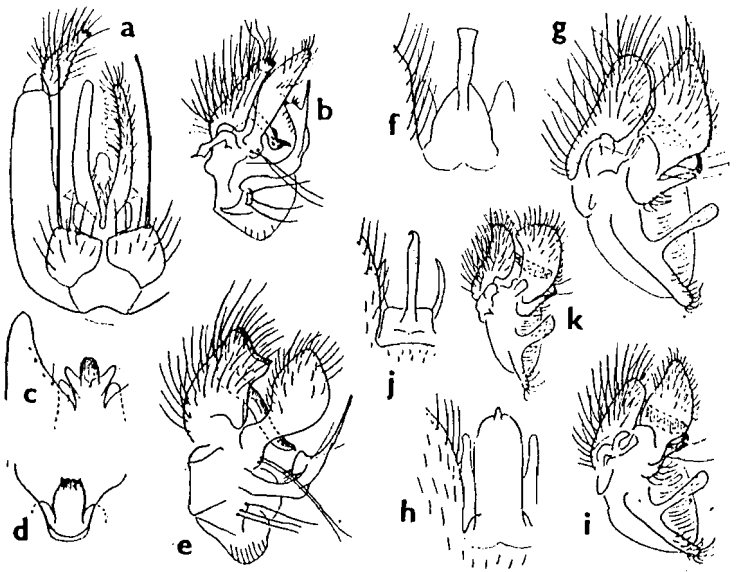


FIG. 8.—a-c, *Rhymosia rufilatera* sp.n.; d, e, *R. excogitata* Dz.; f, g, *R. fenestralis* Mg.; h, i, *R. dziedzickii* sp.n.; j, k, *R. nemoralis* sp.n.; a, hypopygium from above; b, c, g, i, k, styles from side; c, d, f, h, j, sternal processes. All to same scale.

R. fenestralis Mg. As in the case of *R. domestica*, several allied species have been confused here. I have re-examined the types of Meigen's *fenestralis* and *apicalis* and find them to agree with our commonest species, the hypopygium of which was depicted in Dziedzicki's figures 73 and 74 (not 71 and 72 as I stated through a slip when reporting on Meigen's types in 1924, *Encyc. ent.*, B **2**, Dipt. **1**: 13-7); fresh figures are given here (fig. 8, f, g). Externally this species may be distinguished by having three rather distinct but not very dark stripes on the mesonotum (the median stripe divided in front) and a rather faint brown mark in middle of posterior margin of hind coxa. There may be either one or two strong propleural bristles.

* R. dziedzickii sp.n.

Differs from *R. fenestralis* in having the three mesonotal stripes darker, sharply defined and very conspicuous on the pale ground, and all the coxae completely yellow. Hypopygium (fig. 8, h, i; also Dziedzicki's figs. 71 and 72) with small differences in all parts, but especially in the sternal processes.

GLOS.: Symonds' Yat, ix.36, type ♂ (*F.W.E.*).

* R. nemoralis sp.n.

Differs from *fenestralis* and *dziedzickii* in having the mesonotum almost uniformly light reddish, the stripes not or scarcely distinguishable; dark mark on hind coxa much more distinct, and middle coxa also with a small dark mark; in these respects resembling *R. tarnanii* Dz. Hypopygium (fig. 8, j, k) smaller than that of *fenestralis*, resembling that of *tarnanii* in size and structure but differing conspicuously in the shape of the sternal processes and to a less extent in other details. Only one strong propleural bristle in each of the fifteen specimens examined.

N. LANCS.: Tilberthwaite Gill, 21.v.38, type ♂ (*F.W.E.*). WORCS.: Bewdley, ix.92, 1 ♂, 2 ♀♀ (*Verrall*). DEVON: Ivybridge, v.90, 1 ♂ (*Verrall*). CORNWALL: Sheviock, ix. 12 (*Verbury*). SUSSEX: Crowborough, iv.06, x.06, ix.14, ix.16, 1 ♂, 5 ♀♀ (*Jenkinson*). YORKS.: Sawley, Ripon, 4.ix.04, 1♂, 1♀ (*Jenkinson*).

R. tarnanii Dz. I have examined three males from Logie, ELGIN, in addition to those previously recorded. All have two strong propleural bristles, so that this would appear to provide a constant distinction from the closely allied *nemoralis*.

**R. setiger* Dz. Jenkinson took this very distinct species both at Crowborough, SUSSEX, and Logie, ELGIN — 16 specimens in all. It is allied to *winnertzi* and *gracilipes*, but has a very different hypopygium.

R. winnertzi Barendrecht. This is the species determined by Dziedzicki and recorded by me as *signatipes* v.d.W. According to Barendrecht, however, the type of *signatipes* is not this species but *truncata* Winn., which has not yet been found in Britain.

R. britteni Edw. For a time I suspected that the unique type of this species might have been an abnormal *fasciata*, but a second male is in the King collection, taken 30.viii.21, probably near Glasgow.

R. bifida Edw. This differs from *spinipes* in having the coxae clear yellow; in *spinipes* the posterior coxae have dark marks on their outer surfaces.

**Brachypeza armata* Winn. A single male from Goyt Valley, DERBYSHIRE, 2.x.40 (*H. Britten*), appears to belong to this species, which so far as I am aware was hitherto only known from Winnertz's type male from Russia. As described by Winnertz, the front tarsi are peculiarly modified: the second segment is much swollen beneath for rather more than half its length, with a group of blunt black spinules at the end of the swollen portion and four postero-ventral bristles in a row, mostly before the spinules, with one or two more bristles at the tip; the third segment has an anteroventral row of spinules extending the whole of its length; the fourth and fifth have the ventral setae slightly longer than usual. Other diagnostic features are the clear wings and the presence of five propleural and four strong marginal scutellar bristles.

**Dynatosoma cochleare* Strobl. Specimens are in the King collection from Banchory, Dingwall, Nairn and Nethy Bridge; Mr. R. L. Coe took a male in Balmoral Forest in 1937. The species has yellow coxae like *fuscicorne*, but differs in having the scutellum all black and the bases of the forks *M* and *Cu* level (in *fuscicorne fCu* is always well beyond *fM*). The male is distinguished also by the peculiar hypopygium.

Mycetophila. A character of some use in classification, which has not been noted hitherto, is the presence or absence on the middle tibia of an antero-dorsal bristle. This bristle, when present, is placed beside the most distal dorsal bristle, from which it is separated by a single row of setulae (the anterior bristles are separated from the dorsal series by two rows of setulae). This anterodorsal bristle is absent in *M. fungorum, lineola, semifusca, ocellus, formosa, stylata, czizeki, caudata, magnicauda, edwardsi, vittipes, gibbula, freyi, jenkinsoni* and *scotica*; it is present in all the other British species, though in a few cases (*pumila, bimaculata, tarsata*) it is very small. The only species in which I have observed variation in this character is *M. unipunctata*, in which the bristle may be present or absent.

* Mycetophila affluctata sp.n.

Allied to *M. unipunctata* Mg., which it resembles in having a conspicuous central spot, but no trace of apical or subapical spot or shade on the wing, in the shining mesonotum with largely yellowish scutellum, and in tibial chaetotaxy (hind tibial bristles in two rows; mid tibia with 5-6d, 1ad, 3a, 2v, 3-4p); coxae yellow and hind femora only narrowly dark at tip as in *unipunctata*. Differs from *unipunctata* in having the mesonotal stripes darker (blackish rather than brown) and fused, leaving a large yellow patch on each shoulder, much as in *stolida*. Hypopygium (fig. 9, a, b) similar to that of *unipunctata* (and therefore quite different from *stolida*), but the small lower style rather differently shaped and the two spines represented by small bristles. (*M. unipunctata* is figured for comparison in fig. 9, c, d; numerous specimens compared, from several localities.)

SUFFOLK: Eriswell, 24.x.34, type ♂ (*Collin*). CAMBS.: Chippenham, ix.40, 1 ♀ (*Collin* and *Edwards*).

These specimens answer rather well to the description of *M. fluctata* Becker of the Canary Is., but no specimens of Becker's species are available for comparison, and the two are provisionally assumed to be distinct owing to the widely different localities.

M. tridentata Lundst. This is the only *Mycetophila* so far added to the British list since 1925. In addition to the HEREFORDSHIRE specimen which I have noted (1926, *Ent. mon. Mag.*, **62**: 23) I have seen others from Crickhowell, BRECON, and New Forest, HANTS. (*F.W.E.*), and Chippenham, CAMBS. (*Collin*).

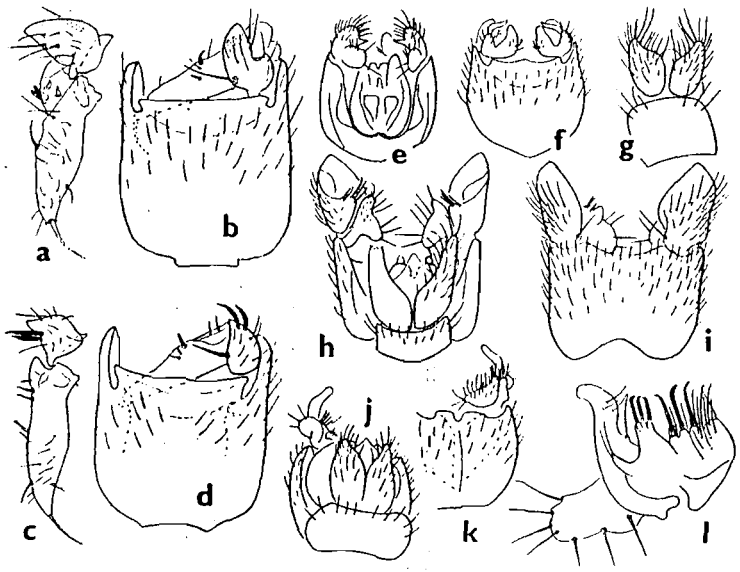


FIG. 9.—a, b, *Mycetophila affluctata* sp.n.; c, d, *M. unipunctata* Mg.; e-g, *M. scotica* sp.n.; h, i, *M. jenkinsoni* sp.n.; j-l, *Sceptonia humerella* sp.n.; a, c, l, styles from side; b, d, f, i, k, hypopygium from beneath; e, hypopygium from above with tergite and cerci removed and shown separately (g); h, j, hypopygium from above. All except l to same scale.

* M. scotica sp.n.

Resembles *M. czizeki* Landr., differing from that and most other British species in the uniformly pale mesonotum. Head blackish; antennae dark, with first three segments yellow. Thorax with mesonotum dull light reddish, unstriped; scutellum pale; postnotum and pleurae dark brownish. Abdomen uniformly dark. Hypopygium very small, structure as in fig. 9, e, f, g. Legs yellow, hind femora narrowly dark at tip and dark above on distal half. Mid tibial bristles: 4d, oad, 2a, 2v, 3-4p. Hind tibial bristles: 4d, 6a. Wings with dark central spot and dark shade filling end of cell from R_1 to R_5 and extending on its proximal half or more to M_1; this dark area rather more conspicuous than in *czizeki* but its distal boundary indefinite. Wing-length 3 mm.

CROMARTY: Dingwall, 2.vii.09, 1 ♂ (*King*).

M. tarsata Winn. (**n.syn.** *occultans* Lundst.). Having now examined a fair number of specimens from various localities I am satisfied that the above two names apply to the same species. Some features of the hypopygium are shown better by Dziedzicki and others (particularly the row of hairs on the posterior margin of the sternocoxite which provide perhaps the most distinctive feature of the species) by Lundström.

M. stolida Walk. Males from the New Forest and Cambridge agree with the type and fairly closely with the figures in Dziedzicki's 'Atlas.' They all have an antero-dorsal and three anterior bristles on the middle tibia. Scottish specimens previously determined as *stolida* prove to be *freyi*.

**M. freyi* Lundst. Very similar to *M. stolida* but rather smaller; middle tibia lacking the antero-dorsal bristle and in most specimens examined with only two anterior bristles, though three are present in some cases; hypopygium with small but constant differences. As in *stolida* both the central and subapical wing spots may be very faint. INVERNESS: Spey Bridge (*Yerbury*). ELGIN: Logie (*Jenkinson*). HEREFORDSHIRE: Stoke Wood (*Wood*). HERTS.: Bayford (*F.W.E.*). HANTS.: Lyndhurst, 11.vii.04 (*Jenkinson*).

* M. jenkinsoni sp.n.

Apparently allied to *M. freyi*, with which it agrees in chaetotaxy of tibiae, as well as generally in size and colouring, differing in hypopygial structure. Head blackish as usual; antennae dark, with second and third segments yellow; palpi yellow. Thorax mainly blackish, mesonotum slightly shining, with its lateral margins yellowish, more broadly so on shoulders and in front of the blackish scutellum. Abdomen dark, first few tergites largely pale at sides posteriorly. Hypopygium as in fig. 9, h, i; the structure appears to resemble that of *M. limbata* Lundst., without being identical. Legs yellowish; hind femur only narrowly dark at tip (much less extensively than in *freyi*) but with the whole dorsal margin slightly darkened. Mid tibial bristles: 4d, oad, 2a, 2v, 1p. Hind tibial bristles: 4d, 6a. Wings with small central spot and faint oblique subapical shade. Wing-length 3 mm.

ELGIN: Logie, ix.04, 1 ♂ (*Jenkinson*).

**M. morosa* Winn. Two males from Logie, ELGIN, viii.03 and ix.04 (*Jenkinson*). This very distinct species appears to be allied to *cingulum* Mg.; these two are the only European *Mycetophila* known to me in which the hind tibiae have the bristles in three rows and lack the dorsal seam of fine black setulae, all the fine tibial hairs being yellow. From *cingulum* the present species differs conspicuously in the largely shining black thorax and abdomen.

**M. lamellata* Lundst. Two males from Ivinghoe Common, BUCKS., 8.iv.38 (*F.W.E.*). The species would run to couplet 23 in my key, differing from the other British species with dull meso-

notum in the entirely blackish scutellum and rather faint subapical mark on the wing. The middle tibiae have either two or three ventral bristles, this character being more variable also in some other species than I formerly thought. The large anal cerci form a conspicuous feature. I have a pencil note that *lamellata* is a synonym of *xanthotricha* Mik according to the type in the Vienna Museum, but cannot now trace the source of this information.

**M. hetschkoi* Landr. One male, Sawley, Ripon, YORKS, 2-6.ix.04 (*Jenkinson*). The remarkable elongate lower claspers agree well with Landrock's figure, though the upper clasper appears to be slightly different, the mesonotum has the shoulders and lateral margin broadly yellowish (instead of having only a small pale shoulder-spot) and the abdominal tergites have the posterior margins narrowly pale; in spite of these differences I believe the specimen must belong to Landrock's species. Superficially it rather closely resembles *finlandica* Edw., but the subapical wing-spot is smaller and fainter than is usually the case in that species.

*** Sceptonia humerella** sp.n.

Resembles *S. nigra, membranacea* and *costata* in having veins R_1 and R_5 close together, their distance apart at tip of R_1 being scarcely more than the width of a vein. Differs from these three species in having a distinct yellow spot on each shoulder, and hind coxa entirely yellow. Abdomen all black. Mid-tibial chaetotaxy normal for the genus; hind femur yellow with at most the distal fourth black. Hypopygium (fig. 9, j, k, l) markedly different from the other species.

DEVON: Chudleigh, Ugbrook, 30.viii.88, type ♂ (*Verrall*). SUSSEX: Crowborough, xiii.16, 1 ♂ (*Jenkinson*).

British Museum (Nat. Hist.),
London, S.W.7.
November 1st, 1940.

THE DISTRIBUTION OF *ORCHOPEAS WICKHAMI* (BAKER) (SIPHONAPTERA), IN RELATION TO ITS HOST THE AMERICAN GREY SQUIRREL.

BY R. B. FREEMAN, B.A., F.R.E.S.

INTRODUCTION.

The American grey squirrel (*Sciurus carolinensis* Gmelin) was introduced into Great Britain a number of times during the nineteenth and early twentieth centuries and has spread from a few centres over much of the deciduous wooded areas of the country. *Orchopeas wickhami* (Baker), a flea found on several species of squirrel and as a stray on marmots, raccoons and opossums in the eastern United States (4)(13), was first taken in this country by