WARDS, F. W.:

British Fungi-gnats (Diptera, Mycetophilidae)

With a revised Generic Classification of the Family

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Explanation of Plate XLVIII.

Fig. 1. *Micrathena bifurcata* Hahn, a hard-bodied thorny spider preyed on by a *Tryporylon*. (Enlarged.)
2. Hanging comb of the Wasp, *Mischocyttarus labiatus* Fabr.
3. Mud colony of *Tryporylon fabricator* Sm.
4. Mud nests of *Tryporylon albitarse* Fabr.
5. Mud coffins of *Pseudagenia timida* Sm.
6. Males of *Zygotricha dispar* Wied. butting one another. (Enlarged.)
7. Head of ♀ *Zygotricha dispar* Wied. from the front.
8. Head of ♂ *Zygotricha dispar* Wied. from the front to show the "horns."
9. *Gonyleptes pectinatus*, Koch, showing its toothed back legs with which it can deliver a sharp nip. (Slightly enlarged.)

XXII. *British Fungus-Gnats* (Diptera, Mycetophilidae). *With a revised Generic Classification of the Family.*

By F. W. Edwards. (Published by permission of the Trustees of the British Museum.)

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Plates XLIX—LXI.

The fungus-gnats or Mycetophilidae are a large but rather neglected family of flies, which have hitherto not found much favour with collectors, partly because of their generally small size and rather fragile nature, but also no doubt to a large extent owing to the difficulty of determination. The object of the present paper is to assist in removing the latter objection to the study of an extremely interesting group of insects. The writer's work on the group was begun in the year 1912 under the inspiration and encouragement of the late Mr. F. Jenkinson of Cambridge, to whose memory this paper is respectfully dedicated.

In the volume of these Transactions for 1913 the writer published a paper containing preliminary notes on the insects of this family, based largely on the extensive collections made by Mr. Jenkinson in Sussex and Scotland, and dealing also with all the other collections then available in this country. At that time I had not myself studied the insects in the field, but since then have collected them extensively and have taken some 250 species on the wing and also reared some 50 from larvae. I am therefore now able to offer a fairly complete review of the British species, and to fill up the gaps in my earlier work, which was necessarily very incomplete, several genera being left more or less untouched. At the same time, I have studied the exotic forms of the family as far as available, and have seen representatives of almost all the described genera. The opportunity therefore seems favourable to review the whole classification of the family, which in some respects, especially as regards the definition of the two main subfamilies, *Sciophilinae* and *Mycetophilinae*, was not very satisfactory. In rearranging these groups I have endeavoured to use those adult characters which will give results in accordance with those arrived at by a study of the early stages and habits,

as I consider that any attempt to base a classification on adults only without reference to the other stages is an unnatural proceeding and likely to produce unnatural results, owing to the ease with which striking but really superficial characters can be confused with those of more fundamental importance from the point of view of phylogeny. It has not, however, been possible to apply this principle fully, as time has not allowed a detailed study of all the larvae collected, while there are still some important genera the life-history of which remains unknown. When these gaps are filled and when the larvae already known have been more fully studied, some modification of the arrangement here suggested may be necessary. The larval material I have collected is in the hands of Dr. D. Keilin for detailed examination, and it is hoped that his work will appear shortly.

The most conspicuous defect in work of the earlier students, including Winnertz and Johannsen, was the absence of any attempt to use the characters of the chaetotaxy, which have been so extensively and successfully adopted by Osten-Sacken, Girschner, Bezzi and others in many families of Cyclorrhaphous Diptera. This was the more surprising as Mycetophilidae are well known to be remarkable among Nematocera for their strong development of bristles. I have devoted considerable attention to this subject, and following up the clues given by other workers in other families have discovered a number of characters which appear to be very useful for specific and in many cases also for generic diagnosis. The most important of these are to be found on the pleurae, and in order to explain the terms used I give figures of the side view of the thorax of some of the characteristic forms. I have followed B. P. Young's recent work in regard to the nomenclature of the parts of the pleurae, using the term *anepisternite* for the *mesopleura* of Osten-Sacken, and *pleurotergite* for the large prominent piece which has sometimes been miscalled *hypopleura* or *metapleura*. The so-called *metanotum* of many authors has been demonstrated to belong to the mesothorax and is called here the *postnotum*, a term in use by several writers as an alternative to *postscutellum* or *mesophragma*.

In referring to the wing-venation I have again used the Comstock-Needham system of nomenclature as slightly modified by Enderlein, who retains the names anal (*An*)

and axillary (*Ax*) for the first and second anal veins (*1A* and *2A*). In one rather important respect, however, the interpretation of the venation is revised. The short branch of the radius which is present in most of the older forms was regarded by Johannsen as R_{2+3}, or the second longitudinal vein, and in my previous paper I followed Johannsen's interpretation of this vein. The earlier authors, Schiner and Osten-Sacken, had treated it as the upper branch of the third longitudinal, and regarded the second longitudinal as absent throughout the family. After a comparative study of the recent and fossil-genera of Nematocera I believe that this earlier view was correct, and I therefore now refer to this vein as R_4, and to the lower branch (or to the main branch of the radius, beyond *r-m*, when R_4 is absent) as R_5. The point is of interest, because the entire loss of R_{2+3} is evidently a feature of fundamental importance. This loss has apparently occurred in three groups of Nematocera: the Mycetophilidae (with the Sciaridae), Bibionidae (with Scatopsidae) and Cecidomyiidae. These families may therefore be sharply separated in a group quite distinct from the rest of the Nematocera, an arrangement which is confirmed by the structure of the larval respiratory system, which is generally peripneustic but never amphipneustic or metapneustic as in almost all other Diptera. I have dealt with this point rather more fully elsewhere.

A point of difficulty is in regard to the limits of the media and cubitus. According to the view recently published by Tillyard, the vein called Cu_1 by Comstock and Needham is really a branch of the media, which he calls M_4, while the vein or fold beneath *Cu* becomes Cu_2. The evidence on this matter, however, seems to me inconclusive, and I have therefore kept to the terms Cu_1 and Cu_2 as generally in use.

As pointed out by Tillyard, the more primitive Diptera possess, like their ancestors, a double set of hairs on the membrane of the wing, the hairs in one set coarse (*macrotrichia*), in the other much finer (*microtrichia*). Among the Mycetophilidae there are many examples of the preservation of both these sets of hairs, but the tendency is for one or the other to disappear; usually the macrotrichia, though I have found some interesting cases where the microtrichia disappear and the macrotrichia remain. These points are valuable for purposes of classification.

The fungus-gnats are mostly readily obtained by sweeping or beating among bracken or evergreen undergrowth in woods or along shady banks of streams, at mouths of caves, by overhanging rocks, or in fact in almost any fairly damp and dark corners. They have the advantage from the collector's point of view in being readily obtainable in such situations all the year round, except perhaps during severe frosts. They are also very frequently found on windows; as an illustration of the value of window-collecting I may mention that I have taken over 50 species on the windows of a house in Hitchin which is not specially favourably situated, some species being included which I have not met with elsewhere. Very many species are easily reared from the larvae, some in fact are not readily obtained in any other way. On this account I have mentioned the host-fungi and such points in the life-history of the British species as may be of interest to collectors, though as mentioned above no attempt has been made to describe the larvae.

The main characters distinguishing the family from other Nematocera are: the absence of vein R_{2+3} (second longitudinal); the presence of ocelli,* and of well-marked tibial spurs; the absence of a suture dividing the mesonotum into praescutum and scutum; and the incomplete axillary vein. The Cecidomyiidae and Scatopsidae exhibit most of these characters, but have no tibial spurs. The Bibionidae have tibial spurs, but may be distinguished from the Mycetophilidae by their stouter build, absence of strong bristles on the body and legs, well-developed pulvilli, and with few exceptions by the position of the short antennae close to the oral margin. The Bibionidae seem to be the nearest relatives of the Mycetophilidae, and when fossil forms are considered it is not very easy to separate the two families.

I propose to recognise ten subfamilies of Mycetophilidae, including the Sciarinae and two new groups, the Lygistorhininae and Manotinae, but excluding the Pachyneurinae and also the genus *Mycetobia*. *Pachyneura* (= *Hesperodina*) I have elsewhere regarded as belonging to a distinct family related to the Anisopodidae; *Hesperinus*, which has sometimes been grouped with *Pachyneura*, seems to me, as also to Johannsen, to be better placed in the Bibionidae.

* Ocelli are said to be absent in two genera: *Hesperodes* and *Syndocosia*.

Mycetobia belongs to the Anisopodidae. The ten subfamilies may be distinguished by the key below. By far the greater number of species, and a still greater proportion of individuals, belong either to the Sciarinae, the Sciophilinae or the Mycetophilinae, the species of the other subfamilies being few in number and representing the reduced descendants of earlier faunas.

1. Medio-cubital cross-vein present, or these veins connected by a fusion . . . . . 2.
   Media and cubitus not connected by a cross-vein or fusion . 6.
2. R_4 present and rather long, generally half or more than half as long as R_5; *Sc* short and ending free; posterior divisions of pronotum with one or more longish bristles . **Ditomyiinae.**
   R_4 less than half as long as R_5, sometimes weak or absent; *Sc* almost always long and ending distinctly in the costa; posterior divisions of pronotum without long bristles . 3.
3. Cross-vein *m-cu* well before *r-m*, both vertical; media with distinct basal section and running straight as far as the fork . . . . . **Bolitophilinae.**
   Cross-vein *m-cu* close to *r-m*, or else media and radius fused for a short distance. . . . . 4.
4. Cross-veins *m-cu* and *r-m* both present, practically in one line; base of *M* wanting; *Rs* arising near base of wing. **Diadocidiinae.**
   Media and radius fused for a short distance (except in *Palaeoplatyura*, where *M* is angulate at *r-m* and *m-cu*) . . 5.
5. Cu_1 and Cu_2 slightly approximated near the base, then divergent; anal angle of wing somewhat square; tibial bristles absent. **Macrocerinae.**
   Cu_1 and Cu_2 divergent from the base; anal angle of wing rounded; tibial bristles present even if small. **Ceroplatinae.**
6. R_1 and *Rs* running separate to the base of the wing; traces of the base of R_{2+3} present . . . . **Lygistorhininae.**
   Rs arising from *R* well beyond the base of the wing, or base of *Rs* wanting (*Leiella*); no trace of R_{2+3}. . . . . 7.
7. Eyes nearly or quite connected above antennae by a narrow bridge; base of *Rs* short and transverse; *r-m* long and in a line with *Rs* . . . . . **Sciarinae.**
   Eyes rounded, without dorsal bridge; base of *Rs* and *r-m* both usually more or less oblique . . . . . 8.
8. Prothorax without strong bristles; head flat or slightly concave behind, with a row of projecting orbital bristles which are more or less curved backwards; antennae inserted much above the middle of the head . . . . . **Manotinae.**

Prothorax with distinct long bristles; head convex behind; orbital bristles not forming a conspicuous projecting row; antennae inserted about the middle of the head . . 9.

9. Microtrichia of wings irregularly arranged; *Sc* usually long; lateral ocelli usually far from the eye-margins. **Sciophilinae.**

Microtrichia of wings in more or less definite lines; *Sc* short; lateral ocelli touching the eye-margins . **Mycetophilinae.** 584

These subfamilies are dealt with in order below, and I have tabulated the known living genera of each of them except the Sciarinae. Purely fossil genera are omitted, since most of them have been insufficiently or perhaps inaccurately described. The amber forms are probably nearly all congeneric with still existing species, though the older Jurassic fossils should yield interesting results when specimens can be obtained in sufficiently good preservation. In the keys given below I have enclosed in brackets those genera which have no known British representatives, and have marked * those few which I have not examined personally.

Subfamily **Ditomyiinae.**

In Winnertz's classification the subfamily Mycetobiinae comprised the three genera *Mycetobia*, *Ditomyia* and *Plesiastina* (*Symmerus*). The first of these has now been shown to have no connection with the other two, and to belong to the Anisopodidae (Rhyphidae). The name of the subfamily has therefore to be changed, and Landrock has adopted the term Ditomyiinae. The adults of these genera, together with the New Zealand *Arctoneura* (including *Casa*) and *Nervijuncta*, which I have added to the group, are similar in most respects to the Ceroplatinae, differing mainly in the reduced subcosta and the longer vein R_4. Another character, possibly more important, which will also serve to distinguish them from the Ceroplatinae, is the presence of definite strong bristles on the posterior divisions of the pronotum (humeral angles). I have not detected these bristles in any of the other subfamilies.

So far as known the larvae live either in hard Polyporaceous fungi or in rotten wood impregnated with Mycelium; pupation takes place in the fungus; no cocoon is formed; the pupae are active and come to the surface for ecdysis. According to Keilin they differ so greatly in structure from all other Mycetophilidae as to require

separation as a distinct family, but from the point of view of adult morphology this course does not seem to be justified.

The recent genera may be arranged as follows :—

1. Cross-vein *r-m* present; antennae flattened; several bristles on posterior divisions of pronotum . . . . . 2.

Cross-vein *r-m* obliterated by fusion; antennae cylindrical; one strong bristle on posterior divisions of pronotum; eyes deeply emarginate above antennae, with a narrow *Sciara*-like dorsal bridge . . . . . 4.

2. Cross-vein *m-cu* vertical or outwardly oblique, joining Cu_1 near the base; R_4 nearly parallel with R_5; M_{1+2} strongly curved at the base, M_3 straight; anepisternites bristly; postnotum bare . . . . . [Centrocnemis Phil.].

Cross-vein *m-cu* inwardly oblique, further from base of Cu_1; R_4 more divergent from R_5; *M* evenly forked . . 3.

3. Eyes reniform; R_4 hardly longer than the second portion of R_5; anepisternites and postnotum bristly . Symmerus Walk.

Eyes rounded; R_4 much longer than the second portion of R_5; anepisternites and postnotum bare . Ditomyia Winn.

4. Stem and base of upper branch of median fork fainter than the ends of the branches . . [Arctoneura Hutton].

Stem and fork of media equally distinct throughout [Nervijuncta Marshall].

Genus Symmerus Walk.

(*Plesiastina* Winn.)

A small genus of holarctic distribution with one European and three North American species: represented in the Neotropical and Australasian regions by *Centrocnemis*.

S. annulatus (Mg.). Nowhere very common, but widely distributed in the south of England at least. It is one of the largest and most conspicuous of our native fungus-gnats. There is a rather remarkable sexual difference in colour, the abdomen of the male having ochreous bands and that of the female being all dark.

Genus Ditomyia Winn.

A small genus with two European and one North American species, evidently closely allied to *Symmerus*, differing most conspicuously in the shape of the eyes, also in the banded wings.

D. fasciata (Mg.) (fig. 181). This was long supposed to

be a rarity in Britain, and in fact the adults are very seldom seen on the wing, but its range is probably coextensive with that of its host-fungus (*Polystictus versicolor*) from which it may easily be reared in numbers.

Subfamily **Bolitophilinae.**

This subfamily includes only two recent genera, *Bolitophila*, with about a score of species in Europe and North America, and *Arachnocampa*, with one species in New Zealand. Johannsen formerly included the genus *Hesperinus*, but has more recently suggested that this should be replaced in the Bibionidae, a course with which I agree.

In the adult *Arachnocampa* differs from *Bolitophila* mainly in the absence of empodia and of the vein R_4, but the larval habits and morphology are utterly different, the larva spinning a slimy web and feeding on the insects caught therein.

Genus Bolitophila Mg.

I am now acquainted with ten British species of this genus and can distinguish all of them by characters applicable to both sexes, according to the following key :—

1. Vein R_4 ending in the costa . . . . . 2.
   Vein R_4 ending in R_1 . . . . . 7.
2. Cross-vein *m-cu* obliterated, Cu_1 in contact with M or even fused with it for a short distance . . . . . 3.
   Cross-vein *m-cu* short but distinct, Cu_1 not touching M; thorax more or less ochreous tinged, mesonotum with three separate stripes . . . . . 6.
3. Mesonotum with three distinctly separated dark stripes . 4.
   Mesonotum not striped . . . . . 5.
4. Wings with only the stigma dark; Cu_2 ending in the tip of An; ground-colour of thorax ochreous . . *occlusa* Edw.
   Wings with a dark spot over *r-m*; Cu_2 ending free in the wing-margin; ground-colour of thorax dark grey. *maculipennis* Walk.
5. Mesonotum scarcely shining; postnotum uniformly dark; Cu_2 normal . . . . . *pseudohybrida* Landr.
   Mesonotum brightly shining; postnotum ochreous with a large blackish spot at the tip; Cu_2 strongly curved at tip. *glabrata* Lw.
6. Cu_1 distinct throughout . . . . *hybrida* Mg.
   Cu_1 more or less interrupted at or near the base . *disjuncta* Lw.

7. Cross-vein *m-cu* entirely obliterated, Cu_1 fused with M for a short distance . . . . . *tenella* Winn.
   Cross-vein *m-cu* short but distinct . . . . . 8.
8. Stigma faint, greyish; pubescence of male antennae barely as long as the diameter of the segments; segments 2 and 3 of front tarsi of female enlarged, 2 a little longer than 3. *cinerea* Mg.
   Stigma distinct, dark brown; pubescence of male antennae over twice as long as the diameter of the segments . 9.
9. No dark spot over *r-m*; segments 2 and 3 of front tarsi of female much swollen and of equal length . . *saundersi* Curt.
   A distinct dark spot over *r-m*; segments 2 and 3 of front tarsi of female not at all swollen . . . . *spinigera* sp. n.

The larvae live inside soft-textured fungi (agarics or boleti) growing on the ground; in form they are rather short and stout, and even under a hand-lens can be readily distinguished from all other Mycetophilid larvae by the possession of distinct projecting antennae. Pupation takes place in the ground, the larvae burying themselves rather deeply and forming no cocoon. The pupae are active and wriggle to the surface, from which they half project for the emergence of the adult, in this respect resembling the Ditomyiinae, but contrasting with the Ceroplatinae and higher Mycetophilidae.

B. occlusa Edw. Still only known from the type from the New Forest.

B. maculipennis Walk. (*bimaculata* Zett.). I have examined the types of these two and find them identical. The species is widely spread in the hilly districts of Britain.

B. pseudohybrida Landr. According to Landrock this is indistinguishable externally from *B. hybrida*, but British examples at least seem to differ constantly in the uniformly dark mesonotum (the stripes being quite fused) and in the more or less complete obliteration of *m-cu*. The species is common in some at least of the eastern counties. I have on two occasions reared specimens from larvae feeding in *Tricholoma nudum* at Baldock, Herts., and have observed a female ovipositing on the same fungus at Knebworth, Herts.; I have also reared it from a species of *Russula*.

B. glabrata Lw. (fig. 182). Additional localities for this species are Shefford, Beds., and Knebworth and Hitch Wood, Herts. The Knebworth specimens were reared from

larvae found feeding in the stem of a fungus (*Clytocybe nebularis*) collected by my mother. The larvae differ from those of the other four species which I have seen in possessing a pair of black plates on the last abdominal segment.

B. hybrida Mg. (*fusca* Mg.). In this species the mesonotum seems always to be distinctly striped, though the ground-colour varies from ochreous to greyish; it is also larger on the average than *B. pseudohybrida*, and the cross-vein *m-cu* is always present. It is widely spread and not uncommon. I have found the larvae feeding in the cap of a fungus (*Paxillus involutus*) at Knebworth, Herts., and also from an unidentified species of *Paxillus* from Sherwood Forest. The larval integument is shining, unlike that of the other species examined.

B. disjuncta Lw. Very similar to *B. hybrida*, but the structure of the ovipositor is rather distinct, as figured by Landrock. I have seen only one British example, taken by myself at Tilberthwaite Ghyll, N. Lancs., vii. 1923. The British Museum also possesses examples from Canada.

B. tenella Winn. I reared this species in large numbers from an undetermined agaric (perhaps a *Hygrophorus*) in Hitch Wood, Herts., 1918, and again from *Flammula carbonaria* from Sherwood Forest in 1922.

B. cinerea Mg. The commonest species of the genus everywhere, but I have not come across the larvae so frequently as those of some other species. I have, however, reared them from *Hypholoma velutinum*.

B. saundersi (Curt.) (? *trullata* Lundst.) (fig. 1). This is also an abundant species in most districts. Though very similar to *B. cinerea* it may be distinguished in both sexes by the darker stigma, in the male by the antennae, and in the female by the front tarsi. The figure of the hypopygium given in my previous paper does not really represent this species, but *B. spinigera* sp. n. The hypopygium of the true *B. saundersi* differs slightly, and is apparently identical with that of Lundström's *B. trullata*, which may be synonymous with *B. saundersi*, although Lundström does not mention the long antennal pubescence.

This species seems to be specially associated with *Hypholoma fasciculare*, in which I have on several occasions found the larvae. Mr. H. Audcent has also reared it from the same fungus, as well as from *Tricholoma personatum*.

B. spinigera sp. n. (fig. 2). Very close to *B. saundersi* Curt., especially in the male sex, which has the same long

antennal pubescence, but differs as follows:—Wings in addition to the dark stigma with a very distinct dark spot over *r-m*, only faint traces of which are sometimes seen in dark specimens of *B. saundersi*. Male claspers of rather different shape (see Trans. Ent. Soc. 1913, pl. xii, fig. 2). Front tarsi of female almost cylindrical, the second and third segments with scarcely a trace of the ventral enlargement which is so conspicuous in *B. saundersi*, *B. cinerea* and other species of the genus. Ovipositor of quite different structure (compare figures), with small spines on the lower margin. Size rather larger than the average *B. saundersi*.

This is apparently a rather rare species which I have previously confused with *B. saundersi*, my figure of the hypopygium being taken from a male *B. spinigera* from Dingwall, Cromarty (*Lt.-Col. Yerbury*); this may be regarded as the type of the new species. The British Museum also possesses a female from South Devon (*Yerbury*) and a male and female from Blaise Castle, Glos. (*H. Audcent*).

Subfamily **Diadocidiinae.**

This includes the single genus *Diadocidia*, of uncertain affinities but readily distinguishable from all other Mycetophilidae by having both the *r-m* and *m-cu* cross-veins present and forming practically one straight line. There are two European and two North American species.

The larvae of *D. ferruginosa* live in long dry silken tubes under bark or in rotten wood; they are very sluggish in their movements, quite unlike most other Mycetophilid larvae. The pupae are enclosed in a small and very dense white cocoon.

D. ferruginosa (Mg.) (fig. 183). A small reddish species common in most parts of the country. The front tarsi of the female are distinctly thickened, and R_1 ends hardly beyond the base of the median fork.

D. valida Mik. Rather larger than *D. ferruginosa*; R_1 longer and front tarsi of female not at all thickened. Known as British only from a specimen taken by the late Mr. F. Jenkinson at Logie, Elgin, in 1904.

Subfamily **Macrocerinae.**

In my previous paper I included this subfamily with the Ceroplatinae, owing to the fact that the venation is practically the same in both. The main character on which

this subfamily was founded by Winnertz was the elongation of the antennae, which is certainly of only secondary importance; but there are a number of probably more significant characters in which *Macrocera* differs from the Ceroplatinae, so that it may be justifiable to retain the subfamily. When the biology of *Macrocera* is better known it may be possible to arrive at a final decision.

The distinctions from Ceroplatinae are as follows:— Head with two longitudinal furrows on the occiput, one on each side of the ocelli. Anepisternal (mesopleural) bristles present. Legs with longish pubescence but without any differentiated bristles. Front tibiae with a fairly well-marked apical comb; hind tibiae without combs. Empodia well developed.

Only one recent genus has so far been referred here: *Macrocera*, with a world-wide distribution; I do not consider Speiser's *Promacrocera* a valid genus, as it is based only on a single character which is variable in different species. De Meijere's genus *Chiasmoneura*, with one species from Java, probably belongs to this subfamily, as the head is shaped as in *Macrocera* and the tibiae are devoid of bristles. It differs from *Macrocera* in the apparent absence of anepisternal hairs and in having the vein Cu_1 widely interrupted at the base.

The early stages are practically unknown, in spite of the fact that many of the species are quite common. The adults may be distinguished in life from almost all other Mycetophilidae by their habit of holding their wings divaricate in repose.

Genus Macrocera Mg.

The number of British species of this genus has been increased from nine to fifteen, which may be distinguished as follows:—

1. Wings with microtrichia only. . . . . 2.
   Wings with numerous macrotrichia at least towards the tip. 13.
2. Wings quite unspotted . . . . . 3.
   Wings with at least one small dark spot . . . . 8.
3. *Sc* ending far before the tip of the basal cell; small species, abdomen with pale bands on the apices of the tergites. *anglica* sp. n.
   Sc ending above the tip of the basal cell . . . 4.

4. Male antennae quite slender and more than twice as long as the body, female antennae longer than the body . . . 5.
   Male antennae somewhat swollen towards the base of the flagellum, and much less than twice as long as the body; female antennae not longer than the body . . . 6.
5. Mesonotum with three more or less distinct stripes, bristles blackish; base of *M* rather faint . . . . *vittata* Mg.
   Mesonotum uniformly yellowish; bristles yellowish; base of *M* strong and distinct, dividing the basal cell into two. *lutea* Mg.
6. Hind coxae without a dark mark; abdomen almost unicolorous. *parva* Lundst.
   Hind coxae with a dark mark posteriorly; abdominal tergites with conspicuous pale apical bands. . . . . 7.
7. Antennae at most very faintly ringed; first flagellar segment mainly dark, the next four segments each about 6–7 times as long as broad . . . . . *fasciata* Mg.
   Antennae with conspicuous pale rings; first flagellar segment mainly pale; the next four segments each about 5–6 times as long as broad . . . . . *crassicornis* Winn.
8. Wings with the tip clear. . . . . 9.
   Wings with the tip dark (rather faintly so in *maculata*) . 11.
9. A dark spot near base of cell Cu_1 . . . *tusca* Lw.
   A dark spot in base of cell R_5. . . . . 10.
10. Abdominal segments with basal pale bands; no dark costal spot . . . . . *bipunctata* sp. n.
    Abdominal segments with apical pale bands; a dark spot on costa at tip of R_1 . . . . . *centralis* Mg.
11. Abdomen largely yellow, the segments with black apical bands; wings with a complete central fascia . *angulata* Mg.
    Abdomen unicolorous or with the apices of the segments paler 12.
12. Wings with a complete fascia just before the middle, and a separate dark spot on the margin in cell Cu_1; mesonotum unmarked . . . . . *fascipennis* Staeg.
    Wings with the central fascia incomplete; no dark spot in cell Cu_1; mesonotum with three blackish marks *maculata* Mg.
13. Tip of wing broadly dark . . . . . *phalerata* Mg.
    Tip of wing clear; tip of R_1 thickened . . . . 14.
14. R_1 with a blackish mark just before the tip, which is pale *stigma* Curt.
    R_1 uniformly brownish . . . . *stigmoides* sp. n.

M. anglica sp. n.

A small species: length of body or wing (♀) about 4 mm.; antennae (♀), 6 mm.

Head ochreous, with a dark ocellar spot. Palpi brownish.

Antennae ochreous at the base, becoming brownish apically; not at all thickened. *Thorax* uniformly ochreous, except for a pair of small dark dots on the front margin of the mesonotum and an ill-defined dark pleural stripe; bristles dark. *Abdomen* dark brown, with conspicuous broad apical ochreous margins to the segments. Coxae and femora uniformly ochreous; tibiae and tarsi darkened. *Wings* quite clear. *Sc* very short, ending well before the middle of the basal section of *Rs*. R_1 not swollen at the tip; R_4 rather short and only moderately oblique.

New Forest, 3 vii. 1904 (*F. C. Adams*), type ♀. Stokenchurch, Oxon., 13–15 viii. 1907 (*G. H. Verrall*), 2 ♀. Crowborough, Sussex (*Jenkinson*), 1 ♀. Welwyn, Herts., 11 vii. 1924 (*F.W.E.*), 1 ♀.

The specimens collected by Verrall were identified as *M. pusilla* Mg., and it was on these that I based the remark in my previous paper that the *M. pusilla* of our (British) list was an undescribed species. Landrock has presumably misunderstood this remark as indicating that Winnertz had misidentified Meigen's *M. pusilla*, and has in consequence proposed to rename Winnertz's species *M. pseudopusilla*. But there is no discrepancy between Winnertz's and Meigen's descriptions, and since Meigen's type is lost I consider that Winnertz's interpretation should be treated as correct. It is indeed probable that Winnertz had two species before him (one being *M. anglica*), but Landrock did not recognise this and his name must therefore be treated as a synonym. The British Museum possesses a number of specimens from Egypt and Mesopotamia which are similar to *M. anglica* but darker, the antennae of the female not longer than the body, the mesonotum conspicuously striped with dark brown, and *Sc* distinctly longer, ending above or slightly beyond the middle of the basal section of *Rs*. These specimens would appear to be the species on which Winnertz mainly based his description of *M. pusilla*, a species of which I have seen no British examples. The identity of Curtis' *M. multicincta* (usually quoted as synonymous with *M. pusilla*) is doubtful, but it cannot have been *M. anglica* as the antennae were stated to be "not longer than the body in both sexes."

M. vittata Mg. (fig. 3). In my previous paper I suggested that this was merely a variety of *M. lutea*, and this view has been adopted by Landrock in his revision of the genus. The conclusion was based on the assumption that the

distinguishing feature of *M. vittata* was a dark longitudinal stripe on the abdomen, this being apparently variable. It now appears, however, that two quite distinct species had been confused under the name *M. lutea*: a larger one with more or less distinctly striped mesonotum, black bristles, swollen tip of R_1, faint base of the media and broad male claspers (see fig. 3) and a smaller one with uniformly yellowish thorax, yellow mesonotal bristles, scarcely swollen tip of R_1, strong base of the media, and narrower male claspers. The larger species is common and widely distributed and may be regarded as *M. vittata*, while the smaller one may be taken as the true *M. lutea*. Female specimens occasionally have the appearance of a dark abdominal stripe, but the real diagnostic characters of the species are those mentioned above. All the specimens in the old collection of the Vienna Museum named *M. vittata* are this species.

M. lutea Mg. (fig. 4). As now understood this appears to be much less common in Britain than *M. vittata*, but I have seen specimens from Loch Assynt and Lochinver, Sutherland (*Yerbury*), Holker Moss, Lancs., and Knebworth, Herts. (*F.W.E.*).

M. fasciata Mg. The largest species of the genus with us; fairly common and widely distributed. It is reported by Enslin to have been reared from larvae feeding on a fungus growing in a cellar, but confirmation of this is desirable, as it seems greatly at variance with Enock's record (see under *M. phalerata*).

M. crassicornis Winn. When writing previously I regarded this as identical with *M. fasciata*, and in fact all the specimens from the Verrall collection in the British Museum named *M. crassicornis* are really only *M. fasciata*. Since then, however, I have taken specimens of a smaller form which seems distinct from *M. fasciata* by antennal characters, as described in the key, and which appears to be the true *M. crassicornis*. The specimens were obtained at Letchworth and Knebworth.

M. parva Lundst. This is the species which I recorded in my previous paper as "perhaps representing the true *M. pusilla*," overlooking the fact that *Sc* is long, ending above the tip of the basal cell. It seems to be purely a mountain form with us; additional British records are Spey Bridge and Aviemore, Inverness (*Yerbury*); Ffrith, Flintshire (*F.W.E.*).

M. tusca Lw. This small species is very distinct from all other members of the genus by the structure of the male claspers, which are truncate and pubescent at the tip and without strong spines. I took a specimen on Holker Moss, N. Lancs, vii. 1923.

M. bipunctata sp. n.

A large species, superficially resembling *M. fasciata*; length of body, 7·5 mm., wing, 5·5 mm.; antennae, 9 mm.

♂. *Head* dark brown on the vertex and occiput; face and palpi ochreous. Antennae brownish, faintly ringed at the joints, not much longer than the body, no long hairs at the tip. *Thorax* ochreous; mesonotum with three separate brown stripes; lower part of pleurae dark brown; bristles black. *Abdomen* rather elongate, ochreous; segments 1–5 with black *apical* bands; 6–8 all black. Hypopygium of the normal structure; claspers very broad, the two spines close together. *Legs* ochreous, the four posterior coxae marked with dark brown on the outer side; tibiae and tarsi darkened. *Wings* clear, except for a small dark spot which fills the bases of cells R_5 and M_1 and a second smaller spot over the base of *Rs*. *Sc* long, reaching just beyond tip of basal cell; tip of R_1 not at all swollen; R_4 rather long and almost parallel with *Rs*, its base far beyond the tip of R_1; costa extending well beyond the tip of R_5. Basal section of *M* strong and dark. Halteres ochreous.

Type ♂ in the British Museum from Tilberthwaite Ghyll, N. Lancs., 21 vii. 1923 (*F.W.E.*); also 2 ♂ in Mr. Collin's collection from Bowness, Westmoreland (previously recorded as *M. grandis*). In many respects this answers to Lundström's description of *M. grandis*, but is evidently quite distinct on account of the shorter antennae (only 1·2 instead of 2·5 times as long as the body) and the distinctly produced costa.

M. centralis Mg. Common and widely distributed. The apical third of the wing is sometimes indistinctly darkened, but this need not cause any confusion with *M. maculata*, which is smaller, with differently marked thorax, and much shorter antennae.

M. angulata Mg. Fairly common, from Kent and Hants. to Cumberland, but I have seen no Scottish examples.

M. fascipennis Staeg. (fig. 184). This might perhaps be confused with *M. angulata*, but the wing-markings are much stronger and differently arranged, and the coloration

of the abdomen is quite different. There is a male in the British Museum from Matley Bog, New Forest (*C. Morley*) and a second in the Birmingham museum from Sutton Park, Worcs. (*R. C. Bradley*).

M. maculata Mg. This pretty little species seems to be not uncommon in Hertfordshire, where I have taken it at Letchworth, Radwell, Knebworth and Digswell. I have also seen it from Timworth, Suffolk (*Nurse*). In some specimens the wing-markings are rather faint.

M. phalerata Mg. An extremely well-marked species, the only one known in Europe with hairy as well as spotted wings. It is common throughout Britain, and it is therefore rather surprising that the larvae have not yet been discovered, though the late Mr. F. Enock presented specimens to the British Museum which were labelled as having been bred from a sod of grass from Richmond Park. If it can be assumed from this that pupation had taken place in the ground, this is an important distinction from *Ceroplatus* and its allies.

M. stigma Curt. Another common and widely spread species, easily recognised by its hairy wings without dark markings on the membrane, though R_1 is much swollen and blackened just before the tip, the extreme tip being pale; the *r.-m.* fusion also blackened.

M. stigmoides, sp. n. (fig. 5).

Very similar to *M. stigma*, differing as follows:—Size on the average smaller; length of body, 3·5–4·5 mm., wing, 4–5·5 mm. Wings distinctly less hairy towards the base; few or no macrotrichia below the *r-m* fusion. R_1 uniformly brown, without pale tip or preapical blackening; *r-m* fusion not blackened; inner spine of male claspers much more slender.

Apparently less common than *M. stigma*, but may have been overlooked. British Museum material is from Cambridge (*F.W.E.*; type ♂); Harrow Weald, Middx. (*F.W.E.*); Horsley (*C. O. Waterhouse*); Richmond Park (*F. Enock*), reared from sod of grass together with *M. phalerata*; Iken, Suffolk (*Yerbury*); Grange and Holker Moss, N. Lancs. (*F.W.E.*); Llangammarch Wells, Brecknock (*Yerbury*); Arran (*F.W.E.*); New Forest (*Verrall*). Differs from *M. zetterstedti* Lundst. and other small hairy-winged species in the structure of the claspers and the entirely ochreous coxae.

Subfamily **Ceroplatinae.**

After the exclusion of *Macrocera*, *Arctoneura* and *Nervijuncta*, the remaining genera of this subfamily form a homogeneous group which may be defined as follows :—

Head not furrowed on the occiput. Anepisternites (mesopleurae) bare. Pleurotergites large and prominent. Tibiae with ranges of short but always distinguishable bristly spines. Front tibiae without comb; hind tibiae (except in *Rhynchoplatyura*) with two distinct apical combs, one on the outer side and one on the inner. Empodia and pulvilli absent. Vein R_4 short, or rarely absent. Cross-vein *r-m* obliterated by fusion of *M* with *Rs* for a longer or shorter distance (except in *Palaeoplatyura*); *m-cu* always present; Cu_1 and Cu_2 evenly divergent beyond *m-cu*. Macrotrichia never present on the membrane.

The recent genera may be separated by the following key, in which an asterisk distinguishes those which have not been examined by the author, and square brackets those of which no British representatives are known.

1. Antennae with 12–15 segments . . . . . 2.
   Antennae with 16 segments . . . . . 4.
2. Antennae strongly pectinate; pleurotergites hairy [PLATYROPTILON Westw.].
   Antennae simple. . . . . 3.
3. Mouth-parts elongate; antennae with 14 segments *[ANTRIADOPHILA Skuse].
   Mouth-parts not elongate; antennae with 15 segments *[PSEUDOPLATYURA Skuse].
4. Prothorax large, not divided in the middle; hind tibiae with only one irregular comb; labella greatly elongate, slender and rigid, but palpi reduced; R_4 ending in R_1; *m-cu* fusion extremely long; median fork almost sessile [RHYNCHOPLATYURA de Meij.].
   Prothorax small, divided in the middle; hind tibiae with both inner and outer combs . . . . . 5.
5. Mouth-parts elongate, at least as long as the head; postnotum and pleurotergites bare; R_4 ending in the costa . . 6.
   Mouth-parts not elongate . . . . . 7.
6. Labella greatly elongate and fleshy. . ASINDULUM Latr.
   Labella small, but the labium itself elongate ANTLEMON Hal.

7. **Palpi reduced, with one swollen terminal segment and sometimes a small indistinct basal one; antennae stout and strongly compressed** . . . . . 8.
   Palpi normal, with three or four distinct segments . . 11.
8. R_4 ending in R_1; pleurotergites hairy CEROPLATUS Bosc.
   R_4 ending in the costa . . . . . 9.
9. Pleurotergites hairy; only two ocelli, large and close together . . . . . [PLAGOCERATIAS End.].
   Pleurotergites bare; three ocelli . . . . . 10.
10. Hind tibiae and tarsi normal . . CEROTELION Rond.
    Hind tibiae and tarsi swollen (should probably be included in *Cerotelion*) . . . . . *[HETEROPTERNA Skuse].
11. Media with distinct fold-like basal extension; *m-cu* vertical or inwardly oblique . . . . . 12.
    Basal section of media quite indistinguishable; *m-cu* more or less outwardly oblique . . . . . 14.
12. R_4 ending in R_1; three ocelli; pleurotergites and postnotum bare. . . . . APEMON Joh.
    R_4 ending in the costa . . . . . 13.
13. No ocelli; *m-cu* obliterated as usual *[HESPERODES Coq.].
    Three ocelli; *m-cu* short but distinct *[PALAEOPLATYURA Meun.].
14. R_4 ending in R_1; pleurotergites and postnotum bare; each tibia with only a single spur; *An* very short, hardly distinguishable . . . . †[MICRAPEMON gen. n.].
    R_4 ending in the costa . . . . . 15.
15. Pleurotergites hairy; postnotum bare . . . . . 16.
    Pleurotergites bare . . . . . 17.
16. Antennae much flattened, the flagellar segments deeper than long, and generally articulated above the middle; outer spur on the four posterior tibiae present but minute; fine tibial setae all in regular rows; *An* much abbreviated [PROCEROPLATUS gen. n.]‡
    Antennae cylindrical; each tibia with only a single spur; *An* nearly reaching the hind margin . MONOCENTROTA gen. n.
17. Postnotum bare; the minute setae of the tibiae all of even size, evenly spaced and seldom arranged in definitely regular rows; outer spur of posterior tibiae more than half as long as the inner; R_4 ending in the costa not far from the tip of R_1,

† Genotype *Platyura parva* Williston (West Indies).
‡ Including *Platyura pictipennis* Williston from St. Vincent (genotype), *Ceroplatus pulchripennis* White (Ceylon), *Platyura suffusinervis* Brun. (India), and probably *P. graphica* Skuse (Australia).

the third costal division being less than half as long as the fourth; *An* usually reaching the margin
ISONEUROMYIA Brun.

Postnotum bristly; the minute setae of the tibiae arranged in conspicuous longitudinal rows, with bare lines between, running the whole length of the tibiae, the setae in some rows being larger than in others; outer spur of posterior tibiae rarely more than half as long as the inner; R_4 ending in the costa far from the tip of R_1, the third costal division being more than half as long as the fourth; *An* much abbreviated . . . . . PLATYURA Mg.

Genus ASINDULUM Latr.

This genus includes a small number of European and North American species which have an elongate proboscis. Two other genera of the subfamily also have this organ elongate: the Oriental *Rhynchoplatyura*, which is very distinct by the characters given in the key, and the European *Antlemon*, discusssed below. The early stages are hardly known; Winnertz records rearing *A. flavum* from rotten wood.

A. nigrum Latr. A rather large shining black species, with dark tips to the wings, known in Britain only from the neighbourhood of Mildenhall and Lowestoft, Suffolk.

A. flavum Winn. A small ochreous species with the wings unmarked. In my previous paper I mentioned it under the name *A. rostratum* Zett., but I now find that this determination was incorrect; it is certainly Winnertz's *A. flavum* as supposed by Verrall, and is the same as the species so determined by Lundström. *A. rostratum* differs in its larger size, definitely striped thorax, shorter proboscis and hypopygium; I have seen no British examples, while *A. flavum* is common and widely distributed, the adults frequenting umbillifer flowers.

Genus ANTLEMON Hal.

(*Helladipichoria* Becker.)

In distinguishing this genus from *Asindulum* I formerly relied mainly on the very long first segment of the palpi in *H. servula* Walk., but since Lundström has now shown that the genotype (*H. tenuipes* Becker) has very short and reduced palpi, it becomes necessary either to erect a new

genus for *H. servula*, or find some other character on which the genus may be defined, or else unite the genus with *Asindulum*. I propose to adopt the second course, and define the genus on the structure of the labium. In all species of *Asindulum* known to me the labella are very large and fleshy, longer than the rest of the proboscis, and distinctly two-segmented; while in both *H. servula* and *H. tenuipes* the proboscis is formed mainly by the basal part of the labium, the labella being very small. *H. tenuipes* is synonymous with *Antlemon halidayi* Lw., Italian specimens of which, named by Haliday, are in the British Museum. Although the generic name *Antlemon* was not fully defined it was definitely published by Loew, and I therefore use it in place of *Helladepichoria*.

A. servulum (Walk.). A small blackish or dark brown species not uncommon in the New Forest, and occurring also in Cambridgeshire and Sussex and doubtless elsewhere; I have not myself met with it.

Genus CEROPLATUS Bosc.

I am now inclined to accept Rondani's restriction of this genus to the species in which R_4 ends in R_1, as I find that this character is supported by another, the presence of a patch of hairs on the pleurotergites; the two characters are correlated in both the species which I have examined.

C. testaceus Dalm. This has still not been found in Britain outside the New Forest, where it was obtained by the late Dr. D. Sharp and Mr. F. C. Adams. According to some of Dr. Sharp's specimens in the British Museum the larvae spin a definite and fairly dense white silken cocoon; this may perhaps be regarded as affording additional support for the restriction of the genus.

Genus CEROTELION Rond.

All the fairly numerous species of this genus which I have examined agree in having the pleurotergites bare.

C. lineatus (F.). This is apparently much more widely spread in Britain than has been supposed. Although the adult fly is seldom met with, the larvae appear to be quite common; I have reared them on several occasions from bark-growing fungi, especially *Auricularia mesenterica*; they form no definite cocoon, the pupa being merely slung

up in a network of slimy threads, in striking contrast to the definite cocoon of *Ceroplatus testaceus*. Dr. D. Sharp also found the larvae feeding on the fungus causing dry-rot in wood.

C. humeralis (Zett.). Quite distinct from *C. lineatus* by the black thorax as well as the structure of the hypopygium and claws. The only British example known to me is one taken by Mr. H. Charbonnier at Olverston, Somerset, now in the collection of Mr. A. E. J. Carter.

Genus Apemon Joh.

(*Paraplatyura* End.)

This small genus includes only a few North American species and one European, which is obviously closely related to the American forms, differing chiefly in colour. The basal section of the media, though faint, is quite easily traceable, and does not as might be supposed run to the *r-m* fusion but to the middle of the vertical veinlet which looks like *m-cu*. In chaetotaxy and leg-characters the species resemble *Isoneuromyia*, especially the large species of the typical group of that genus.

A. marginata (Mg.). The largest species of the subfamily in Britain. Most of the specimens I have seen are from the New Forest.

Genus Monocentrota nov.

Three ocelli. Antennae nearly cylindrical, 16-segmented. Palpi short, but distinctly 3-segmented. Mouth-parts short. Pleurotergites hairy; postnotum bare. Tibiae with the fine setae rather irregularly arranged at the base, but in rather regular lines for the apical two-thirds or more, all, however, of about equal size. Venation as in *Isoneuromyia*, except that *Sc* is abbreviated and does not reach the costa; *An* almost or quite reaching the margin.

Genotype, *M. lundströmi*, sp. n. (North Europe). Perhaps *Platyura indistincta* Brun. (India) also belongs here, but I have no note as to the condition of the tibial spurs. The total absence of the outer tibial spurs, together with hairy pleurotergites, seems sufficient reason for establishing the new genus.

M. lundströmi sp. n.

A rather small species; length of body or wing about 3·8 mm.

Body all black; a small shoulder-spot, front coxae, all femora and tibiae, and the halteres yellowish. Mesonotum rather shining. Tibial spurs black. Wings with a slight and almost uniform brownish tinge. R_4 ending in the costa about its own length from the tip of R_1. Costa much produced, extending fully half-way from the tip of R_5 to that of M_1. Medio-cubital fusion about half as long as the stem of the median fork. *An* faint at the tip, but traceable to the wing-margin. Hypopygium, see Lundström, 1912 *b*, figs. 3 and 4.

"Nine nicks of Thirlwall," Northumberland, 17 vii. 1923, 1 ♂ (*F.W.E.*). The species has also been reported from Finland by Lundström, who describes and figures a specimen under the name *Platyura brunnipennis* Staeg.; this was a misidentification, since I have found by examination of Staeger's type that his species is synonymous with *P. semirufa* Mg., as suggested by me in 1913.

Genus Isoneuromyia Brun.

This genus was founded by Brunetti for two Indian species which in many respects resemble the European *P. semirufa* Mg. The distinction indicated by Brunetti was that all the veins are equally thick and conspicuous, but this cannot be maintained as a valid distinction from *Platyura*, and I have therefore elsewhere treated *Isoneuromyia* as synonymous with *Platyura*. I would now, however, restrict *Platyura* to the species with a more or less bristly postnotum, and the name *Isoneuromyia* will then become available for those with bare postnotum and pleurotergites. These species nearly all have several other characters in common, as indicated in the diagnosis in the key above, although the great range in the structure of the hypopygium shows that they are not all by any means closely related; in fact they merely form the residue of the old concept of *Platyura* after the exclusion of the well-marked groups *Proceroplatus*, *Monocentrota* and *Platyura* s.str. The genus *Isoneuromyia* as now defined includes all those species in which *An* is prolonged to the hind margin, and also a few others. More than half of the European species of the old *Platyura* belong here, and a similar or greater proportion in other parts of the world.

The ten British species may be distinguished as follows :—

1. *An* not reaching the hind margin . . . . . 2.
   An prolonged to the hind margin . . . . . 4.
2. *An* strong and nearly reaching the hind margin; large species; costa scarcely produced; male claspers with two terminal spines as in *Macrocera* . . . . . *semirufa* Mg.
   An weak and not nearly reaching the hind margin; small species; costa much produced; male claspers with one subterminal spine . . . . . 3.
3. Abdominal tergites 2–4 more or less pale apically *zonata* Zett.
   Abdominal tergites 2–4 pale basally . . *perpusilla* Edw.
4. First segment of front tarsi fully as long as the tibiae; male antennae nearly twice as long as head and thorax together. *macrocera* Edw.
   First segment of front tarsi distinctly shorter than the tibiae; male antennae not longer than the thorax . . . . 5.
5. Wings with an obvious dark tip and a dark cloud on Cu_2; *Sc* ending above base of *Rs* . . . . *biumbrata* Edw.
   Wings clear or with faint apical costal spot . . . . 6.
6. Tip of *Sc* well before base of *Rs*; small species with thorax all yellow; small black bristles adjoining prothoracic spiracle 7.
   Tip of *Sc* above or beyond base of *Rs*; larger species; thorax dark or with dark stripes, at least in the male; no spiracular bristles . . . . . 9.
7. Tip of abdomen black (at least in ♂) . . *nigricauda* Strobl.
   Abdomen all yellow . . . . . 8.
8. R_4 nearly twice its length from tip of R_1; lobes of ninth tergite of ♂ short . . . . . *modesta* Winn.
   R_4 longer and about its own length distant from tip of R_1; lobes of ninth tergite of ♂ long, brush-like beneath *flava* Mcq.
9. Costa reaching half-way from tip of R_5 to that of M_1 *atriceps* Edw.
   Costa reaching only a quarter of the way from tip of R_5 to that of M_1 . . . . . *ochracea* Mg.

With three exceptions I have nothing further to add to my remarks on these species published in 1913.

I. perpusilla (Edw.). Additional localities for this apparently rare but probably overlooked species are: Pampisford, Cambs. (*Jenkinson*), 1 ♂; Letchworth, Herts. (*F.W.E.*), 1 ♂.

I. atriceps (Edw.). A male of this species was taken by Jenkinson at Farringford, I. o. W., 26 vi. 1921.

I. ochracea (Mg.) (*dorsalis* Staeg.). I am now quite convinced that *P. nigriceps* Walk. is the female of *P. dorsalis* Staeg. Prof. J. W. Carr has taken examples of both at the same time and place in Nottinghamshire. According to Meigen's type *P. ochracea* is the same species, though the *P. ochracea* of Dziedzicki's Atlas is different.

Genus Platyura Mg.

As first described by Meigen in 1804 this genus included only *P. marginata* Mg. and *P. fasciata* Mg., besides some species which have since been treated as Sciophilinae. Zetterstedt in 1851 chose *P. fasciata* as the type, though A. Costa later (1857) divided the genus on the character of R_4 and restricted *Platyura* to *P. marginata*, suggesting the name *Orfelia* (without indication of type) for those species in which R_4 ends in the costa. Zetterstedt's selection has been followed by Johannsen, and to avoid confusion I propose to do the same. *P. fasciata* is one of the rather large groups of species with small bristles on the postnotum; pleurotergites bare; the fine tibial setae arranged in very conspicuous longitudinal rows running the whole length of the tibia; R_4 very short and placed far beyond the tip of R_1; *An* much abbreviated. These characters taken together seem to be sufficiently well-marked to distinguish the group generically from the rest of the old genus *Platyura*.

Species of *Platyura* in this restricted sense are fairly numerous in most parts of the world, six being British. These are distinguishable as follows :—

1. Outer spur of posterior tibiae less than a quarter as long as the inner; postnotum with only a few bristles; *An* nearly reaching the margin . . . . . *ruficornis* Zett.
   Outer spur of posterior tibiae from one-third to two-thirds as long as the inner; postnotal bristles more numerous; *An* not nearly reaching the margin . . . . . 2.
2. First segment of front tarsus shorter than the tibia . . 3.
   First segment of front tarsus longer than the tibia; wings generally with preapical dark band . . . . . 4.
3. Thorax all black; whole wing-tip more or less darkened *nemoralis* Mg.
   Thorax mainly or all ochreous . . . . *pallida* Staeg.

4. *Sc* ending above base of *Rs*; thorax of male with three more or less confluent black stripes; abdomen mainly or all black *nigricornis* F.

   Sc ending slightly before base of *Rs*; thorax normally all ochreous (♂♀); abdomen with broad ochreous bands or even all ochreous . . . . . 5.

5. Inner edge of wing-fascia projecting between R_5 and M_{1+2} *fasciata* Mg.

   Inner edge of wing-fascia indented between R_5 and M_{1+2} *discoloria* Mg.

P. ruficornis Zett. (*pectinifera* Edw.). Very distinct from the other British species of the genus. In the much reduced outer tibial spurs, the less conspicuous rows of tibial setae, and the less bristly postnotum it seems to show an approach to *Monocentrota*. Additional locality: Hogley, Oxford (*Hamm*).

P. nemoralis Mg. I have reared this species from a pupa found in a slight cocoon beneath a piece of rotten wood on the ground. It is fairly common everywhere.

P. pallida Staeg. (*aestivalis* Winn.). This synonymy I have established by examination of Staeger's type. Additional locality: Farringford, I. o. W. (*Jenkinson*).

P. nigricornis F. I have seen Fabricius' type in the Copenhagen Museum and find it agrees with our material. No fresh British specimens have been obtained recently.

P. fasciata Mg. I have twice reared this species from larvae found feeding on moulds under loose but wet bark (poplar). The larvae were collected in early autumn and remained half-grown through the winter, pupating the following June, the adults emerging in July.

P. discoloria Mg. (*unicolor* Staeg.). Difficult to distinguish from the last except by the hypopygium; very variable in size and colour. Both species are fairly common.

Subfamily **Lygistorhininae** nov.

I would propose this new group for the reception of the single genus *Lygistorhina* (including *Probolaeus* and *Palaeognoriste*), which has a wide distribution in the tropics, species occurring in South America, West Indies, West Africa, Ceylon, Borneo and Australia. Johannsen has hitherto placed it in the Mycetophilinae, while suggesting that it might more properly be classed with the Sciarinae, but I am convinced that it has little connection with either of these subfamilies, the venational character which I have used for defining it being seemingly of more than generic importance: *Rs* arises from R_1 practically at the base of the wing, below the humeral cross-vein, while practically at the point of origin there are fairly distinct traces of a vein (presumably R_{2+3}) between R_1 and *Rs*. The early stages are unknown.

Subfamily **Sciarinae.**

The position of *Sciara* and related genera has been subject to much discussion, some writers placing them as a subfamily of Mycetophilidae, others treating them as forming a separate family. The characters usually used for defining this family, however, were very indefinite until Enderlein in 1911 called attention to the difference in the form of the eyes between Sciarinae and Mycetophilinae, and struck by the resemblance between the eyes of Sciarinae and Lestremiinae proposed to unite these groups into one family Sciaridae on the bases of the eye structure. Kieffer has, however, pointed out that from the point of view of the life-history this is a most unnatural grouping, the larvae of the Lestremiinae resembling those of other Cecidomyiidae and those of Sciarinae resembling the Mycetophilidae. It may further be noticed that Sciarinae, like Mycetophilidae, always possess well-developed tibial spurs, while the Lestremiinae, like the Cecidomyiinae, have none. This, together with the fact that the larvae of Sciarinae agree with those of almost all other Mycetophilidae in having lost the posterior spiracles, while in all Cecidomyiidae, including Lestremiinae, the full number of spiracles is preserved, clearly shows that the Sciarinae cannot be regarded either as ancestral to or developed from the Lestremiinae, but that on the other hand they may very well represent an offshoot of the Mycetophilidae. Any other conclusion would imply a breach of the generally accepted law of the irreversibility of evolution. I therefore consider that the shape of the eyes is not a character of fundamental importance, and that as the Sciarinae present no other striking and constant points of difference from the Mycetophilinae or Sciophilinae they must be treated as a subfamily of Mycetophilidae. The only alternative to this would be to

raise to separate family rank also the Ditomyiinae, Bolitophilinae, Diadocidiinae, Ceroplatinae and perhaps some of the other groups, which differ from the Mycetophilinae more than do the Sciarinae. This course has indeed been suggested by Malloch, but the whole of these groups appear to form a very natural assemblage, and it seems better to keep them united.

The Sciarinae seem in some respects to be nearest to the Leiini, as defined below, especially to the *Tetragoneura* group of genera, and I have little doubt that these groups have had a common origin. Since, however, the more primitive members of the Sciarinae, such as *Trichosia*, have retained the macrotrichia on the wing-membrane, they cannot have been derived directly from *Tetragoneura* or its near relatives, which have all lost their macrotrichia. With very few exceptions the larvae of Sciarinae are saprophagous in habit, which is another point of contact with the Leiini, and may also be connected with some of their external characteristics, such as small size and black colour.

Practically all Mycetophilidae which have any economic importance belong to this subfamily, the larvae of quite a number of species being recorded as root pests. Unfortunately most of these belong to the most obscure group of the genus Sciara, and are very difficult to identify. I have, however, endeavoured to find names for as many as possible.

The genera of Sciarinae were reviewed by Enderlein in 1911. Although I consider that many of the characters adopted by him for generic subdivision are altogether too trivial, I do not propose in this paper to attempt a revised classification of the subfamily, and therefore merely give a key to British genera, which may be distinguished as follows :—

1. Palpi well developed, with three distinct segments; eyes distinctly hairy; both sexes winged . . . . . 2.
   Palpi reduced, with only one or two small rounded segments; eyes nearly bare . . . . . 5.
2. Branches of median fork wide apart at the base, approximated beyond the middle; segments of male flagellum with very long pubescence and long necks . . ZYGONEURA Mg.
   Branches of median fork parallel or evenly divergent . . 3.
3. The whole wing-membrane rather densely covered with macrotrichia, as well as all the veins . . TRICHOSIA Winn.

   Macrotrichia confined to the tip of the wing (*Sciara thomae* and *S. longiventris*) or absent from the membrane . . 4.
4. Claws toothed; base of cubital fork below or immediately beyond base of stem of median fork; coxae rather long PHORODONTA Coq.
   Claws simple; base of cubital fork before base of stem of median fork; coxae shorter . . . . . SCIARA Mg.
5. Both sexes fully winged; anal angle of wings distinct PLASTOSCIARA Berg.
   Female wings reduced; anal angle of male wing distinct PEYERIMHOFFIA Kuff.
   Female without wings or halteres; anal angle of male wing hardly distinguishable (compare also genus *Pnyxia*, p. 584). EPIDAPUS Hal.

Genus ZYGONEURA Mg.

A rather distinct genus by the irregular median fork and the form of the male antennae, but evidently quite closely related to *Sciara*. There are two European species.

Z. sciarina Mg. (fig. 186). Apparently uncommon in Britain; there is a specimen in the British Museum from Radcliff-on-Trent, Notts. (*F. M. Robinson*), and I have taken it at Letchworth and Baldock, Herts., and Shepreth, Cambs. The specimens from the last-mentioned locality were reared from larvae feeding in the fungus *Auricularia mesenterica*.

Genus TRICHOSIA Winn.

This is really nothing but a *Sciara* which has retained macrotrichia more or less all over the surface of the wing.

Two British species occur.

T. hirtipennis (Zett.) (*splendens* Winn.). A large shining black species with smoky wings; coxae yellow in the male, dark in the female. Male hypopygium very similar to *Sciara longiventris* and *S. trochanterata*, especially in the shape of the claspers and the inwardly-directed spines on the inner side. It is widely distributed but not common.

T. absurda Winn. Differs from the above chiefly in the shorter antennae; also the thorax is less shining. There is a female in the British Museum from the New Forest (*Adams*).

Genus Phorodonta Coq.

This genus was founded by Rubsaamen (as *Odontonyx*) for species of *Sciara* with toothed claws. It is very doubtful if it should be maintained as distinct from *Sciara*. I have found teeth on the claws of one of our British species and therefore refer it here. Enderlein's genus *Aniarella*, founded on a South American species, is almost certainly the same as *Phorodonta*, since although the claws are not described, the venation is the same as in *P. flavipes*.

P. flavipes (Mg.) (fig. 187). This differs from the other British species with setose media and cubitus in the largely or entirely ochreous thorax and the longer and more slender legs. The coxae are longer than in other *Sciarinae*, rendering the distinction in this respect between Sciarinae and Mycetophilinae uncertain. The species is rather common in woods.

Genus Sciara Mg.

At the present time it is impossible to attempt a complete review of the British species of this large genus. This can only be done after the European species have been more fully studied and the types of Winnertz and Grzegorzek re-examined. The genus is divided into two main groups, according to the presence or absence of setae (macrotrichia) on the branches of the media and cubitus. The first group contains only a few well-marked forms, the majority of the smaller and more obscure species falling into the second or bare-veined group. I do not propose to follow Pettey in considering the second group as a distinct genus (*Neosciara*), as the division, though very useful, does not appear to represent a natural cleavage, each of the two groups containing diverse elements.

Some of the species have a wide distribution, several being already known to be common to Europe and North America. Probably some will be found to be more or less cosmopolitan. In the notes below I have omitted a number of species recorded by earlier authors, the identity of which is uncertain.

Group I.

Branches of media and cubitus bearing macrotrichia.

A useful preliminary note by Lengersdorf on Winnertz's collection of *Sciara* indicates those of his species which fall

in this group, and by examination of the collections of Meigen, Staeger and Zetterstedt I have determined which of the older species are also to the placed here. It is therefore possible to determine the British species of this group; those I have found may be distinguished by the following key :—

1. Tip of wing with fairly numerous macrotrichia on the membrane . . . . . 2.
   No macrotrichia on wing-membrane . . . . . 3.
2. Very large, stoutly-built species; palpi and halteres black; abdominal membrane bright yellow in life. . *thomae* L.
   Moderately large, slender species; palpi and halteres yellow; abdominal membrane dark. . . *longiventris* Zett.
3. Cubital fork sessile. . . . . 4.
   Cubital fork with at least a short stalk . . . . . 5.
4. Hypopygium moderate, black; R_1 ending beyond base of median fork . . . . . *trochanterata* Zett.
   Hypopygium large, red; R_1 ending just before base of median fork. . . . . *ruficauda* Mg.
5. M_1 distinct at base; abdomen rather long and slender. . 6.
   M_1 faint or interrupted at base; abdomen short and stout; brightly shining black. . . . . *glabra* Mg.
6. Abdominal pubescence black *pilosa* Staeg.; *subpilosa* sp. n.; *subspinulosa* sp. n.; *scotica* sp. n.
   Abdominal pubescence pale . . . . . 7.
7. R_1 ending beyond base of median fork . . *hispida* Winn.
   R_1 ending just before base of median fork *autumnalis* Winn.

S. thomae (L.). A common summer species in most districts, frequently found on umbellifer flowers. Together with *S. longiventris* it differs from all the other members of the genus in the distinctly hairy wing-tip, thus occupying an intermediate position between *Sciara* and *Trichosia*. The large swollen male claspers are similar to those of *S. carbonaria*, and these doubtless are a better indication of relationship than the macrotrichia.

S. longiventris Zett. (fig. 6). Not common, but widely distributed. British Museum specimens are from Sutton Coldfield (*Bradley*); Leeds (*Cheetham*); Arden Hall, Cheshire, bred from rotten wood (*Britten*); Grange, N. Lancs. (*F.W.E.*). Walker's *S. caudata* is very likely this species, but his type has lost the tips of its wings, and the identity is therefore uncertain.

S. trochanterata Zett. The structure of the clasper (fig. 7) is extremely similar to that of *S. longiventris* Zett., showing that these two must be very closely related and the presence or absence of macrotrichia at the tip of the wing a character of little importance. I have taken specimens (agreeing well with Zetterstedt's type) at Letchworth and Knebworth, Herts., and at Brodick, Arran; others are in the British Museum from the New Forest (*Adams*), and in the Cambridge Museum from Nethy Bridge (*Sharp*).

S. ruficauda Mg. A male of this very distinct species is in the Cambridge Museum, taken by the late Dr. D. Sharp in the New Forest, ix. 1904.

S. pilosa Staeg. (*elegans* Winn.). This is a common species, especially in woods, but it seems very variable, unless there can be a number of nearly allied species. The hypopygium of a specimen agreeing with Staeger's type is shown in fig. 9. Such specimens normally have R_1 extending well beyond the base of the median fork, but sometimes this vein ends above or even slightly before the base of the fork. The length of the stem of the cubital fork is variable, and so is the colour of the halteres, which though usually black are sometimes yellow, such specimens not showing any obvious difference in hypopygial structure. The clasper also varies slightly in shape and length, but not in conformity with the other characters just mentioned.

S. subpilosa sp. n. I suggest this name for a species which is externally closely similar to *S. pilosa*, but differs in the form of the hypopygium (fig. 10), which has a fringe of hair at the base beneath, and longer and stouter claspers.

Type in the British Museum from Grange, N. Lancs., vii. 1923; other specimens from Holker Moss, N. Lancs.; Ffrith, N. Wales,; and Stoke Gabriel, S. Devon (*F.W.E.*).

S. subspinulosa sp. n. Closely similar to *S. pilosa*, but male claspers (fig. 11) longer and spinulose at the tip, the hypopygium being otherwise similar.

Type in the British Museum from Sannox, Arran, 26 v. 1919; a second male from Brodick, Arran, 22–25 v. 1919 (*F.W.E.*).

S. scotica sp. n. Closely resembles *S. pilosa*, but differs conspicuously in the shape of the male claspers (fig. 12), which are large and much swollen towards the base.

Type and one other male in the British Museum from Brodick, Arran, 22–25 v. 1919 (*F.W.E.*).

S. hispida Winn. According to Lengersdorf *S. hispida* Winn. and *S. bilineata* Staeg. (of Winnertz's collection) are synonymous. I have, however, examined Staeger's type of *S. bilineata* and believe it to be the female of his *S. scutellata*, and not the species described by Winnertz. The scutellum is dark above, but the underside and the base of the postnotum are reddish, as in the male *scutellata*, while in Winnertz's species the thorax is entirely black. The latter, which seems fairly common in Britain, may therefore be known as *S. hispida* Winn. Two forms occur, one with all the coxae clear yellowish, the other with the four posterior coxae blackish (in both sexes). The hypopygium is constructed almost as in *S. pilosa*, the claspers being somewhat longer (fig. 8).

I have reared this species (the form with black coxae) on several occasions from old nests of thrushes and blackbirds, a habitat where it has also been found by Mr. A. H. Hamm. It is not exclusively a nest-breeder, however, as I have also obtained it from moss growing at the roots of beech trees.

S. glabra Mg. I have taken a few specimens of this very distinct species at Letchworth, and the British Museum also possesses it from Suffolk (*Morley*) and Lochinver, Sutherland (*Yerbury*). Male clasper, fig. 13.

S. autumnalis Winn. This is apparently common, as I have taken it in several localities in Herts. and Beds. and also in Arran, and on Lake Windermere. All the specimens have the thorax blackish, the abdomen blackish-brown. Male clasper, fig. 14.

Group II.

Branches of media and cubitus base.

All the very numerous small obscure species of the genus are included in this second group, but there are also a fair number of forms which are well distinguished in one way or another. I give notes below on those few which I have been able to identify up to the present, with some probability of correct determination. In the first seven species mentioned R_1 ends beyond, above, or scarcely before the base of the median fork.

S. carbonaria Mg. A shining black species which might be confused with *S. thomae*, though the males at least are usually much smaller. It is very distinct on

account of the long R_1, which ends much beyond the base of the median fork, and the enormously swollen claspers of the male. Abundant everywhere, especially in spring.

S. bicolor Mg. (*rufiventris* Macq.). Not common, though apparently widely distributed; some fresh records are New Forest (*Adams*); Whernside and Bishopdale (*Cheetham*). It is a large species, easily known from other British forms by the mainly red abdomen. There is a sexual difference in the colour of the halteres, these being yellow in the male, black in the female.

S. annulata (Mg.) Winn. Specimens which seem to agree fairly well with Winnertz's description of this species are in the British Museum from Harlesden, Mx. (*Austen*); New Forest (*Adams*); Oxford (*Hamm*); Felden, Herts. (*Piffard*); Letchworth, Herts. and Wicken, Cambs. (*F.W.E.*); Shoeburyness (*E. R. Speyer*). The specimens from the last-named locality were reared from larvae said to be damaging cucumbers.

S. brunnipes Mg. This is evidently closely allied to the last, but the ground-colour of the thorax is greyer, making the dark stripes more conspicuous, the female wings are lighter, and there is a slight difference in the hypopygium. The specimens in the British Museum are from the New Forest (*Adams*); Newmarket (*Verrall*); Knebworth (*F.W.E.*).

S. confinis Winn. If Verrall and I have identified this species correctly it is allied to the last two but much blacker, and therefore the thorax is not distinctly striped; the hypopygium has a pair of longish bristles close together at the base beneath, and claspers as shown in fig. 16. I have taken it abundantly at Knebworth, Herts., in woods at the beginning of May. Two or three of the numerous specimens examined showed more or less distinct traces of the vein R_4 in one or both wings, placed much as in Winnertz's genus *Cratyna*. As this genus is only known from very few examples, it seems possible that it may have been described from similar abnormal specimens of other species of *Sciara*.

S. semialata Edw. Since I described this species (1913 *b*) I have seen no further material. It is exceptionally interesting on account of the remarkable sexual dimorphism in the wings, those of the male being reduced in size and venation.

S. flavicauda Zett. Quite a distinct species on account

of the large, swollen, yellowish male claspers (fig. 15). I have taken numerous examples at Letchworth and Radwell, Herts., and have also seen specimens from Roe Wood, Winkburn, Notts. (*Carr*), and Austwick (*Cheetham*).

S. insignis Winn. A male from Crag Wood, Yorks., 18 vi. 1920 (*Cheetham*); another from Ivybridge, S. Devon, 18 v. 1893 (*Yerbury*); and a female from Baldock, Herts., vi. 1918 (*F.W.E.*) apparently agree with Winnertz's description of this large and fairly distinct species.

S. hyalipennis (Mg.) Winn. A distinct species by the mainly dull, somewhat striped thorax, the glassy wings, and the venation, R_5 being unusually arcuate and the costa produced less than half-way from R_5 to M_1. A male and female in the British Museum were taken *in cop.* by Mr. H. Britten at Fallowfield, Manchester, 26 ix. 1920, and I have taken specimens at Cardington, Beds., and Shelford, Cambs. Male claspers, fig. 17.

S. inflata Winn. I am indebted to Herr Lengersdorf for the determination of this species, which resembles *S. hyalipennis*, the venation being practically the same, but it is quite distinct not only by the more shining and quite unstriped thorax but also by the structure of the male claspers (fig. 18), which have a peculiar excavation on one side towards the tip. I took a number of males at Knebworth, Herts., 7–9 ix. 1923, hovering in a small swarm in the late afternoon sun, a most unusual habit for a member of this family, which I have not observed in any other. I have also taken it at Shefford, Beds., and Welwyn, Herts.

S. quinquelineta Macq. A common species, readily known by the venation (base of *Rs* far beyond middle of R_1, etc.) and the brightly shining black thorax with conspicuous lines of grey hair. As in the last two the costa extends only about half-way from the tip of *Rs* to that of M_1.

S. pectoralis Staeg. (*tritici* Coq.). This is quite distinct by the colour of the pleurae, which are yellowish in the middle, the lower part of the sternopleura being dark brown; the mesonotum is more or less reddish-brown, especially in the middle. It has been reported from several places as causing great damage to the roots of seedlings in greenhouses (see Edwards and Williams, 1916). I took a specimen in the orchid house of the botanic gardens at Edgbaston, Birmingham, 13 ix. 1923. The species

described by Winnertz as *S. pectoralis* is apparently different, as he mentions that the breast is yellow.

S. albinervis Winn. A small black species with whitish wings, the costa and radius, however, being conspicuously black. I found it abundant at Llandwrog, Carnarvon, 9 vii. 1914.

S. (?) nitidicollis Mg. (*pauciseta* Felt.). If this is correctly identified it is an abundant species and breeds in a variety of situations, sometimes causing damage or perhaps accentuating damage caused by other pests. The British Museum contains specimens reared from fungi (*Polystictus versicolor*, three separate lots); from roots of rhubarb; from potatoes attacked by scab; and from narcissus bulbs attacked by *Eumerus strigatus*. The hypopygium is identical in all these, and constructed as in the American *S. pauciseta* Felt. Specimens structurally identical, but with yellow halteres instead of black, have been received from Mr. E. R. Speyer, who stated that they caused serious damage to mushrooms at Leigh nurseries, Wimborne, Dorset.

S. agraria Felt. This species was submitted to me for identification in 1921 by Mr. C. B. Symes, of the Imperial College of Science, who stated that it caused great damage to mushroom beds. At the time I provisionally named it *S. praecox* Mg., but it appears to be the same as the American species which Felt has described as damaging mushrooms. Doubtless some earlier European name will be found to apply to it. Mr. Symes has given an account of it under the name *S. praecox*.

S. praecox Mg. (*macilenta* Winn.; *occulta* Winn.). Probably abundant. Some specimens apparently of this species received from Mr. E. R. Speyer from Cheshunt were said to have been causing damage to cucumber plants in pots; these differ from *S. agraria* in having no ventral patch of hairs on the male hypopygium.

S. (?) varians Joh. Large numbers of a small *Sciara* were reared from potatoes at Kirton, Lincs., by Mr. H. W. Miles in December 1924. These agree almost entirely with Johannsen's *S. varians*, except for a slight and perhaps negligible difference in the claspers. The hypopygium is practically the same as in *S. praecox* as determined above, but the halteres are yellow instead of black.

S. pallida Walk. (*compressa* Walk.). This small species does not appear to be described in Winnertz's monograph, unless it can be the one he calls *pectoralis* Staeg. It is rather distinct by the reddish-brown mesonotum and entirely yellowish pleurae, contrasting with the blackish head. In fresh specimens the abdomen is dark brown except for the genitalia, and in the female the last few segments. Palpi clear yellow; halteres with black knob; legs yellow. Branches of *M* and *Cu* bare; R_1 much shorter than *R*, and ending far before the base of the median fork; costa reaching about three-fourths of the distance from *Rs* to M_1; tip of *Rs* far before tip of M_2. Claspers subglobular. So far as I can see Walker's types of *S. pallida* and *S. compressa* are identical. I have taken specimens at Letchworth and Baldock, Herts.

S. tilicola Lw. There are specimens of both sexes of this species in the British Museum reared from lime galls at Acton by the late C. O. Waterhouse.

S. longispina Pettey (sp. No. 27, Johannsen). I took two males agreeing exactly with Johannsen's description and figures at Corriegills, Arran, 2–4 vi. 1919. The subglobular claspers with one very long and stout subapical spine are remarkable, and there can be no doubt of the specific identity with the North American form. The species does not appear to be described in Winnertz's monograph.

S. tricuspidata Winn. (fig. 189). I took two males which agree with Winnertz's description on a fallen log covered with *Stereum* and other fungi at Bell Heath, Birmingham, 13 ix. 1922. It is a very minute species with rather a distinct venation. The palpi are extremely short, with small round segments, approaching the genus *Plastosciara*, though as they have three distinct segments the species must presumably remain in *Sciara*.

Genus Plastosciara Berg.

This small genus includes four described species, all of which have been found in Britain. Probably a few other European species described as members of the genus *Sciara* will eventually be found to belong here, and some of the older names may possibly be found to apply to some of our species.

The genus is chiefly distinguished from *Sciara* by the reduced maxillary palpi, which consist of two very short

segments, and also by the almost bare eyes. Both sexes are fully winged, whereas in the other European Sciarine genera with reduced palpi the wings of the female are vestigial or absent. None of the species possess setae on the media or cubitus.

Two slightly different types of structure are represented within the genus: in *P. pictiventris* Kieff. and *P. pernitida* Edw., R_1 ends almost opposite the base of the median fork, and the female abdomen is very long and tapering, with several of the tergites longitudinally divided into two; while in the other two species R_1 ends well before the base of the median fork, and the female abdomen is less elongate, with at least the first five tergites undivided. These two species are also of smaller size.

P. pictiventris (Kieff.). I have taken females which are probably this species in an oak wood at Knebworth and both sexes on a fence at Radwell, Herts. The thorax is blackish, not light brown as stated by Kieffer, but he probably described from immature specimens. The abdominal markings which he described are due to the dark chitinised areas appearing conspicuous on the yellowish membrane; tergites 2–5 in the female are all divided longitudinally, the two halves of tergite 2 being larger than those of the following segments. The mesonotum is only moderately shining, the median hair-stripe indicated only by a few very minute hairs in a single row. The male clasper has about six strong spines, much as in Johannsen's fig. 119. Reared by Kieffer from rotten oak wood.

P. pernitida Edw. (1915 *a*). I still only know this species from the original series from Stanmore Common, Middlesex. It differs from *P. pictiventris* in the brightly shining thorax; the median hair-stripe of the mesonotum is distinct and composed of a double or triple row of hairs; and in the female abdomen tergites 1–3 are entire, and the halves of tergites 4 and 5 broader than in *P. pictiventris*. The male clasper has no definite spines. Reared by Blair from rotten wood; gregarious. Possibly the same as *Sciara lignicola* Winn.

P. keilini Edw. (1915 *b*). This also is known only from the original series, which was from Barton Mills, near Mildenhall. Wing-length, 1·6–2·5 mm.; scutellum with several marginal bristles; male clasper truncate at tip and less than twice as long as broad. Costa extending about

four-fifths of the distance between the tips of R_5 and M_1. Reared by W. R. Thompson from rotten wood; gregarious.

P. perniciosa Edw. (1922) (fig. 190). This appears to be a common greenhouse pest; first noted from Worthing in 1922, it has since been found at Hoddesdon and elsewhere. It resembles *P. keilini*, but is smaller; wing-length, 1·2–1·5 mm.; scutellum with only two distinct marginal bristles; male clasper tapering and over twice as long as broad. Costa almost as long as in *P. keilini*. Larvae destructive to cucumbers, feeding in the roots and stems.

Genus Peyerimhoffia Kieff.

A very little-known genus, based chiefly on the reduced palpi and female wings; it may possibly be found identical with Winnertz's *Bradysia*. So far as I know only a very few specimens, all of the female sex, have been obtained in Britain which seem referable to this genus.

P. (?) brevipennis (Walk.). Walker's type of *Sciara brevipennis* has as far as I can see without mounting only one or two minute segments in the palpi. The wings, which are not quite as long as the thorax, and have a fairly well-preserved venation, agree rather closely with Winnertz's figure of *Bradysia heydeni*, which may perhaps be the same species.

P. brachyptera Kieff. Mr. Donisthorpe has recorded (1913) a female taken under a stone with ants on Lundy Island. The specimen was unfortunately lost by the writer before being compared with Walker's *P. brevipennis*, but it appeared larger and with shorter wings. According to Kieffer's description the female wings show only a single vein; the male has fully developed wings with normal *Sciara* venation.

Genus Epidapus Hal.

This genus was founded by Haliday for a small female Sciarid without wings or halteres. Since Haliday's time a number of such species have come to light, belonging to two or three distinct genera, and the identification of the original *Epidapus* therefore becomes a matter of some uncertainty. According to the figures in Walker's "Insecta Britannica," *E. venaticus* has round eyes without a dorsal bridge, and minute one-segmented palpi. If this figure were accurate we might assume identity of *E. venaticus*

with *Pnyxia*, although in Walker's figures the antennae and legs are much longer than in *P. scabiei*. But it is quite likely that the artist overlooked the dorsal bridge of the eyes, which in some of these small forms is difficult to see, especially in side view. If this be assumed there is no reason for disputing Schmitz's (1918) identification of *Epidapus* with his *Pholeosciara* and with Winnertz's *Corynoptera*.

The genus is fairly well distinguished in the male sex, differing from *Pnyxia* in the venation and eye-structure, and from *Plastosciara* and (probably) *Peyerimhoffia* in the shape of the wings, narrow at the base with only the faintest suggestion of an anal angle. Kieffer's genus *Mycosciara* is possibly identical.

E. atomarius (Deg.) (according to Schmitz = *E. venaticus* Hal. = *C. pumila* Winn.). I took a male which seems to be this species at Gidleigh, S. Devon, and two others at Dart Head, vii. 1920. Walker's *Sciara gracilis* is identical. A female in the British Museum found under a stone at Lawrence Weston, Glos., 17 iv. 1924 (*J. V. Pearman*) may possibly belong to this species, but it is certainly different from Schmitz's *Pholeosciara melina*, which he regards as the female of *E. atomarius*, since the antennae are much less distinctly verticillate and apparently devoid of the hyaline appendages at the tips of the segments; the specimen, however, agrees fairly well with Walker's figure, apart from the bridged eyes. Mr. H. Donisthorpe has recorded a female taken with *Formica fusca* at Box Hill, as *Peyerimhoffia subterranea*; this was due to a mistaken identification on my part, the specimen being probably an *Epidapus*.

E. gracilis (Winn.). I have occasionally found males of this species on windows at Letchworth, and have also reared one from the fungus *Hypholoma velutinum* from Tewin, Herts. It differs from the above in the structure of the antennae, the flagellar segments being longer (over three times as long as broad) and with shorter necks (only a quarter as long as the segment itself), also in venation. The name is preoccupied by Walker's *S. gracilis*.

Subfamily **Manotinae** nov.

The two genera *Allactoneura* and *Manota* differ in common from all Sciophilinae and Mycetophilinae in the peculiar

shape of the head (reminding one of the Brachycera and Cyclorrhapha) and the absence of prothoracic bristles. In spite of great differences between them I believe they are more or less related, and propose to include them in a new subfamily. The early stages are unknown.

Allactoneura has the thorax and abdomen clothed with scales; tibiae with strong bristles; fine tibial setae and microtrichia of wings irregular; *Sc* long, ending in costa; *Rs* angled, a long spur reaching back from the angle; *r-m* with a right-angled bend; *M* complete. About three species, Seychelles to Queensland. (Synonym, *Scottella* End.)

Manota has no scales; tibiae with weak bristles; fine tibial setae and microtrichia of wings in fairly regular lines; *Sc* short; *Rs* without spur; *r-m* long and nearly horizontal; *M* incomplete, represented by two free branches on the margin. About five or six species, S. America, West Indies, S. Europe, Seychelles, Ceylon, New Zealand. (Synonym, *Aphanizophleps* End.)

Subfamily **Sciophilinae.**

This subfamily was formerly distinguished from Mycetophilinae by the presence of a short vein R_4 forming a small closed radial cell, but already in 1913 I pointed out that this was an unsatisfactory distinction, and mentioned several instances of abnormal individuals of Sciophilinae in which this vein was lacking. Subsequent experience has entirely confirmed the view that the presence or absence of R_4 is an unimportant character, as a number of fresh instances of its occasional lack have been noted. The variation has now been observed in the following species :—

Mycomyia sp. n. (An African specimen in the British Museum.)
Diomonus pulcher Joh.
Polylepta undulata Winn.
P. leptogaster Winn.
Monoclona elegantula Joh.
Sciophila lutea Macq.
S. hirta Mg.
S. nigroclavata Strobl.
Empalia vitripennis Mg. Frequent occurrence.
Tetragoneura sylvatica Curt.

In addition to these accidental cases there are several

pairs of genera which are quite obviously closely related, but have hitherto been placed in different subfamilies on account of the lack of R_4 in one of them. Such are *Monoclona* and *Acnemia*; *Polylepta* and *Anaclinia*; *Empalia* and *Proboletina*; *Sciophila* and *Megalopelma*; *Diomonus* and *Leptomorphus*; *Tetragoneura* and *Parastemma*. In view of these facts it appears necessary to disregard the vein R_4 entirely even for purposes of generic differentiation, and to base the definition of the subfamilies Sciophilinae and Mycetophilinae, if both are retained, on other features of their organisation. The best character for this purpose seems to be one pointed out by Johannsen: the arrangement of the microtrichia on the wing-membrane. In all the members of the old subfamily Sciophilinae, as well as in Johannsen's first section of Mycetophilinae, the microtrichia are irregularly arranged, showing no trace of a linear disposition. I propose to unite these two groups on the basis of this character, and if we add some other features which are common to most of the genera the subfamily Sciophilinae may be defined thus:—

Ocelli generally remote from the eye-margins. *Sc* nearly always long. Fine tibial setae irregularly arranged (except in *Mycomyia* and *Neoempheria*). Wing-membrane frequently with macrotrichia; the microtrichia never arranged in definite lines. Larvae feeding externally on the spores of fungi; sometimes under bark or on liverworts; usually spinning a slimy web or tube of mucilage.

The subfamily may be divided into four tribes, which in spite of a few intergrading forms are fairly readily distinguishable:

A. Mycomyiini. Ocelli two, placed close together. Fine tibial setae arranged in regular longitudinal rows. Empodia absent. Wings without macrotrichia on membrane. *Sc* reaching at least to base of *Rs*. R_1 long, several times as long as *r-m*, which is oblique.

B. Sciophilini. Ocelli three. Fine tibial setae irregularly arranged. Empodia nearly always present. Postnotum generally with hairs or bristles at the tip. Wings with macrotrichia on the membrane, often covering the wing (microtrichia may be absent). *Sc* nearly always long. R_1 several times as long as *r-m*, which is oblique. Humeral cross-vein generally long and oblique. Seventh abdominal segment usually large and visible externally.

C. Gnoristini. Ocelli three. Fine tibial setae irregularly arranged. Empodia present. Postnotum bare. Wings without macrotrichia on the membrane. *Sc* always long. R_1 several times as long as *r-m*, which is more or less oblique or vertical. Median fork always much longer than its stem. Humeral cross-vein short and nearly vertical. Seventh abdominal segment usually small and retracted, invisible externally.

D. Leiini. Ocelli three, the laterals sometimes close to the eye-margins. Fine tibial setae irregularly arranged. Empodia present. Postnotum bare. Wings without macrotrichia on the membrane. *Sc* long or short. R_1 short, usually little if any longer than *r-m* which is long and nearly horizontal; in *Rondaniella* R_1 is rather long, but the median fork is hardly longer than its stem. Seventh abdominal segment small and retracted.

Tribe *Mycomyiini.*

This tribe includes only the genera *Mycomyia* and *Neoempheria*. The latter was treated by Johannsen in 1908 as merely a subgenus of *Mycomyia*, but has since been restored by him to full generic rank, perhaps with good reason. The differences between the two are as follows:—

Costa ending rather abruptly at the tip of R_5, which usually reaches the extreme tip of the wing; wings without conspicuous markings; no fold between R_5 and M_{1+2}; eyes slightly emarginate above antennae. . . Mycomyia Rond.

Costa usually continued at least a short distance beyond the tip of R_5, which does not quite reach the wing-tip; wings usually with conspicuous markings; usually a more or less distinct, often vein-like fold between R_5 and M_{1+2}; eyes not or scarcely emarginate. . . . . Neoempheria O.-S.

Both genera are well represented in species almost throughout the world.

Genus Mycomyia Rond.

A rather large genus, of which I have now been able to recognise 21 British species. These may be classed in two groups, according to the presence or absence of a spur on the middle coxae of the male. This spur when present projects forwards between the front coxae, and is usually long enough to reach almost to the mouth; the coxae of the female are in all cases simple. Most of the species are distinguishable by characters of colour, venation or

chaetotaxy, but in a few cases the only obvious differences are in the male hypopygium. The adults rest with their wings divaricate, somewhat as in the genus *Macrocera*.

The larvae of those species which I have reared are rather shorter and stouter than those of the *Sciophilini*; they spin slimy webs on the under surfaces of bark-growing fungi or under bark. No definite cocoon is formed, the short, stout pupa being merely slung up by a few threads; for some obscure reason its removal from these threads is usually fatal.

The following is an attempt at a tabular arrangement of the British species :—

1. Male with mid-coxal spur; abdominal tergites in both sexes more or less distinctly pale on the posterior margins . 2.
   Male without mid-coxal spur . . . . . 12.
2. *Sc* ending distinctly in the costa, or at least some trace of Sc_1 normally present . . . . . 3.
   Sc curving into R_1 usually without any trace of Sc_1; base of cubital fork below or immediately beyond base of stem of median fork; scutellum with four bristles . . 11.
3. Base of cubital fork below or before base of stem of median fork; postnotum bare . . . . . 4.
   Base of cubital fork well beyond base of stem of median fork; postnotum with 1–3 bristles at the tip; scutellum with two bristles, or with the outer pair smaller than the inner 10.
4. Scutellum with four bristles . . . . . 5.
   Scutellum with two bristles . . . . . 9.
5. A dark cloud over the small cell; apex of wing also somewhat darkened. . . . . *marginata* Mg.
   The small cell quite clear . . . . . 6.
6. Small species; thorax of male all blackish and unusually bristly . . . . . *exigua* Winn.
   Large species; ground-colour of thorax ochreous . . 7.
7. Hind coxae practically clear ochreous . . *winnertzi* Dz.
   Hind coxae with a fairly distinct dark spot on the outer side . . . . . 8.
8. *Sc* distinctly reaching costa . . . *wankowiczii* Dz.
   Sc often not quite reaching costa . . *hyalinata* Mg.
9. *Sc* ending in the costa . . . . *cinerascens* Zett.
   Sc ending in R_1, usually with a spur of Sc_1 present. *trivittata* Zett.
10. Male hypopygium with two or three very long lateral bristles . . . . . *tenuis* Walk.
    Male hypopygium without such bristles . . *duplicata* nom.n.

11. Thorax all yellow; coxal spur long . . *flavicollis* Zett.
    Thorax with more or less confluent dark stripes; coxal spur short . . . . . *incisurata* Zett.
12. *Sc* ending in the costa (Sc_1 present) . . . . 13.
    Sc ending in R_1 (Sc_1 absent); base of cubital fork well beyond base of stem of median . . . . 18.
13. Abdominal tergites with basal yellow bands . . . 14.
    Abdominal tergites with the apical margins pale, or abdomen all dark . . . . . 15.
14. Base of cubital fork below or just beyond base of stem of median fork; stem of median fork almost as long as the upper branch . . . . . *circumdata* Staeg.
    Base of cubital fork distinctly before base of stem of median; stem of median fork barely half as long as the upper branch . . . . . *wrzesniowskii* Dz.
15. Postnotum with a few bristles; mesonotum dull greyish; front coxae of male with a dense brush-like patch of fine setae at the tip towards the inner side . . *ornata* Mg.
    Postnotum bare; mesonotum somewhat shining black; front coxae of male without brush . . . . . 16.
16. Abdominal tergites pale apically . . . . . 17.
    Abdomen all black . . . . *melanoceras* Edw.
17. Scutellum and pleurae black . . . *digitifera* sp. n.
    Scutellum yellow, pleurae largely so . . *parva* Dz.
18. Abdominal tergites pale basally . . . *fimbriata* Mg.
    Abdominal tergites pale apically, or all dark . . . 19.
19. Thorax all black (normally) . . . *maura* Walk.
    Thorax largely yellow, in ♀ often entirely so . . . 20.
20. Brushes of male hypopygium rather dense, the hairs all simple . . . . . *flava* Stan.
    Brushes of male hypopygium less dense, the apical hairs flattened and twisted . . . . *trilineata* Zett.

M. marginata (Mg.) (*punctata* Mg.) (fig. 192). A common species, distinguishable from all the other members of the genus in Britain by the dark spot over the small cell. The larvae will apparently feed on any bark-growing fungus; I have obtained them on *Poria vaporaria*, *Polystictus versicolor*, *Phlebia merismoides*, *Auricularia mesenterica*, and *Stereum hirsutum*.

M. exigua (Winn.). Some British records are : Lochinver and Loch Assynt, Sutherland (*Yerbury*); Arran (*F.W.E.*); Knebworth, Herts. (*F.W.E.*).

M. winnertzi (Dz.). Common and widely distributed,

but not very easily separable from the two following except on hypopygial characters.

M. wankowiczii (Dz.). This is the largest British species of the genus and is fairly common and widely distributed. I have reared specimens from larvae feeding on a whitish fungus encrusting the bark of a fallen branch.

M. hyalinata (Mg.) Dz. In this species the extreme tip of Sc_1 is usually lacking, and such specimens can be separated fairly readily from the allied *M. winnertzi* and *M. wankowiczii*, but the condition is not constant, and the only reliable criterion is in the male hypopygium. I have seen it from the following British localities: Brodick, Arran; Holker Moss, Lancs.; Sherwood Forest (*F.W.E.*); Austwick, Yorks. (*Cheetham*); Tunbridge Wells (*Nurse*); Leigh Woods, Bristol (*Audcent*).

M. cinerascens (Zett.). This appears to differ constantly from the last five in having only two strong bristles on the scutellum instead of four. It is common all over the country. I have reared it from larvae feeding on *Stereum* sp.

M. trivittata (Zett.) (*marginata* Dz.). Dziedzicki's name being preoccupied, Lundström has proposed to replace it by *M. trivittata* Zett., which may be the same species. It is closely allied to *M. cinerascens*, but smaller, Sc_1 more or less incomplete or absent, and with a slight difference in the male hypopygium. The only British specimens I have seen are three males from Aviemore (*J. J. F. X. King*). In these the hypopygium does not quite agree with Dziedzicki's figure, but I believe they must be correctly named.

M. tenuis (Walk.) (*apicalis* Winn.; *radoskowskii* Dz.). A common and widely distributed species. As in the last two, the scutellum usually has only two bristles, but occasionally an outer pair is also present, though smaller than the inner pair. The presence of postnotal bristles and the position of the cubital fork seem to be constant, and will suffice to distinguish the species from all those mentioned above, apart from the very characteristic hypopygium.

M. duplicata nom. n. (*trivittata* Dz.). Dziedzicki's name being preoccupied, a new one is necessary, since Lundström has identified *M. trivittata* Zett. with *M. marginata* Dz. The species appears to be indistinguishable by external characters from *M. tenuis*; all those I have examined

have only two scutellar bristles. British localities are: Brockenhurst (*Collin*); Sherwood Forest (*F.W.E.*); Chapelle-dale, Cheshire (*Britten*).

M. flavicollis (Zett.). A very distinct species by the combination of characters mentioned in the key, though it might easily be confused with *M. trilineata* Zett. Apparently rare in Britain; I have only seen it from Bonchurch, I. o. W. (*Verrall*) and Baldock, Herts. (*F.W.E.*).

M. incisurata (Zett.) (? *annulata* Mg.). Easily separated in the male sex by the short coxal spur, combined with the abbreviated *Sc*. In most districts it is the commonest species of the genus.

M. circumdata (Staeg.) (*lucorum* Winn.). A very distinct species on account of the basally situated yellow bands on the abdominal segments, only two other British species being thus coloured, both of which differ in venation. Two strikingly different varieties of the female occur: in one the mesonotum has three blackish stripes, the middle one divided by a narrow pale line, on a yellowish ground; while in the other the colours are reversed, the black markings being replaced by yellowish, on the yellowish ground-colour, at least on the posterior half, by black. Both forms are found together with normal males, and there can be little doubt they all belong to the one species. Additional British localities for this species are: Brodick, Arran; Wyre and Sherwood Forests (*F.W.E.*).

M. wrzesniowksii (Dz.). This species, if I have identified it correctly,* resembles *M. circumdata* (black-striped form) in coloration, but differs in venation, the cubital fork being longer, its base distinctly before the base of the stem of the median fork; the median fork much longer; and R_5 ending distinctly above the wing tip and meeting the costa at a more acute angle than in *M. circumdata* and most other species of the genus. It is with some hesitation that I introduce this as a British species, as I have seen only two examples, both females: one from the New Forest, vii. 1905 (*Sharp*) and one from Glen Sannox, Arran vi. 1919 (*F.W.E.*).

The latter specimen was reared from a larva found on

* I am indebted to Dr. D. Keilin for translating Dziedzicki's description, which agrees in all essential particulars with our specimens, especially as regards the markings of the thorax and abdomen and the venation, though he does not mention the somewhat shortened vein R_5.

a fallen birch branch covered with *Poria*; its habits were similar to those of the other species of the genus, but it was remarkable for its colour, which was a beautiful vermilion instead of the usual dirty white.

M. ornata (Mg.) (*tumida* Winn.). This species differs from all others of the genus known to me in having a rather dense brush of fine black setae on the front coxae of the male; it also differs from all except *M. tenuis* and *M. duplicata* in the presence of a few small dark bristles on the postnotum. Meigen's type shows the postnotal bristles and the identification is therefore probably correct. The male hypopygium shows a certain amount of variation (one rather distinct variety is shown in figs. 19–20), but most of those I have examined agree more or less closely with Dziedzicki's figures of *M. tumida*. As usual in this genus the structure is very complex and looks very different in slightly different positions of the mount. For this reason I think it possible that Dziedzicki has merely figured as *M. ornata* an abnormal or damaged specimen of the same species which he has shown in a different position as *M. tumida*. The species is widely distributed and fairly common with us.

I have reared specimens from larvae feeding on a fungus (*Corticium* sp. ?) encrusting a fallen branch.

M. digitifera sp. n.

Length of body, 4·5 mm.; wing, 4·5 mm.

Head black, antennae pale at the base; palpi blackish. *Thorax* practically all black, mesonotum considerably shining. Postnotum bare. Scutellum with four bristles. *Abdomen* black, the posterior margins of the tergites broadly yellowish, also the venter. Hypopygium (figs. 21–22) of the same type as *M. ornata*, but quite different in detail, especially in regard to the elongate appendages of the side-pieces. Legs ochreous. All coxae simple. (Front femora, tibiae and tarsi missing.) *Wings* hyaline. *Sc* complete. Base of cubital fork just before base of stem of median fork.

Type ♂ in the British Museum from Bagley, Oxford, 27 v. 16 (*A. H. Hamm*).

M. parva (Dz.). Similar in structure and colour to the last, but thorax largely yellow and with very different hypopygium. I have seen one British example, from Stockenchurch, Oxon. (*Collin*).

M. melanoceros Edw. (1925) (*nigricornis* Lundstr. *nec* Zett.). In many respects similar to the last two, but in all the specimens I have seen the abdomen is entirely black. Lundström's figure of the hypopygium (1909) is rather poor, but quite recognisable. British localities: Blairgowrie and Aberfoyle, Perth (*Carter*); Logie, Elgin (*Jenkinson*).

M. fimbriata (Mg.) (*affinis* Dz. *nec* Staeg.). This change has been necessitated by the identification of the types. The species is widely distributed but not common.

M. maura (Walk.). This is possibly only a black variety of *M. flava*, but the colour difference is so striking that the two may be kept separate, especially as they are not found in the same places. I have found the newly-emerged adults of this species in great numbers at Knebworth, Herts., in April, when hardly any fungi were to be found in the woods, and I therefore suspect that the larvae may live under rotting leaves.

M. flava (Stan.). In its hypopygium this is extremely closely allied to *M. maura* and *M. penicillata* Dz., the hairs of the brush being all simple, but it seems well distinguished by the almost uniformly yellow colour of the female; the male has more or less distinct, sometimes fused, blackish stripes on the mesonotum, and narrow dark bands on the abdominal incisures. The species was abundant in Sherwood Forest in September 1922.

M. trilineata (Zett.). Similar to the last in coloration, and also in the structure of the hypopygium, but certainly distinct by the structure of the projecting brushes, which have thick flattened and bent hairs towards the tips. It is common in many places in the south of England.

Genus Neoempheria O.-S.

This genus seems to be better developed in the tropics than in temperate regions; only two species have been found in Britain. Enderlein's genera *Neurocompsa* and *Pleonazoneura* do not seem to me to be well distinguished from *Neoempheria*.

N. pictipennis (Hal.) (fig. 191). A rather small but beautifully marked species with two dark bands across the wing, and yellow bands on the black abdomen: one on the first segment in both sexes, and in the male usually a second band on the fourth segment. Costa produced well beyond the tip of R_5; subradial fold very distinct;

small cell barely twice as long as broad. New Forest; Burnham Beeches; Sherwood Forest; Crowborough, Sussex; Lelant, Cornwall; Llangammarch Wells, Brecknock; Logie, Elgin.

N. lineola (Mg.) a large ochreous species belonging to quite a different group of the genus from the last. Costa hardly produced beyond tip of R_5; subradial fold very faint; small cell elongate. The only known British example is the one recorded by Jenkinson from the New Forest.

Tribe *Sciophilini*.

The presence of macrotrichia on the wing-membrane is diagnostic of this tribe, but in those cases where the microtrichia have disappeared it may not always be easy to determine which set of hairs is present. Generally speaking where the surface hairs are quite obvious through a hand-lens they may be regarded as macrotrichia. Sometimes this may be confirmed by the presence of a few microtrichia bordering the veins near the base of the wing, visible under a fairly high magnification; in other cases, as in *Leptomorphus* and some species of *Sciophila*, where there is no trace of microtrichia left, comparison with related forms clearly indicates that the remaining set of hairs is the macrotrichia.

A second character which is almost diagnostic is the presence of at least a few long hairs or bristles on the postnotum; these are absent in only a few genera, in all of which macrotrichia are unmistakably present on the wing-membrane.

The recent genera may be distinguished as follows :—

1. Lateral ocelli contiguous with the eye-margins *[Eudicrana Lw.].
   Lateral ocelli remote from the eye-margins . . . 2.
2. Base of cubital fork distinctly proximal to that of the media; hind tibiae without distinct apical comb . . 3.
   Base of cubital fork distinctly distal to that of the media, or fork absent; hind tibiae generally with distinct apical comb; postnotum hairy . . . . . 10.
3. Postnotum hairy or bristly, at least towards the sides at the tip; pleurotergites hairy . . . . . 4.
   Postnotum quite bare . . . . . 8.
4. M_1 complete or almost so . . . . . 5.
   M_1 faint or obviously defective at base; R_5 rather wavy; Sc_2 before middle of Sc, sometimes faint or absent; wings unmarked . . . . . 7.
5. Sc_2 well beyond middle of Sc . . . . . 6.
   Sc_2 before middle of Sc . . . . Allocotocera Mik.
6. R_5 straight; costa not produced beyond tip of R_5; wings with dark markings . . . Leptomorphus Curt.
   R_5 wavy; costa distinctly produced; wings unmarked Polylepta Winn.
7. Costa produced only slightly beyond tip of R_5 Neuratelia Rond.
   Costa produced much beyond tip of R_5; base of M_1 traceable though very faint, and placed only slightly beyond the fork of Cu . . Paraneurotelia Landr.
8. Pleurotergites hairy; Sc ending in R_1; body stout Syntemna Winn.
   Pleurotergites bare; Sc ending in the costa; body long and slender . . . . . 9.
9. Macrotrichia present at tip of wing only; Sc_2 in middle of Sc . . . . . Paratinia Mik.
   Macrotrichia present over the whole wing; Sc_2 well before middle of Sc . . . . . [Aneura Marshall].
10. Legs extremely long and slender, the first segment of front tarsi over twice as long as the tibia; median fork broad, the branches curving widely apart at the base; Cu_2 wavy . . . . . Phthinia Winn.
    Legs normal; median fork pointed at base or absent . 11.
11. M_3 complete . . . . . 12.
    M_3 detached, present only as a short free vein on the wing margin; Cu_1 also faint or detached at the base . . 17.
12. Macrotrichia towards tip of wing only; anepisternite bare [Stenophragma Skuse].
    Macrotrichia present over the whole wing-membrane . 13.
13. Stem of median fork moderately long, more than twice as long as r-m; anepisternite hairy, also subalar knob [Parvicellula Marshall].
    Stem of median fork very short, less than twice as long as r-m; subalar knob bare . . . . . 14.
14. Sc_2 well beyond base of Rs; macrotrichia of wings erect or pointing slightly towards base of wing; anepisternite bare . . . . . Megalopelma End.
    Sc_2 just before, above, or immediately beyond base of Rs . 15.
15. Cu forked; anepisternite with small hairs . Sciophila Mg.
    Cu simple; anepisternite bare . . . . . 16.

16. Macrotrichia decumbent as in *Sciophila* . ACNEMIA Winn.
    Macrotrichia reflexed as in *Megalopelma* MONOCLONA Mik.
17. *Sc* very short, not reaching costa; anepisternite hairy, but subalar knob bare . . . . . AZANA Walk.
    Sc distinctly reaching costa . . . . . 18.
18. Anepisternite and subalar knob hairy . [TRIZYGIA Skuse].
    Anepisternite and subalar knob bare [APHELOMERA Skuse].

I have no doubt that all these genera form one natural group, with the possible exception of *Eudicrana*, which is unknown to me, and *Syntemna*, which on account of its much reduced seventh abdominal segment may be more nearly related to the Gnoristini (cf. *Dziedzickia*).

Genus LEPTOMORPHUS Curt.

Since there is no essential difference between *Diomonus* and *Leptomorphus* I would propose to unite the two, the North American species described as *Diomonus* being evidently nothing more than species of *Leptomorphus* which have retained the vein R_4. All other details of structure and even of colour are very similar, and it is remarkable that a similar wing-pattern occurs in the Indian species described by Brunetti. I have also seen a West African species.

The larvae (of *L. walkeri*) have similar habits to those of *Sciophila* and *Mycomyia*, spinning webs on bark-growing fungi and forming tubes of mucilage within which they glide, but they spin no cocoon; the larval skin remains attached to the tail of the pupa, which hangs free head downwards like a Vanessid butterfly, the analogy being heightened by the angular projections of the head and thorax, and the development of a special colour-pattern quite different from that of the larva or adult.

L. walkeri Curt. (fig. 193). Though this large and showy species is a reputed rarity, and few adults have been captured on the wing, it is really widely distributed and fairly common in Britain in all suitable places. The larvae feed chiefly on *Poria vaporaria*, and I have rarely failed to find them on fallen branches well covered with this fungus.

Genus ALLOCOTOCERA Mik.

This genus is a very close ally of *Leptomorphus*, the only very obvious structural difference being in the more basally

placed subcostal cross-vein. Besides this, the insects are generally much smaller than the species of *Leptomorphus* and have a rather different ornamentation. Besides the single European species, one is known from North America and several from New Zealand. It is a curious coincidence that the genus was described independently by Dziedzicki in Europe as *Eurycera* and by Marshall in New Zealand as *Euryceras*. The early stages are unknown.

A. pulchella (Curt.) (*flava* Dz.; *Boletina silacea* v.d. W.) (fig. 195). Apparently not common, but widely distributed in Britain. The material in the National collection is from the New Forest (*Adams*); Felden, Herts. (*Piffard*), and Holker Moss, Lancs. (*F.W.E.*).

Genus POLYLEPTA Winn.

A small genus including only two or three European species and about as many in North America. It appears to me to be closely allied to *Leptomorphus*, the principal structural difference being in the wavy vein R_5. The hypopygium is also peculiar in that the apparent claspers are formed by the produced ends of the side-pieces, the true claspers being rudimentary. The males of at least two species (including the one known from Britain) have a very peculiar secondary sexual adornment of the middle tibiae, the base of which is swollen and provided on the flattened dorsal surface with a dense covering of fine pale setae.

P. guttiventris (Zett.) (*undulata* Winn.) (fig. 194). Apparently a rare species in Britain, occurring chiefly in mountainous districts of the north and west.

Genus NEURATELIA Rond.

In my former paper I objected to the use of Rondani's name *Neuratelia* in place of *Anaclinia*, on the ground that Rondani's diagnosis was inconsistent with the characters of *nemoralis* Mg., which he cites as the type of his genus. However, there can be little doubt that Rondani simply overlooked the vein Sc_2 on account of its position much nearer the base of the wing than usual, and it may be as well to adopt his name, especially as it is in general use. Coquillett's *Odontopoda* I regard as synonymous. The genus seems to me to be very closely allied to the last

two; it includes species from Europe (2), North America (7) and India (1). The early stages are unknown.

N. nemoralis (Mg.) (fig. 196). A large black species with yellow legs; widely distributed and not uncommon.

Genus Paraneurotelia Landr.

This genus, which hardly seems to deserve separation from the last, and is probably synonymous with Meunier's *Anaclileia* from Baltic amber, includes only two European species, the life-history of which is unknown.

P. dispar (Winn.). A small black insect which might easily be passed over as *Boletina sciarina*. On this account it may be commoner in Britain than is supposed; the only records are Nethy Bridge (*Sharp*) and Arran (*F.W.E.*). The subcostal cross-vein may be present or absent.

Genus Syntemna Winn.

This genus was founded by Winnertz for one species, *S. morosa*, some additional species with a similar venation being referred here later by other authors. I am indebted to M. E. Séguy for the loan of specimens of *S. morosa* from the Paris Museum, named by Winnertz himself. In these the wing is quite densely covered with macrotrichia as well as microtrichia, while in the two other species I have examined (*S. alpicola* Strobl and *S. flava* Edw.) there are no macrotrichia; I would therefore exclude the two last from this genus. On the other hand, the species of *Loewiella* described by Lundström possess macrotrichia and resemble *S. morosa* in most respects, apart from possessing the vein R_4. *Loewiella* may therefore be treated as a synonym of *Syntemna*.

S. morosa Winn. This has not been found in Britain, but for comparison with the two British species I give a figure of the hypopygium (fig. 23) which in general is not unlike that of *S. hungarica*, but lacks the anal comb.

S. hungarica (Lundst.).

A small, dark-coloured species. Palpi yellowish. Mesonotum scarcely shining; greyish when viewed from in front; bristles yellowish, numerous small ones on the front margin in the middle. Second and third abdominal segments pale posteriorly. Base of cubital fork only a little before *r-m*.

Additional localities: Seger Hill, Herefordshire (*Wood*); Logie, Elgin (*King*).

S. nitidula sp. n.

Differs from *S. hungarica* as follows:—Palpi dark. Mesonotum rather brightly shining black; bristles dark brown, none on front margin in middle. Second abdominal segment all yellow laterally. Base of cubital fork well before *r-m*. Hypopygium, fig. 24.

Type ♂ in the British Museum, from Humphrey Head, N. Lancs., 28 viii. 1921 (*C. A. Cheetham*).

Genus Paratinia Mik.

A small genus containing only two European and one North American species; life-history unknown. It does not seem to be very closely related to the other genera of the Sciophilini, but I include it here on account of the presence of macrotrichia on the apical half of the wing and the elongate abdomen with large seventh segment. It may perhaps be related to *Phthinia*, and in some respects appears intermediate between that genus and *Speolepta*.

P. sciarina Mik (fig. 197). A dark-coloured insect, variable in size, with the general appearance of a *Boletina*. It has been found singly in widely separated localities in Britain. Some new records are: Shefford, Beds., and Knebworth, Herts. (*F.W.E.*). I have examined Mik's type and found it to agree with our specimens.

Genus Phthinia Winn.

A small genus containing a few European and North American species, and one from New Zealand. Some of the species originally referred here are now transferred elsewhere; thus *P. thoracica* Winn. and *P. curta* Joh. belong to *Coelosia*, while *P. fraudulenta* Will. is a *Megalopelma*. The most striking characteristic of the genus is the great length and slenderness of the tarsi. The early stages are little known; Winnertz records rearing *P. humilis* from a rotten hornbeam log, and Sharp obtained the same species in the New Forest from a cocoon resembling that of *Sciophila hirta*.

P. winnertzi Mik. Body very elongate; abdomen with ill-defined pale bands; hypopygium small and pale; anal

vein straight. Widely distributed but rather rare. Additional locality: Sherwood Forest (*F.W.E.*).

P. humilis Winn. (fig. 198). Smaller and rather less elongate than the last; abdomen all dark; hypopygium larger and dark; anal vein curved down at tip. South of England.

Genus Sciophila Mg.

(*Lasiosoma* Winn.)

This genus is distinguished from those of the *Leptomorphus* group by the very short stem of the median fork and the more distally placed cubital fork, but the presence of bristly hairs on the postnotum, the macrotrichia on the wings, the tendency to disappearance of the microtrichia, the long oblique humeral cross-vein, and the well-developed seventh abdominal segment are all characters suggesting a rather close relationship between the two groups, which is confirmed by resemblances in the eggs and larvae. The genus is chiefly of holarctic distribution, according to the present state of our knowledge, but species occur in Africa and India. The adults have the habit of resting with the wings only partially overlapping, and may often be recognised on this account.

The larvae live within delicate tubes of mucilage on the under surfaces of various fungi, and spin webs of silk which, unlike those of *Mycomyia*, are always quite dry and not covered with droplets of moisture. Pupation takes place in a slight dry silken cocoon placed in a crevice in the fungus or bark.

The different species are very similar in external structural characters, and some of them are also variable in colour, so that their identification is not easy. After transferring *S. nigroclavata* to the genus *Megalopelma* we have thirteen species in Britain, for the determination of which the following table is offered as a rough guide. With the exception of *S. hirta* and *S. lutea* all the species are more or less rare.

1. Microtrichia of wings absent, unless at the extreme base . 2.
   Microtrichia of wings distinctly discernible all over the membrane under a magnification of 100, though sometimes very minute and dot-like . . . . . 4.
2. Body and antennal flagellum all black . . *limbatella* Zett.
   Body all ochreous or reddish, flagellum ochreous at the base . . . . . 3.
3. Large reddish species; segments of antennal flagellum about twice as long as broad; front tibiae with an antero-dorsal row of small bristles . . . . . *rufa* Mg.
   Smaller ochreous species; segments of flagellum hardly longer than broad; front tibiae without antero-dorsal bristles *ochracea* Walk.
4. Cu_1 rather widely interrupted at the base *interrupta* Winn.
   Cu_1 not interrupted at the base . . . . . 5.
5. Hind femora all yellow. . . . . 6.
   Hind femora more or less dark at the tip; body all black 10.
6. Abdomen blackish, the posterior margins of the segments conspicuously yellow . . . . . *varia* Winn.
   Abdomen more or less unicolorous . . . . . 7.
7. Segments of male flagellum about as long as broad; Sc_2 just before base of Rs . . . . *plurisetosa* Edw.
   Segments of male flagellum about twice as long as broad . 8.
8. Sc_2 above base of Rs; body largely or all ochreous *lutea* Macq.
   Sc_2 distinctly beyond base of Rs . . . . . 9.
9. Flagellum ochreous at the base . . . *fenestella* Curt.
   Flagellum all black . . . . . *cliftoni* sp. n.
10. Hind femora narrowly dark at the tip and scarcely at all at the base . . *hirta* Mg.; *lutea* var. *analis* Winn.
    Hind femora broadly black at the tip and also at the base beneath . . . . . 11.
11. Hind tibiae distinctly dark at the tip . . *adamsi* sp. n.
    Hind tibiae not distinctly dark at the tip . . . 12.
12. Hind coxae dark outwardly . . . . *nigra* Landr.
    Hind coxae dark at the tip only . . . *geniculata* Zett.

S. limbatella Zett. (*sharpi* Edw.). This is still only known in Britain from the type of *S. sharpi* from the New Forest, but it has been found in Sweden and Finland.

S. rufa Mg. No fresh material has been obtained of this species, which has only been obtained at Rannoch from larvae feeding on a *Polyporus* on birch. The cocoons preserved by Mr. Donisthorpe are much stronger and of a more papery texture than those of the species I have reared.

S. ochracea Walk. (figs. 25–26, 199). I have now succeeded in tracing Walker's type of this species in the Stephens collection in the British Museum. It is much smaller than *S. rufa* and has shorter antennae, but agrees

in the complete absence of microtrichia on the wing-membrane, a feature which together with the shorter antennae will distinguish it from *S. lutea*, the pale form of which it much resembles. There is a male in the Cambridge Museum taken by Jenkinson at Cambridge, from which I have prepared the figure of the hypopygium (figs. 25–26).

I have reared a fair number of specimens from brown larvae found feeding on a fungus (*Fomes*?) growing on an old plum tree at Wood Walton Fen, Hunts. The habits of the larvae were similar to those of *S. hirta*.

S. interrupta (Winn.). Distinguished from all the other members of the genus by the interrupted vein Cu_1. No fresh records are available, only two British specimens being known.

S. varia (Winn.). Previously recorded only from Logie. A female, probably of this species, has been taken at Leigh Woods, Bristol, by Mr. H. Audcent, and presented by him to the British Museum.

S. plurisetosa Edw. Known only from the type from Arran. The shining black abdomen and dark pleurae, in contrast with the largely ochreous mesonotum, may help to distinguish it from the next species.

S. lutea Macq. An exceedingly variable species as to colour, but recognisable by the hypopygium which is constant and characteristic. The pale form (typical *lutea*) has the body uniformly ochreous, also the first few segments of the antennal flagellum; the dark form (var. *analis* Winn.) has the body all black, also the flagellum, the hypopygium, however, usually remaining ochreous. Intermediates between the two forms are frequent. I have reared the species from larvae found on *Polyporus giganteus*.

S. fenestella Curt. I would restrict this name to the species of which the hypopygium is shown in figs. 48 and 49 of my previous paper. In the only two males I have seen the flagellum is ochreous at the base; the macrotrichia of the wings are dense and the microtrichia minute and dot-like.

S. cliftoni sp. n. I propose this name for the form figured by me in 1913 as a variety of *S. fenestella*. Apart from the quite well-marked differences in the hypopygium shown in the figure, the specimen differs from those now regarded as *S. fenestella* in the entirely dark flagellum, in the less dense macrotrichia on the wings, and the larger microtrichia, which are just distinguishable as fine hairs under a magnification of 100. I therefore prefer now to regard it as a distinct species. As in the related forms, the femora are entirely yellow.

Type in the British Museum, from the Clifton collection, without data, but probably from the London district; most of the specimens in the collection are believed to have been taken in Coombe Wood, Wimbledon.

S. hirta Mg. This common species is usually distinguishable by the black thorax and abdomen and the narrow blackish tip to the hind femora, but the shoulders and front of the mesonotum are sometimes more or less ochreous, and the dark tip to the femora indistinct. There appears to be no absolutely constant difference except in the hypopygium between this and *S. lutea*. The larvae occur on various fungi and vary greatly in colour according to their food-plant. I have reared them from *Daedalia quercina*, *Poria vaporaria*, *Polystictus versicolor*, *Herniola auricula-judae*, *Lactarius volemus* (eggs deposited on specimen lying on my table in the museum), and also from a green algal growth on a rotting stump.

S. nigra Landrock. The British specimens of this species which I have examined all have the hind femora broadly black at the tip and with a large but ill-defined blackish mark at the base beneath; there is, however, a male (under a manuscript name) in Meigen's collection in Paris in which the tips of the hind femora are not darkened; the colour of the legs therefore cannot be relied on to distinguish the species. The name *S. nigra* had been used previously by Macquart, but as his description is undecipherable and may possibly have applied to this species I do not think it necessary to alter Landrock's name. Additional locality: Knebworth, Herts. (*F.W.E.*).

S. geniculata (Zett.) Edw. I still only know this from the male previously recorded from Arran.

S. adamsi sp. n. A small black species closely resembling the last two, but perhaps distinguishable by the dark tip to the hind tibia; hypopygium (figs. 27–28) also quite different, and more like that of *S. cliftoni*, but the ninth tergite very narrow apically.

Type ♂ in the British Museum from the New Forest, 28 viii. 1908 (*F. C. Adams*).

Genus Megalopelma End.

This genus was founded by Enderlein (1911 *b*) for a supposedly new South American species which is very possibly identical with *Phthinia fraudulenta* Will. from the West Indies. Williston's type in the British Museum shows a peculiar arrangement of the setulae of the wing, the macrotrichia being rather scanty and pointing slightly backwards towards the base of the wing. Exactly the same condition is seen in the European *Sciophila jenkinsoni* Edw. (*Lasiosoma nigroclavatum* Strobl), and as this species also agrees with *M. fraudulenta* in the position of Sc_2 far beyond the base of *Rs*, I propose to refer it to the genus *Megalopelma*. The presence of R_4 in the European species is not a character of any importance and is not even constant.

M. nigroclavatum (Strobl) (*jenkinsoni* Edw.). Apart from the generic characters as defined above this differs from all the British species of *Sciophila* in having the knob of the halteres black. Additional localities: Sutton Park, Worcs. (*Bradley*), 1 ♂ in Birmingham Museum, R_4 absent on both wings. Llangollen (*F.W.E.*).

Genus Monoclona Mik.

Although the presence of a short vein R_4 is in my opinion insufficient to distinguish this genus from *Acnemia*, it may perhaps be retained on the basis of the trichiation of the wing, the macrotrichia being reflexed as in *Megalopelma* (in *M. rufilatera*; I have not ascertained whether this holds good also for the genotype, *M. halterata*).

I have reared the British species from rotten wood attacked by fungus (*Poria*?). The larval habits are just the same as in *Sciophila*.

M. rufilatera (Walk.) (*unicorunta* Dz.) (fig. 200). This species is very variable in colour. The female is lighter than the male, sometimes entirely yellow; the male has a variable amount of dark marking on the mesonotum. The species is not uncommon in the south and east of England. Verrall's record of *M. halterata* was based on females probably belonging to this species.

Genus Acnemia Winn.

This genus is structurally similar to *Sciophila*, except as regards the loss of R_4 and the simple cubitus, neither of which points are of fundamental importance. The adults resemble *Sciophila* in their habit of resting with the wings partly divaricate, not completely overlapping as is the general rule in the family.

The larvae are unknown, but I have reared *A. nitidicollis* from a pupa found in a slight cocoon under a piece of rotten wood.

All three European species occur in Britain.

A. amoena Winn. Differs from the other two species in its entirely yellow colour, including the knob of the halteres, and in the presence of microtrichia as well as decumbent macrotrichia all over the wing-membrane. The British Museum possesses three females from the New Forest (*Adams*).

A. nitidicollis (*Mg.*) (fig. 201). Entirely black, including the knob of the halteres. Microtrichia of wings absent, except at the extreme base. Ocelli in a flattened triangle, the middle one placed a little forwards. A common species and generally distributed.

A. longipes Winn. Larger than *A. nitidicollis*; the ocelli arranged in a perfectly straight line and the hypopygium quite differently constructed (see Landrock, 1923 *b*). A rare species, only a few British examples being known, from Crowborough, Sussex.

Genus Azana Walk.

This genus also seems to me to belong to the *Sciophila* group, the venation having undergone a further stage of reduction from that of *Acnemia* by the loss of one of the branches of *M*. Besides the single European species, one has been described from Assam. The Australian *Trizygia* and *Aphelomera* appear to be related. The early stages are unknown.

A. anomala (Staeg.) (fig. 202). A small black species, in general appearance resembling *Acnemia nitidicollis*. The few known British examples have mostly been taken on windows: Cambridge (*Jenkinson*); Letchworth (*F.W.E.*); Nethy Bridge (*Sharp*).

Tribe *Gnoristini*.

In this tribe may be included a few genera in which the wing-membrane is devoid of macrotrichia and the post-notum is quite bare, but all of which have R_1 quite long;

they cannot therefore be included either in the Sciophilini or in the Leiini. With the possible exception of *Speolepta* these genera appear to form a natural group; in fact some of them are so close that it is difficult to find satisfactory characters for their separation. I would define them as follows :—

1. Seventh abdominal segment quite large (♂ ♀) and even the eighth visible externally; *Sc* not reaching the costa
SPEOLEPTA gen. n.
Seventh abdominal segment small and usually entirely retracted, at least in the ♂ . . . . . 2.
2. Base of cubital fork well beyond that of the media
COELOSIA Winn.
Base of cubital fork before, below, or scarcely beyond that of the media . . . . . 3.
3. *Sc* ending in *R* . . . . . 4.
Sc ending in the costa . . . . . 5.
4. Proboscis slightly produced, about as long as the head
*[HADRONEURA Lundst.].
Proboscis not at all produced . . . DZIEDZICKIA Joh.
5. Proboscis very elongate . . . . . GNORISTE Mg.
Proboscis shorter than the head . . . . . 6.
6. Sc_2 present and well beyond middle of *Sc* . . . . 7.
Sc_2 near middle of *Sc* or absent . . . . . 8.
7. Base of cubital fork beyond base of stem of median fork; seventh abdominal segment small and retracted
SYNAPHA Mg.
Base of cubital fork below or before base of stem of median; seventh abdominal segment fairly large PALAEOEMPALIA Meun.
8. R_4 present; Sc_2 absent; ninth tergite of male with terminal row of strong spines . . . APOLIPHTHISA Grzeg.
R_4 absent; Sc_2 usually present; ninth tergite of male without terminal row of spines . . . . BOLETINA Staeg.

Pleurotergal hairs are present in *Dziedzickia*, *Apoliphthisa* and in some species of *Boletina* but absent in the other genera of the tribe.

Genus SPEOLEPTA nov.

Differs from *Polylepta* Winn. as follows :—Body still more slender and elongate. Postnotum and pleurotergites bare. Middle tibiae of male simple, without swelling at base. Wings without macrotrichia on the membrane. *Sc* abbreviated, ending free; Sc_2 far before base of *Rs*. Cubital fork rather shorter and more widely open, the lower branch rather more curved.

Genotype : *Polylepta leptogaster* Winn.

The larvae are found on the walls of dark caves. No cocoon is formed, the pupae hanging free head downwards as in *Leptomorphus* (Cheetham, 1920 *a*).

S. leptogaster (Winn.) (fig. 203). A dark-coloured species without ornamentation, recorded from caves in Yorkshire and Scotland. I have also seen a female in Haliday's collection, without data, but probably from Ireland.

Genus COELOSIA Winn.

I regard the absence of macrotrichia and the small size of the retracted seventh abdominal segment as of more importance than the presence or absence of Sc_2, and hence would include here *Phthinia thoracica* Winn. and *P. curta* Joh., which possess Sc_2, as well as *C. flava* and other species which lack this vein. The genus seems to be allied to *Boletina*, but is easily separated by the short cubital fork, the base of which is far beyond that of the median fork. Some authors have compared it with *Phronia*, with which it appears to me to have no connection at all. Besides European and North American species, one has been described from India by Brunetti (as *Euryschalis*). Four species have so far been found in Britain, all being distinctly rare.

C. thoracica (Winn.).

Thorax with three separate dull black stripes; bristles black. Middle tibiae of male with a basal swelling, the upper surface of which is flattened and covered with fine pale pubescence, much as in the genus *Polylepta*. Tibial spurs yellowish. Costa extending one-third of the distance from R_5 to M_1. Sc_2 present. Base of *Rs* oblique and about as long as *r-m*. Branches of cubitus widely divergent, Cu_2 rather curved.

Recorded by Mr. C. A. Cheetham from N.-W. Yorkshire and by Mr. A. E. J. Carter from Scotland.

C. tenella (Zett.) (*flavicauda* Winn.) (fig. 204).

Thorax dark, shoulders more or less pale; bristles longer than in *C. thoracica* and pale in colour. Middle tibiae of male simple;

tibial spurs black. Costa extending one-third of the distance from R_5 to M_1. Sc_2 absent. Base of *Rs* short and vertical; *r-m* long, almost in a line with R_5, and about two-thirds as long as the stalk of *M*. Cubital fork as in *C. thoracica*. *M* and *Cu* pale.

Recorded from Sussex, Elgin and Inverness.

C. flava (Staeg.).

Larger than the last two. Thorax all yellow; bristles black. Middle tibiae of male simple; tibial spurs black. Costa extending one-third of the distance from R_5 to M_1. Sc_2 absent. Base of *Rs* and *r-m* as in *C. tenella*. Cubital fork rather longer than in *C. tenella* and more pointed at the base, the branches being less divergent and Cu_2 almost straight. *M* and *Cu* pale.

Isle of Wight (*Verrall*). No other recent captures.

C. silvatica Landr. (1918 *b*).

Head black, including palpi and antennae, only the base of the first flagellar segment yellowish. *Thorax* blackish, the shoulders and sides of mesonotum greyish; bristles dark. *Abdomen* rather dark brown. Legs brownish-ochreous, tibial spurs black; mid tibiae of male simple. *Wings* slightly greyish, all the veins dark; *M* and *Cu* slightly seamed with dark brown, especially the end of the stem of *Cu*. Venation as in *C. flava*, except that the costa is much longer, extending almost three-quarters of the distance from R_5 to M_1. Halteres yellowish, tip of knob darkened.

There is a ♀ in the British Museum from Felden, Herts., 9 iii. 1899 (*A. Piffard*), and a ♂ from Oxford (*Hamm*).

Genus Dziedzickia Joh.

The type of this genus, *D. marginata* (Dz.), possesses the vein R_4, but otherwise has a venation similar to that of *Syntemna*. It differs, however, from the type of *Syntemna* in having no macrotrichia on the wing-membrane. I believe this to be a more important character than the presence or absence of R_4, and would use it for distinguishing the two genera, referring to *Dziedzickia* all species described as *Syntemna* which lack macrotrichia on the wing-membrane. On this basis the European *Syntemna alpicola* and *S. flava* should be referred here, and probably some or all of the American species of *Syntemna*.

D. marginata (Dz.) (fig. 205). An uncommon species in Britain, only one new record being available: Wyre Forest (*F.W.E.*). The species is variable in size, in abdominal markings, and in the position of the cubital fork, which may be either under or well before the base of the stem of the median fork.

D. alpicola (Strobl). The British Museum possesses a female of this species from the New Forest (*Adams*) and a male from Holker Moss, Lancs. (*F.W.E.*). The hypopygium (fig. 29) is of a similar type to that of *D. marginata*, the ninth tergite in both being large, truncate apically, with the small comb-less anal segment hidden under its base. Differs from the preceding species in the shorter *Sc*, as well as in the absence of R_4 and the colour of the thorax, the mesonotum being yellowish with a pair of large blackish patches.

D. flava (Edw.). Thorax coloured somewhat as in the last, but abdomen largely yellow and hypopygium of a quite different type of structure (figs. 30, 31). The figure is taken from a specimen from Chippenham, Cambs. (*Nurse*), in the British Museum collection. This and the type from Herefordshire are the only examples I have seen.

Genus Gnoriste Mg.

The elongate proboscis will readily separate this genus from other members of the tribe, though its length varies in different species. In the British form it is more than half as long as the wings. The venation is the same as in *Boletina*.

G. bilineata Zett. A large species, known as British only from one female in the Cambridge Museum from Nethy Bridge (*Lamb*).

Genus Synapha Mg.

Although founded on an abnormality, this old generic name has to be used to replace Winnertz's *Empalia*, now that Meigen's type has been identified. The chief difference from *Boletina* is in the position of Sc_2 well beyond the middle of *Sc*; the hypopygium is also of a rather different type, though agreeing in having a very large ninth tergite. The presence of R_4 is not diagnostic. Both the European species occur with us.

S. fasciata Mg. (*paradoxa* Edw.) (fig. 206). *Sc* ending just before base of *Rs*, Sc_2 at about two-thirds its length; R_4 never present; first few abdominal segments with yellow markings basally. The position of the base of the cubital fork is somewhat variable, either just before, below, or even just beyond the base of the median fork. Since describing this I have seen specimens from Wonersh, Surrey (*Dr. F. M. Turner*); Sidmouth, S. Devon and Welwyn, Herts. (*F.W.E.*).

S. vitripennis (Mg.) (*finalis* Walk.). *Sc* reaching just beyond base of *Rs*, Sc_2 beyond three-quarters of its length; R_4 usually present, though examples are rather frequently seen in which it is lacking on one or both wings; when it is present the small cell is always small, though variable in shape. First few abdominal segments with yellow markings apically. Widely distributed and rather common.

Genus Palaeoempalia Meun.

Though with a very similar venation to *Synapha* this genus seems distinct on account of the widely different hypopygium and the fairly large seventh abdominal segment. Besides the species mentioned below, Walker's *Sciophila diversa* from Switzerland seems to belong to this genus.

P. collaris (Mg.) (? *stylifera* Grz.) (fig. 207). A rare species of which I have seen three British examples; a female taken by the late Mr. F. Jenkinson on the steps of the University Library, Cambridge, 1 ix. 1902; another from Blaise Castle, Glos., 9 vii. 1922 (*H. Womersley*), and a male from the New Forest, 16 ix. 1896 (*F. C. Adams*). The thorax is shining black; prothorax light yellow; pleurae partly yellow; wings with the tip slightly darkened and a dark cloud on the small cell, much as in *Mycomyia marginata*. Grzegorzek's *P. stylifera* is extremely similar, but may be distinct as it is described as having black instead of yellow scutellar bristles, and dark tips to the coxae and hind femora.

Genus Apoliphthisa Curt.

This seems to me to be nearly allied to *Boletina*, differing most obviously by the absence of Sc_2 and the presence of R_4, though neither of these characters is of fundamental importance. Another difference is that *Sc* is uniformly

bristly, while in *Boletina* it is bare. Also the hypopygium is quite unlike that of *Boletina*, the rather small ninth tergite having a series of spines on the margin.

The larvae live under bark or on bark-growing fungi, and resemble those of *Mycomyia* in habits; no definite cocoon is formed.

A. subincana (Curt.) (*Tetragoneura melanoceras* Hal., according to description) (fig. 208). A medium-sized shining black species, widely distributed and not uncommon. I have reared it from larvae feeding on *Poria vaporaria* and under oak bark.

Genus Boletina Staeg.

This genus includes a rather large number of species many of which are very similar and can be distinguished only by mounting the male hypopygium; others, however, are quite easily identified without reference to this organ. A very useful character for distinguishing certain species is the presence of pleurotergal hairs. In some other cases (*e.g.* Ceroplatinae) I have treated the presence or absence of these hairs as of generic importance, but in this case of *Boletina* such a course would not seem to be justified, as the species are otherwise so similar, and the hypopygial structure is of a fairly uniform type, with characteristic combs on the anal segment. In a few species the vein Sc_2 is lost (the name *Palaeoanaclina* having been applied to these), but even in these species specimens are sometimes found which possess this vein, so that this character also cannot be used for generic subdivision. A few show interesting secondary sexual structures.

Very little is known concerning the early stages, but some species have been recorded as feeding in the larval state on rotten wood, while Mr. C. A. Cheetham (1920 *b*) has reared *B. dubia* from liverworts. In view of the localities where the adults are most frequently found (banks of mountain streams, etc.) it seems quite likely that many of the larger species are liverwort feeders.

I have been able to distinguish 19 British species, at least 10 of which are distinguishable by external characters, as shown in the following key :—

1. Costa scarcely reaching beyond *Rs*; *r-m* long and almost in a line with *Rs*; base of cubital fork far beyond base of stem of median fork; pleurotergites bare . . . *trivittata* Mg.

Costa reaching well beyond *Rs*; *r-m* shorter, oblique, and not approaching alignment with *Rs*; base of cubital fork not much beyond base of stem of median fork . . . 2.

2. *Sc* ending distinctly before base of *Rs*; Sc_2 normally absent; shoulders and large lateral triangles on each of tergites 2–4 of the abdomen yellow; pleurotergites bare *reuteri* Lundst.

Sc ending about opposite base of *Rs* . . . . 3.

3. Pleurotergites hairy, at least near the ridge . . . 4.

Pleurotergites absolutely bare . . . . . 9.

4. Antennae all black, or at most the base of the first flagellar segment yellow . . . . . 5.

Antennae with the whole of the first two flagellar segments yellow . . . . . 8.

5. Tibial spurs black; petiole of median fork hardly longer than *r-m* . . . . . 6.

Tibial spurs yellow; petiole of median fork distinctly longer than *r-m*; thorax uniformly shining black . *dispecta* Dz.

Sc_2 normally absent . . . . . 7.

Sc_2 present . . . . . *plana* Walk.

7. Shoulders and pleurae more or less dull; *Rs* rather wavy *dubia* Mg.

Shoulders and pleurae more or less shining; *Rs* nearly straight *villosa* Lundst.

8. Tibial spurs and all thoracic bristles yellow; thorax all black; hind femora all yellow . . . *lundbecki* Lundst.

Tibial spurs and many of the thoracic bristles black; thorax largely yellow; hind femora dark at tip . *pallidula* sp. n.

9. First two flagellar segments all yellow . . . . 10.

Antennae all black, or at most the first flagellar segment partly yellow; *r-m* shorter than the stem of the median fork . 11.

10. Shoulders and posterior margins of abdominal tergites yellowish (very slightly so in ♂); *r-m* about as long as stem of median fork . . . . . *basalis* Mg.

Thorax and abdomen all black; *r-m* distinctly shorter than the stem of the median fork . . . *digitata* Lundst.

11. Tibial spurs dark *nigricans* Dz.; *moravica* Lundst.; *trispinosa* Edw.

Tibial spurs yellow . . . . . 12.

12. Posterior coxae dark at least on basal half . *gripha* Dz.

Posterior coxae normally clear yellow *sciarina* Staeg.; *brevicornis* Zett.; *lundstroemi* Landr.; *nigrofusca* Dz.; *griphoides* sp. n.

B. trivittata Mg. The largest species of the genus, and fairly common in damp woods everywhere. The striped thorax is rather distinctive, but less so than the venation.

B. reuteri Lundst. This has a hypopygium of a rather different type from that of most of the other species, and the coloration is also distinctive. The female has a long tapering abdomen similar to that of *Apoliphthisa*. It is widely distributed but local. Additional locality: Knebworth, Herts. (*F.W.E.*).

B. dubia Mg. (*analis* Mg. *nec* Landr.; *inermis* Lundst.). Generally common in damp places where the liverworts on which the larva feeds are abundant. I have previously described the interesting sexual difference in the front claws.

B. villosa Landr. Seems to be a purely Scottish insect so far as the British islands are concerned. Additional localities: Nethy Bridge and Aviemore (*King*).

B. plana Walk. (*dubia* Staeg. *nec* Mg.; *grzegorzeki* Dz.). A fairly common species in damp woods in most districts, also found with *B. dubia* along the banks of small mountain moorland streams. In my previous paper I recorded some specimens of this species by mistake as *B. lundbecki*, from Polton (*Carter*) and St. Kilda (*Waterston*).

B. dispecta Dz. One of our rarer species, but one which should be easily recognisable. The females with thickened front tarsi mentioned in my previous paper evidently belong to this species, as they agree with the males in having hairy pleurotergites, uniformly shining thorax, black antennae and yellow tibial spurs. The males as usual show no sign of tarsal thickening. Additional locality: Ardentinny, 13 vi. 1903 (*King*).

B. lundbecki Lundst. The male of this well-defined species is remarkable in possessing a conspicuous projecting horn on the face below the antennae, of which there is no trace in the female. As a secondary sexual character this is unique in the family. The species is not common, the only records being Crowborough, Sussex, and Logie, Elgin (*Jenkinson*).

B. pallidula sp. n.

A small species; wing-length about 3 mm.

Head blackish grey. Antennae with the first four segments ochreous, the rest black; flagellar segments not much longer than broad. Palpi brownish ochreous. *Thorax* ochreous, mesonotum with three quite separate dark brown stripes, postnotum and lower

part of sternopleurite and pleurotergite dark brown. **Mesonotal bristles black, the four on the scutellum strong and nearly equidistant; small yellowish hairs on the spaces between the mesonotal stripes.** Pleurotergites distinctly hairy. *Abdomen* yellowish, the tergites with broad blackish bands occupying the basal three-fourths of the tergites. Ovipositor ochreous; it bears two pairs of rather strong black spines beneath. *Legs* ochreous; tibiae and tarsi darkened; trochanters and tips of hind femora blackish; tibial spurs dark. *Wings* clear; venation as in *B. sciarina* Staeg.; halteres yellow.

Type ♀ in the British Museum from Baldock, Herts., ix. 1917 (*F.W.E.*). I have also seen another female collected by Mr. A. H. Hamm at Oxford. Although this may possibly have been described from the male sex, I have been unable to find a description which will fit it, and it is certainly quite distinct from any of the other British species dealt with in this paper. The presence of pleurotergal hairs should assist in associating the male sex when discovered.

B. basalis Mg. A fairly distinct species by the characters given in the key. It is not uncommon in damp woods.

B. digitata Lundst. Nearly allied to the last; the colour distinction given may not be constant. A male was taken at Aviemore, Inverness, 24 vi. 1903, by Mr. J. J. F.-X. King, and presented by him to the British Museum.

B. nigricans Dz., **B. moravica** Lundst. and **B. trispinosa** Edw. These three seem to differ from the other members of the *sciarina* group by the dark tibial spurs, but I can find no other external distinctions. All three are rare, no fresh records are available.

B. gripha Dz. This is much the commonest species of the *sciarina* group, and is usually recognisable by the more or less darkened posterior coxae, but this may not be absolutely constant.

B. sciarina Staeg., **B. brevicornis** (Zett.) Dz. and **B. lundstroemi** Landr. seem to be indistinguishable externally, though the hypopygia are very different and distinctive. I have taken *B. brevicornis* in Wyre Forest and Holker Moss, and *B. lundstroemi* at Knebworth. *B. sciarina* is rather common.

B. gripholdes sp. n. A small species, closely resembling the last three and like them with yellow coxae, but differing in the hypopygium, which is more like that of *B. gripha*,

though different in detail, especially in the structure of the aedoeagus (figs. 32, 33).

Type and one other male in the British Museum from Wyre Forest (*F.W.E.*), taken in company with *B. gripha*; also 2 ♂ from Beaconsfield, Bucks., vii. 1922 (*F.W.E.*).

B. nigrofusca Dz. A male which seems to be this species was taken by Mr. J. J. F.-X. King at Dingwall, Cromarty, 22 vii. 1909. The hypopygium (figs. 34, 35) does not quite agree with Dziedzicki's figures, but the differences seem hardly sufficient for the establishment of a new species. Externally the specimen resembles the last four.

Tribe *Leiini*.

This tribe occupies an intermediate position between the Sciophilinae and the Mycetophilinae, as shown by the fact that in several genera the lateral ocelli are almost in contact with the eye-margins, while in some others *Sc* is reduced; also, the vein R_4 is nearly always absent. The genera placed here, however, seem to form a natural group, the chief characteristics of which are the shortness of R_1, which is usually little if any longer than *r-m*, and the nearly horizontal position of this cross-vein, approaching alignment with *Rs*. These points are not well shown in *Rondaniella*, which, however, is evidently allied to the genera of the *Leia* group and so is included here; nor in *Docosia*, which, however, seems to fit better here than in the Mycetophilinae, and is probably related to *Tetragoneura*. Some of the genera, e.g. *Novakia*, show an approximation to the *Sciara* type of venation, the resemblance being heightened by the small size and dark coloration, but the eyes are always rounded as in other Sciophilinae.

The habits of the larvae, so far as known, are mostly similar to those of the Sciophilini, but some at least of the species show a tendency to saprophagous feeding. *Pnyxia* is a hot-house pest.

The recent genera so far described may be distinguished as follows :—

1. *Sc* distinctly ending in the costa (faint apically in some species of *Leia*); tibial bristles long and strong . . . . 2.
   Sc short, ending free or in *R* . . . . . 0.
2. R_1 over twice as long as *r-m*, which is rather oblique; M_1 often detached at base; Sc_2 absent . . RONDANIELLA Joh.
   R_1 hardly longer than *r-m*, often shorter . . . . 3.

3. Lateral ocelli far removed from the eye-margins . . 4.
   Lateral ocelli touching the eye-margins, or not more than their own diameter distant . . . . . 6.
4. Cu_1 and M_1 both distinct at base . [Greenomyia Brun.].
   Cu_1 detached at base . . . . . 5.
5. Costa ending at tip of R_5 . . [Clastobasis Skuse].
   Costa produced beyond tip of R_5; M_1 detached at base [Ateleia Skuse].
6. *An* strong and distinct; Sc_2 present . . . . . 7.
   An faint; Sc_2 absent . . . . . 8.
7. Costa ending at tip of R_5 . . . . Leia Mg.
   Costa much produced beyond R_5 . [Acrodicrania Skuse].
8. Base of *Rs* present; M_1 not detatched at base [Anomalomyia Hutton].
   Base of *Rs* wanting; M_1 and Cu_1 detached at base *[Leiella End.].
9. Palpi well developed; female with normal wings; Cu_1 not arising from *M* . . . . . 10.
   Palpi minute, composed of a single rounded segment; female wingless; in male wing Cu_1 arises from *M* . Pnyxia Joh.
10. Cu_1 detached at base; Cu_2 with a rather sharp double curve into which *An* runs, forming a closed cell; tibial bristles rather long . . . . . 11.
    Cu_1 not detached at base; Cu_2 not strongly curved; *An* ending free; tibial bristles not longer than the diameter of the tibiae . . . . . 12.
11. Media forked; lateral ocelli remote from eye-margins [Paradoxa Marshall].
    Media simple; lateral ocelli touching eye-margins [Cycloneura Marshall].
12. Ocelli wanting; a chitinised fold between R_5 and M_1 *[Syndocosia Speiser].
    Ocelli present; no chitinised fold between R_5 and M_1 . 13.
13. R_1 very short; *r-m* several times longer than R_1; lateral ocelli moderately removed from eye-margins [Novakia Strobl].†
    R_1 not shorter than *r-m*, sometimes 2–3 times as long . . 14.
14. Lateral ocelli touching the eye-margins; R_1 rather long; stem of median fork short; pleurotergites hairy; no hind tibial comb . . . . . Docosia Winn.
    Lateral ocelli remote from the eye-margins; R_1 shorter . 15.
15. Pleurotergites hairy; hind tibial comb present; *Sc* very short . . . . . Megophthalmidia Dz.
    Pleurotergites bare; no hind tibial comb; R_4 often present, forming a narrow cell . . . . . 16.
16. *Sc* rather long and ending in *R*; *Cu* forking near base of wing . . . . . Ectrepesthoneura End.
    Sc very short and ending free; *Cu* forking near middle of wing . . . . . Tetragoneura Winn.

† Synonym, *Kerteszina* End. I have examined the type of *K. tunesica* End.; it answers so well to Strobl's description of *Novakia scatopsiformis* that there can be no doubt the two are congeneric even if the two species are not identical. As Strobl points out, the species of *Novakia* resemble *Docosia* in habitus, and I should consider them related to that genus. Strobl was mistaken in referring his genus to the Sciarinae.

Schiner's *Pseudosciara* from Colombia may belong to this tribe; it is said to have only 12-segmented antennae, which if correct would suffice to distinguish it from the other genera.

Genus Rondaniella Joh.

(*Leia* Winn.).

As stated under the genus *Leia*, I now accept Johannsen's name for this genus, in place of *Leia* as used by Winnertz. In spite of the much longer R_1, the general appearance is very similar to *Leia* and the two genera are no doubt related. The broken vein M_1 is characteristic of the European species, but is not shown by some oriental forms which are otherwise similar.

The early stages have not been described.

R. dimidiata (Mg.) (*terminalis* Mg.; *elegans* Winn.) (fig. 210). I am still of opinion that there is only one species of this genus in Britain and probably in Europe, but consider that Meigen's earlier name *dimidiata* should be used for it. The markings of the thorax are variable, but the species is easily known by the black tip of the wing. It is rare but widely distributed.

Genus Leia Mg.

(*Glaphyroptera* Winn.; *Neoglaphyroptera* O.-S.; *Leiomyia* Rond., Edw.).

In my previous paper I argued in favour of the use of the name *Leiomyia* for this genus, on the ground that the mere designation of a type species by Curtis was insufficient to prevent the acceptance of Winnertz's later restriction of Meigen's *Leia*. I find, however, that my interpretation of

the rules of nomenclature is not upheld by the members of the British committee on Entomological nomenclature, and in deference to their views I now accept Johannsen's use of the names *Leia* and *Rondaniella*.

The members of this genus are at once distinguished from other British fungus-gnats by the very short vein R_1, which is shorter than the very long and horizontally placed *r-m*. It is possible that this condition may have come about through the loss of the base of *Rs*, and that the short vein connecting R_5 with R_1 is really R_4. If this is so the ancestor of *Leia* must have possessed a small radial cell shaped like that of *Tetragoneura*. The venation of the South American *Leiella*, where R_5 is a continuation of *r-m* and has lost all connection with R_1, may perhaps be regarded as tending to confirm this view. However, this is a matter of conjecture, and in default of further evidence the usual view that the short transverse vein is the base of *Rs* may be accepted.

The species of *Leia* are generally showy insects with distinct wing-markings, and in this respect as well as in the possession of strong tibial spines they resemble *Mycetophila*, a genus to which they are certainly not closely related. Many of the species are very variable in colour, especially in the thoracic markings.

The adults occur mainly during the summer and are most easily obtained by beating the branches of trees at a height of 6 ft. or so from the ground; they do not often rest among bracken or low herbage as do most of the other members of the family.

The habits of the larvae are similar to those of *Mycomyia*; they spin a slimy web on the under surface of fungi and form no definite cocoon, the motionless pupa being merely suspended in an irregular network of threads.

Seven British species have so far been discovered, distinguishable thus :—

1. Cu_1 not disconnected at base; a dark cloud over *r-m* and some separate dark spots near the tip of the wing *winthemi* Lehm.
   Cu_1 disconnected at base; no dark cloud over *r-m*; usually a distinct dark fascia before the wing-tip . . . 2.
2. Abdomen mainly or all orange-yellow; femora all yellow . 3.
   Abdomen with black bands; hind femora black at the tips . 4.
3. First abdominal tergite all orange; male claspers not bifid *fascipennis* Mg.
   First abdominal tergite with a black spot at the tip; male claspers deeply bifid . . . . . *crucigera* Zett.
4. Cross-vein *r-m* more than twice as long as R_1 *cylindrica* Winn.
   Cross-vein *r-m* less than twice as long as R_1 . . . 5.
5. Black abdominal triangles not reaching the sides of the segments, but tending to form a continuous longitudinal stripe; male claspers trifid . . . . . *subfasciata* Mg.
   Black abdominal triangles reaching the sides of the segments; not tending to form a stripe; male claspers not trifid . 6.
6. Male clasper simple, curved and tapering; colour very variable, orange to black . . . . . *bimaculata* Mg.
   Male clasper stout, with a projecting arm . *piffardi* sp. n.

L. winthemi Lehm. This conspicuously marked species is apparently rare in Britain, but has probably been overlooked, especially as it might easily be confused with *Anisopus fenestralis*. I have seen it from Hartland, N. Devon (*Austen*); New Forest (*Adams*); Hitchin, Herts., and Shefford, Beds. (*F.W.E.*); Delamere, Cheshire (*Britten*). It also has a remarkably wide distribution outside Britain, being known from Europe, North America, India, Java and Sumatra. I have examined specimens from all these countries and find them practically identical.

L. fascipennis Mg. (fig. 211). This, the type of the genus, is the only one which can be considered at all common in Britain; it is easily recognised by the uniformly reddish colour of the body in life, though after death the abdomen of the female is very liable to turn black.

L. crucigera Zett. Formerly considered synonymous with *L. fascipennis*, this is quite distinct in the structure of the male hypopygium, and may be identified also by the black spot at the tip of the first abdominal tergite. As in *L. fascipennis* the wing-fascia varies in distinctness, and in fact in the only two British examples I have seen it is absent altogether. These are a male and female from Monk's Soham, Suffolk (*C. Morley*), captured respectively 15 vi. 1919 and 30 vi. 1916.

L. cylindrica (Winn.) (? *bilineata* Winn.). The species which I have thus identified is very distinct by the structure of the hypopygium, which is large and has the side pieces produced into rather long divergent points. The unusually long *r-m*, distinctly over twice as long as R_1, will also distinguish both sexes from the following three species. British localities: Logie, Elgin (*Jenkinson*); Sherwood

Forest (*Carr, F.W.E.*); Staverton, Suffolk (*Morley*); King's Lynn (*Atmore*).

L. subfasciata Mg. (*tricuspidata* Strobl). I have been unable to discover any very satisfactory distinction between the females of this and the next two, but the male hypopygium is very distinctive with its trifid claspers. I have seen males only from Nethy Bridge (*Lamb*); Rannoch (*Verrall*); and Teesdale (*F.W.E.*).

L. bimaculata Mg. (? *fasciola* Mg., ? *octomaculata* Curt.). In the typical form this species has the thorax nearly all black, with the shoulders more or less yellow; the abdomen mainly black, with larger or smaller yellow lateral basal triangles on each segment. What I regard as merely a variety (which may be called var. *fasciola* Mg.) has the thorax mainly orange yellow, sometimes almost entirely so, but usually with the scutellum and postnotum black and with more or less obvious traces of two or three black stripes on the posterior half of the mesonotum; abdomen largely orange-yellow, with black apical bands on the tergites. In the dark form the wing-fascia is always very distinct; in the light form it is fainter, and in the lightest specimens sometimes even absent altogether. Intermediates between the two forms occur, and the hypopygium has an identical structure in both; the claspers are simple, curved and tapering to the rather blunt tips, and the parameres end in long points. Both forms are fairly common.

I have reared numerous specimens of the dark form, with one or two showing transitional colouring, from larvae feeding on a decaying specimen of *Russula nigricans* at Shefford, Beds. None could be found on fresh examples of the fungus in the locality, these containing only *Mycetophila guttata*.

L. piffardi sp. n. Closely resembles *L. bimaculata* var. *fasciola*, no external differences being observable, but hypopygium of a very different structure (figs. 36–38).

Type ♂, in the British Museum from Felden, Herts., 20 viii. 1895 (*A. Piffard*).

Genus Megophthalmidia Dz.

Though with a venation similar to *Parastemma* and *Tetragoneura*, this genus appears distinct, at least from the latter, by the possession of a strong comb on the hind tibiae and hairs on the pleurotergites; also by the presence

of a few macrotrichia on the anal lobe of the wing, such as are often found in the Mycetophilinae. I suspect that *Rutrophora* Schnuse is synonymous, and perhaps also *Neoparastemma* S. Abreu.

The early stages are unknown.

M. crassicornis (Curt.) (*Leia brevicornis* Zett.; *L. helvola* Hal.; *L. ferruginea* v. d. Wulp; *Cordyla valida* Walk.; *M. zugmayeriae* Dz.; ? *Rutrophora rufina* Schnuse) (fig. 214). The thick orange antennae and general ochreous colouring render this species very distinct. There is little doubt that all the above names apply to the same insect. It is rare in Britain. Some fresh records are: New Forest (*Adams*); Rocester, Staffs. (*F.W.E.*).

Genus Tetragoneura Winn.

If we disregard the presence of R_4 as a generic character there is little or nothing to separate *Parastemma* from *Tetragoneura*, and the two may perhaps be united. The genus *Neoparastemma*, recently proposed by Santos Abreu may either be a *Tetragoneura* or perhaps more probably a *Megophthalmidia*. Besides two or three European species there are a fair number in New Zealand.

I have obtained the larvae of *T. sylvatica* on mouldy branches; they form a slight slimy web and for pupation a very slight dry meshwork cocoon.

T. sylvatica (Curt.) (*compressa* Walk.) (fig. 213). A small shining black species generally common in woods.

Genus Ectrepesthoneura End.

The differences in venation seem quite sufficient to separate this as a genus distinct from *Tetragoneura*, though the two are doubtless closely allied. The forking of the cubitus close to the base of the wing is of interest as supporting the conclusion that this group of genera are more or less related to the Sciarinae. There is one European species.

E. hirta Winn. (*aliena* Walk.) (fig. 212). A small black insect occasionally found on windows. British Museum specimens are from Sussex, Middlesex, Herts., Hereford and Lancs.

Genus Docosia Winn.

The species of this genus are small black insects, in life much resembling species of *Sciara*. They also resemble

Tetragoneura in appearance and habits, but are sharply differentiated by the position of the lateral ocelli close to the eye-margins, as well as by the longer vein R_1. They might easily be confused with the genus *Trichonta* of the Mycetophilinae, which has a rather similar venation, but the microtrichia of the wings and tibiae are quite irregularly arranged, and on this account I have included *Docosia* in the Sciophilinae. There are no anepisternal bristles, another clear point of distinction from *Trichonta*. I believe the genus is not distantly related to *Tetragoneura*.

The larvae differ from those of the other Sciophilinae in living inside fungi, generally those in a more or less advanced state of decay. One species has the remarkable habit of living in birds' nests, and this has not been found elsewhere. This tendency to saprophagism is another point of similarity with the Sciarinae, and may indicate that that subfamily had its origin from the same stock as the *Docosia* and *Tetragoneura* group. The pupae are enclosed in a rather tough cocoon formed partly of silk and partly of the food matrix, within which it is situated.

Four of the species described in Landrock's recent revision have been found in Britain, and also one other which appears to be new to science. These differ as follows :—

1. *Sc* setose and ending free; wings practically clear *gilvipes* Hal.
   Sc bare or almost so, and ending in *R* . . . . . 2.
2. Hind femora and tibiae all black; all the larger bristles of mesonotum and scutellum black . . . *fumosa* sp. n.
   Hind femora and tibiae at least partly ochreous; thoracic bristles all pale yellowish . . . . . 3.
3. Posterior coxae all yellow; wings quite clear *moravica* Landr.
   Posterior coxae blackened on at least the basal half; wings more or less darkened at the tip, at least in the female *sciarina* Mg., *fuscipes* v. Ros.

D. gilvipes (Hal.) (*sciarina* Winn. *nec* Mg.). Quite distinct from the other species by venation. It seems to be fairly common throughout the country. I have reared specimens from *Auricularia mesenterica, Hypholoma fasciculare* and *Polyporus betulinus*.

D. fumosa sp. n.

Head, thorax and *abdomen* black, somewhat shining. Thoracic bristles mostly black, but some of the smaller ones pale. Abdominal pubescence pale. Hypopygium, figs. 39–42. Coxae all ochreous, as are the four anterior femora and tibiae. Hind femora, tibiae and tarsi entirely deep black, the tibial spurs, however, pale yellow; tibiae shorter and stouter than usual. *Wings* (fig. 215) with a strong smoky tinge all over, deepest towards the costa on the posterior half of the wing; less pronounced in the male than in the female. Venation as in *D. sciarina* (*valida*). Halteres yellow.

Type in the British Museum from Hogley, Oxford (*A. H. Hamm*).

I first recognised this as a new species from two females collected by the late Mr. F. Jenkinson at Crowborough, Sussex, 17 viii. 1907 and 21 iv. 1914. Subsequently Mr. A. H. Hamm sent me specimens of both sexes which he had reared from larvae found feeding in old decaying birds' nests in the Oxford district. His notes are as follows :—

" Hogley Bog, Oxford, 3 iii. 1923. An old thrush's nest, filled with old leaves and hawthorn seeds, most of which had been eaten by mice and probably stored by them; the whole was very wet and decaying. A few larvae were found, white, of a slight leaden tint. Thirteen were bred, emerging from April 2nd to 17th. No parasites.—Old hedge-sparrow's nest, the Parks, Oxford, 27 iii. 23. Two larvae were found; only one reached maturity and emerged 14 iv. 23."

Since Mr. Hamm made this interesting discovery I have myself reared the species from several thrushes' and hedge-sparrows' nests at Letchworth and Weston, Herts.; most of the specimens were obtained, like those reared by Mr. Hamm, from nests which had been filled by mice. It seems likely that the species will be found to be common and widely distributed, although it has but rarely been seen on the wing.

D. moravica Landr. Apparently uncommon in Britain, but very likely overlooked owing to confusion with *D. sciarina*. There are sometimes, but not always, a few macrotrichia on *Sc*. I have seen males from Aviemore (*Yerbury*) and Logie (*Jenkinson*), also females with yellow coxae, probably belonging to this species, from Grange, N. Lancs.; Ffrith, N. Wales; and Shefford, Beds. (*F.W.E.*).

D. fuscipes (v. Ros.) (*pseudovalida* Landr.). The British Museum possesses three males of this species from the New Forest (*Adams*). According to Landrock it differs from

D. sciarina (*valida*) in the more erect bristles of the mesonotum, but I cannot detect any obvious difference in this respect, or in any feature other than the hypopygium.

D. sciarina (Mg.) (*basalis* Walk., *pubescens* Walk., *valida* Winn.). This species, in the restricted sense of Landrock, is fairly common in most districts.

Genus Pnyxia Joh.

A genus of somewhat uncertain relationships, which has usually, and perhaps correctly, been referred to the Sciarinae. I include it now in the Sciophilinae on account of the round eyes, which are destitute of a dorsal bridge, and the more or less oblique *r-m*, which are the main points of distinction between the two subfamilies. Perhaps, however, it would be more correct to regard the genus as a reduced Sciarine form. Apart from the eye-structure, the male sex is readily distinguished from other Sciophiline and Sciarine genera by the venation, Cu_1 arising from the stem of *M* quite separately from Cu_2. A similar venation is found in the fossil genus *Heterotricha* (which also has a living representative in South Africa), but this has hairy wings and normal Sciarine eyes. The wingless and haltere-less female of *Pnyxia* is not easily distinguished from other degenerate forms (compare genus *Epidapus*, p. 543).

P. scabiei (Hopkins) (*subterranea* Schmitz) (fig. 216). Originally described from North America, this was first recorded as British by Mr. H. J. Charbonnier from Somerset material; Mr. E. R. Speyer has since found it at Cheshunt and elsewhere, the larvae attacking potatoes and tomato seedlings, and also feeding in manure. As in America, two forms of the male (long-winged and short-winged) are found. Our specimens agree with Johannsen's description, and also with Schmitz's description and figures of his *P. subterranea* reared from ants' nests; the distinctions between *P. scabiei* and *P. subterranea* which Schmitz points out are probably due either to individual variation or to inaccuracy in Hopkins' original description.

Subfamily **Mycetophilinae.**

Johannson in 1912 divided this subfamily into two sections, the first with the microtrichia of the wing-membrane irregularly arranged, the second with the microtrichia

disposed in a more or less linear manner. As has been shown above (p. 545), many of the genera of the first group are closely related to Sciophiline genera, and I therefore propose to restrict the subfamily Mycetophilinae to Johannsen's second group, which is evidently a natural assemblage, the members of which show a number of characters in common besides the one indicated by Johannsen, although these other characters are all to be found in one or more Sciophiline genera. The linear arrangement of the microtrichia is not very well marked in *Trichonta* and *Phronia*, but in these as well as all the other genera the fine tibial setae are placed in regular rows, a character which will distinguish the Mycetophilinae from all *Sciophilinae* except *Mycomyia* and *Neoempheria*. We may then define the Mycetophilinae as follows:—

Lateral ocelli always in contact with the eye-margins; median ocellus small and often absent. Seventh and eighth abdominal segments of male always small and retracted, visible only on dissection. Wing-membrane without macrotrichia, except sometimes a few on the anal lobe; microtrichia arranged in fairly definite lines, as are also the fine setae of the tibiae. *Sc* reduced, never reaching costa. Larvae not spinning a web; usually feeding internally on the substance of fungi, or if feeding externally, then usually bearing some sort of case formed of excrement.

The genera fall into two groups, which seem to me to be best distinguished by the absence or presence of anepisternal bristles. The two groups are equally well separated in the larvae, the first (as already pointed out by Johannsen) having no black ambulacral setae, while in the second these are always more or less conspicuous.

Most of the species of this subfamily are particularly abundant in the late autumn, many breeding continuously throughout the winter whenever food is available, so that adults may be captured nearly all the year round, whereas the adults of the Sciophilinae and Ceroplatinae are on the wing chiefly during the summer months.

Nearly all the known recent genera are well represented in Britain and are thus distinguished:—

1. Anepisternal and pteropleural bristles absent; hind coxa with a fairly strong bristle at base; empodia absent or rudimentary; hind tibial comb usually indefinite or absent; tibial bristles short (Tribe *Exechini*) . . . . . 2.

Anepisternal bristles present; hind coxa usually without basal bristle; empodia and hind tibial comb nearly always distinct (Tribe *Mycetophilini*) . . . . . 6.

2. Costa produced well beyond tip of R_5 . ANATELLA Winn.
   Costa ending at R_5 . . . . . 3.
3. Base of cubital fork beyond that of the media EXECHIA Winn.
   Base of cubital fork below or before that of the media . 4.
4. *An* strong and distinct . . . . RHYMOSIA Winn.
   An short and weak or absent . . . . . 5.
5. The vein below Cu (Cu_2 of Tillyard) very long and distinct, reaching nearly to the middle of the cubital fork BRACHYPEZA Winn.
   This vein shorter and less distinct . . ALLODIA Winn.
6. Pteropleural bristles absent . . . . . 7.
   Pteropleural bristles present; tibial bristles long and strong 10.
7. Tibial bristles long and strong; *Sc* ending in *R* DYNATOSOMA Winn.
   Tibial bristles small, at most a little longer than the diameter of the tibia . . . . . 8.
8. Second segment of palpi greatly enlarged CORDYLA Winn.
   Second segment of palpi not enlarged . . . . . 9.
9. Base of cubital fork below or before that of the media; *Sc* rather long and normally ending in *R* . TRICHONTA Winn.
   Base of cubital fork beyond that of the media; *Sc* ending free . . . . . PHRONIA Winn.
10. Cubitus forked . . . . . 11.
    Cubitus simple . . . . . 14.
11. Cu_1 slightly divergent from M_3 apically, but parallel with or slightly convergent towards Cu_2; pleurotergites and pteropleurites generally quite large (somewhat as in text-figs. 2 and 3); costa ending at tip of R_5 . MYCETOPHILA Mg.
    Cu_1 parallel with M_3 throughout, but slightly divergent from Cu_2; pleurotergites and pteropleurites small (text-fig. 4); head usually fitting very closely into the front of the thorax . . . . . 12.
12. Pronotal lobes distinctly separated from the propleura, and provided with distinct long bristles; base of cubital fork hardly if at all before *r-m*; costa distinctly produced beyond tip of R_5 . . . . . EPICYPTA Winn.
    Pronotal lobes only indistinctly separated from the propleura and without long bristles; base of cubital fork well before *r-m* . . . . . 13.
13. Costa produced beyond tip of R_5; second abdominal segment without ventral bristles . . [PLATUROCYPTA End.].

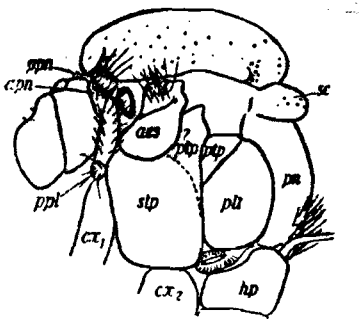

FIG. 1.

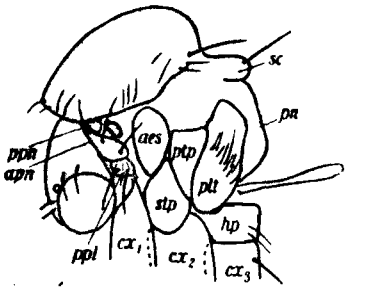

FIG. 2.

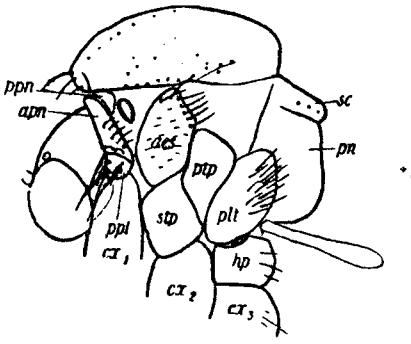

FIG. 3.

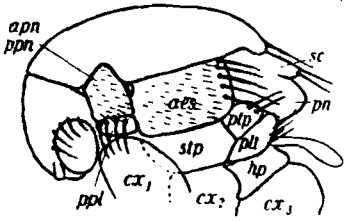

FIG. 4.

TEXT-FIGS. 1–4.

Side-view of thorax of (1) *Symmerus annulatus*, showing anepisternal and postnotal hairs, and bristles on posterior division of pronotum; (2) *Allodia lugens*, showing pleurotergal hairs and two propleural bristles; (3) *Trichonta venosa*, showing anepisternal and pleurotergal bristles; (4) *Delopsis aterrima*, showing propleural, anepisternal and pteropleural bristles, absence of strong pronotal bristles, small pleurotergites, etc. Lettering the same in each: *apn* and *ppn*, anterior and posterior divisions of pronotum; *ppl*, propleura; *stp*, sternopleurite; *aes*, anepisternite; *ptp*, pteropleurite; *hp*, hypopleurite; *plt*, pleurotergite; *pn*, postnotum; *sc*, scutellum.

The dotted line in fig. 1 represents the position of the suture between the sternopleurite and the pteropleurite in *Centrocnemis*, which is more normal in its pleural structure than *Symmerus* or *Ditomyia*.

Costa ending at tip of R_5; second abdominal segment with a pair of ventral bristles . . . . DELOPSIS Skuse.

14. M_3 and *Cu* slightly divergent; pleurotergites and pteropleurites large; middle tibiae with ventral bristles ZYGOMYIA Winn.
M_3 and *Cu* parallel; pleurotergites and pteropleurites small; middle tibiae without ventral bristles; R_1 and R_5 often rather closely approximated . . . . . 15.

15. Costa hardly produced beyond tip of R_5 . SCEPTONIA Winn.
Costa produced far beyond tip of R_5 [PLATYPROSTHIOGYNE End.].

Genus ANATELLA Winn.

The members of this genus are readily distinguished by the strongly produced costa. The venation most resembles that of *Phronia*, in which the costa is also somewhat produced, but the absence of anepisternal bristles and of empodium, as well as the structure of the hypopygium, indicates that the genus is more nearly allied to *Exechia* or *Allodia*. The species are all of small size and more or less rare; the life-history is unknown.

The seven species which have so far been found in Britain may be distinguished as follows:—

1. Prothoracic lobes and palpi more or less darkened . . 2.
Prothoracic lobes and palpi yellow (the former slightly darkened in *ciliata*, otherwise strongly contrasting with the dark mesonotum) . . . . . 4.

2. Abdomen all dark; mesonotum more or less dusted with grey, outer spur of mid tibiae about half the length of the inner *setigera* Edw.
First three abdominal segments yellowish apically . . 3.

3. Mid-tibial spurs subequal in length . . *unguigera* Edw.
Outer spur of mid tibiae about two-thirds the length of the inner . . . . . *incisurata* sp. n.

4. Media and cubitus almost as dark as the radius; middle femora of male with a row of long cilia beneath . . . 5.
Media and cubitus pale; middle femora of male not ciliate beneath . . . . . 6.

5. Male claspers with a group of small spines at the tip *ciliata* Winn.
Male claspers without spines but with very long hairs *piligera* sp. n.

6. Abdominal segments 1–3 largely yellowish at the sides *flavomaculata* sp. n.
Abdomen all dark . . . . . *minuta* Staeg.

In all seven species the mesonotum is uniformly dark; the base of the cubital fork is only a short distance beyond that of the median, and the halteres are yellow.

A. setigera Edw. (fig. 217). Apparently distinct by the black abdomen, grey-dusted mesonotum, and short outer spur of the mid tibiae. Lower clasper with a long bristle at the tip. Since describing the species from Brodick, Arran, I have taken specimens in Wyre Forest.

A. unguigera Edw. As the spurs of the mid tibiae are nearly equal in length I suspect this may be Winnertz's *A. flavicauda*, although the hypopygium does not agree very exactly with his description. The lower clasper has a strong tooth at the tip. Besides the type from Arran there is a male in the British Museum from the New Forest (*Adams*).

A. incisurata sp. n. (Verrall MS.) (figs. 43–45). Very similar to the last, but the abdomen generally more extensively yellow on the sides of the first few segments, towards the apical margins, and the outer spur of the middle tibiae shorter, not more than two-thirds as long as the inner. Hypopygium resembling the last two, but the inner appendage of the upper clasper strongly forked; other differences in detail as shown in the figures; the lower clasper has neither a long bristle nor a stout tooth at the tip.

Type in the British Museum from Hitchin, Herts., ix. 1915 (*F.W.E.*); others from Crowborough, Sussex (*Jenkinson*) and Stockenchurch, Oxford (*Verrall*); others in the Cambridge Museum.

Although this may possibly be Winnertz's *A. flavicauda* it seems best to treat it as new, since the agreement with the description is not very close, particularly in regard to the rather short outer spur of the middle tibiae.

A. ciliata Winn. (figs. 46, 47). In my experience this and not the last is the species most frequently met with, though it cannot be called common. Of the two species which have the middle femora of the male strongly ciliate beneath, I use the name *ciliata* for the one which appears to agree best with Winnertz's description in regard to the hypopygium. In this the male claspers are as shown in figs. 46. The prothoracic lobes and palpi are yellowish, not dark as in the last three species nor yet quite so conspicuously pale as in the following three. The British Museum possesses examples from numerous localities in England and Wales.

A. piligera sp. n. (figs. 48–50). Closely resembles *A. ciliata* and like it with ciliate mid femora in the male, but the prothoracic lobes more distinctly yellow and the male hypopygium quite different, the upper claspers clothed with very long bristles.

Type ♂ in the British Museum from Llangammarch Wells, Brecknock, 12 viii. 1913 (*Yerbury*); a second male from Burnham Beeches, Bucks., 15 iv. 1913 (*F.W.E.*).

A. flavomaculata sp. n. (figs. 51–53). A very small species, somewhat smaller than any of the preceding. Prothorax and palpi conspicuously yellow. Mesonotum all dark, without greyish reflections. Abdomen with a yellowish patch extending along the sides of the first three segments. Spurs of mid tibiae subequal. Venation as in the other British species. Hypopygium as figured.

Type ♂ in the British Museum from Sheviock, Cornwall, 10 ix. 1912 (*Yerbury*); there is also a male in the Cambridge Museum from the New Forest (*Sharp*), and another in Mr. Collin's collection, also from the New Forest, this last being the specimen on which Verrall based his record of *A. gibba*.

A. minuta Staeg. (figs. 54–56). This much resembles the last, except that the abdomen is entirely dark, and the hypopygium is quite different, the strongly produced corners of the ninth tergite and the square-ended anal cerci being very characteristic. The figures are taken from a male in the British Museum from Wyre Forest, 14 ix. 1922 (*F.W.E.*); others are from Hay, Glamorgan (*Yerbury*) and Cambridge (*Jenkinson*).

Genus Exechia Winn.

This genus is fairly well defined by the position of the base of the cubital fork distinctly, often much beyond that of the median, but apart from this there is no important difference between it and *Rhymosia* or *Allodia*. Some writers have confused the genus with *Phronia*, to which, however, it is not at all closely related, as shown by the presence of a strong basal bristle on the hind coxa and the absence of anepisternal bristles and empodium, as well as by the structure and habits of the larvae. There are rather numerous species in nearly all parts of the world.

The larvae live in various ground-fungi, especially the smaller species, and most frequently in the stalk. They spin a slight silky cocoon before pupation, generally just underground.

We have about 36 British species which fall very readily into two groups, though many of the species in these groups are only distinguishable by characters of the hypopygium or ovipositor; in this genus the females as well as the males nearly always show good genitalic distinctions, but the characters can only be appreciated by reference to figures, and I have therefore not referred to them in the key below. As in other genera of this group the number of propleural bristles seems to be very important for classification, and some other chaetotactic characters are also useful.

1. *Rs* almost or quite straight; fork of *Cu* short, Cu_2 quite straight; *r-m* very long, more than twice as long as the stem of the median fork; *Sc* ending free; pale markings of abdomen when present nearly always situated towards the bases of the segments; two or three propleural bristles, placed side by side; ninth abdominal sternite of male small (Group I) . . . . . 2.

   Rs usually distinctly curved downwards at the tip; fork of *Cu* often rather long, Cu_2 more or less curved; *r-m* not more than twice as long as the stem of the median fork; *Sc* more or less distinctly ending in *R*; hind margins of abdominal tergites pale; one long propleural bristle, with sometimes a second shorter one above or below it; ninth abdominal sternite of male often quite large, occupying the underside of the hypopygium (Group II) . . . . 17.

2. Two propleural bristles . . . . . 3.

   Three or four propleural bristles; rather large species with yellow shoulders . . . . . 16.

3. Hind tibiae on the inner side with 12–15 fine bristles; a similar number in the outer row; thorax rather light ochreous; posterior margins of abdominal tergites pale, as well as the bases of the segments . . . . . *pallida* Stan.

   Hind tibiae on the inner side with 4–8 fine bristles near the tip; thorax mainly dark; posterior margins of most abdominal tergites dark . . . . . 4.

4. Hind femora with a dark mark at the base beneath, sometimes faint . . . . . 5.

   Hind femora without any trace of a dark mark at the base beneath . . . . . 11.

5. Mesonotum all blackish-grey; abdomen of ♂ mostly or all black . . . . . 6.
   Mesonotum distinctly yellowish on the shoulders; abdomen of ♂ conspicuously yellow at the base of segment 3 or 3 and 4 . . . . . 8.
6. Abdomen of ♀ practically all black like that of the ♂ *spinigera* Winn.; *frigida* Holmgr.
   Abdomen of ♀ with large yellow lateral spots . . 7.
7. Abdomen of ♂ all black . . . . . *fusca* Mg.
   Abdomen of ♂ with a small yellow lateral spot on segment 2 *confinis* Winn.
8. Abdominal tergites 1 and 2 pale posteriorly; 4 all dark in ♂ *dorsalis* Staeg.
   Abdominal tergites 1 and 2 with the posterior edge dark 9.
9. The yellow marks on the abdomen not united dorsally *lundstroemi* Landr.
   The fourth abdominal tergite with a complete yellow band (♂ ♀) . . . . . 10.
10. Hind tibiae with 10–12 bristles in the outer row *bicincta* Staeg.
    Hind tibiae with about 7 bristles in the outer row *dizona* Edw.
11. Hind tibiae with about 12 bristles in the dorsal row; ♂ hypopygium very large; abdominal tergites 2–5 broadly yellow at base (♂ ♀) . . . . . *festiva* Winn.
    Hind tibiae with 4–8 bristles in the dorsal row; ♂ hypopygium small; ♂ abdomen mainly black . . . . 12.
12. Mesonotum considerably shining, all blackish *lucidula* Zett.
    Mesonotum quite dull . . . . . 13.
13. Scape of antennae black; abdomen all black in both sexes *nigra* sp. n.
    Scape of antennae more or less yellowish; abdomen of female with yellow markings . . . . . 14.
14. Abdominal tergites 3 (♂) or 3 and 4 (♀) with complete yellow bands . . . . . *exigua* Lundst.
    Abdomen all black (♂) or with lateral yellow spots which are not united dorsally (♀) . . . . . 15.
15. Hind tibiae with 6–8 bristles in the dorsal row *separata* Lundst.
    Hind tibiae with 4–5 bristles in the dorsal row *nana* Staeg.; *parva* Lundst.
16. Hind femora with a conspicuous dark mark at the base beneath *contaminata* Winn.; *pseudocincta* Strobl.
    Hind femora without dark mark at base beneath *nigroscutellata* Landr.
17. Two propleural bristles (one smaller than the other) . 17.

   Only one propleural bristle; mesonotum with discal bristles 24.
18. *Rs* straight; cubital fork narrow, its branches parallel; Cu_2 not reaching margin; mesonotum without discal bristles *parallela* sp. n.
    Rs more or less curved down at tip; branches of cubital fork divergent; Cu_2 reaching the margin . . . . 19.
19. Mesonotum greyish, with three black stripes, and without discal bristles; wings smoky with a small nearly clear patch in the middle below base of *Rs* *trivittata* Staeg.; *trisignata* Edw.
    Mesonotum otherwise coloured; discal bristles present; wings otherwise . . . . . 20.
20. Mesonotum all dark; *r-m* little if any longer than the stem of the median fork; abdomen very slender, yellow markings conspicuous . . . . . *leptura* Mg.
    Mesonotum distinctly yellow on the shoulders; *r-m* about twice as long as the stem of the median fork . . 21.
21. A slight cloud on the wing below Cu_2; first front tarsal segment hardly longer than the tibia . *unguiculata* Lundst.
    No cloud below Cu_2 . . . . . 22.
22. First front tarsal segment fully one-third longer than the tibia *subulata* Winn.; *fimbriata* Lundst.
    First front tarsal segment barely one-fourth longer than the tibia . . . . . 23.
23. Segments of male flagellum about twice as long as broad *indecisa* Walk.
    Segments of male flagellum hardly longer than broad *ligulata* Lundst.; *hammi* sp. n.
24. *Rs* scarcely curved; cubital fork rather short, the distance of its base from that of the median fork equal to nearly three times the length of the stem of the median fork; abdomen largely yellow . . . . . *crucigera* Lundst.
    Rs strongly curved; cubital fork longer . . . 25.
25. Mesonotum uniformly dark grey . . . *pollicata* sp. n.
    Mesonotum more or less distinctly yellow on the shoulders 26.
26. Mesonotum with three separate brown stripes; a faint dark cloud below Cu_2 . . *intersecta* Mg.; *magnicauda* Lundst.
    Mesonotum not striped or with the stripes fused; no cloud below Cu_2 *clypeata* Lundst.; *pulchella* Winn.; *jenkinsoni* sp. n.

Group I.

E. pallida (Stan.). I know of only a single British example of this species, taken by Mr. A. H. Hamm at

Oxford and presented by him to the British Museum. It is quite distinct from all the other British species by the chaetotaxy of the hind tibiae. Mr. Hamm noted that the middle legs were curved over the body in repose, as is frequently the case in species of this and allied genera.

E. spinigera Winn. (*spinuligera* Lundst.). Lundström's name for this species was proposed in the belief that his previous identification of Winnertz's species was incorrect, but Dziedzicki's figures based on Winnertz's specimens appear to represent the same species, and I therefore restore the older name. The species is common in Britain, but I have only bred it on one occasion, when I found the larvae in *Hygrophorus chlorophanus* in company with those of *E. fusca*.

E. frigida (Holmgr.). This is the northern representative of *E. spinigera*, being common in many arctic countries, but also extending far southwards in North America. I now introduce it as British on the basis of a male from Gorge of Avon, 16 ix. 1905 (*J. J. F.-X. King*). It seems distinguishable from *E. spinigera* only by a slight difference in the hypopygium.

E. fusca (Mg.) (*guttiventris* Mg.; *fungorum* auct. *nec* Deg.). The commonest species of the genus everywhere with us. I have reared it from a variety of fungi, chiefly small agaricine species: *Boletus versicolor*; *Amanita mappa*; *Tricholoma nudum*; *T. terreum*; *Hebeloma crustuliniformis*; *Marasmius erythropus*; *Clytocybe infundibuliformis*; *Collybia radicata*; *C. butyricum*; *Inocybe incarnata*; *Hygrophorus chlorophanus*.* The larvae are generally found in quite small numbers, and more often in the stem of the fungus than in the cap.

E. confinis Winn. Since this was recorded from Yorkshire by Mr. C. A. Cheetham I have taken it in Wyre Forest.

E. dorsalis (Staeg.). A widely distributed and rather common species. I have reared it from several species of *Boletus* and also from *Cortinarius hinnuleus* and *Laccaria laccata*.

E. bicincta (Staeg.) (*interrupta* Zett.; *serpentina* Lundst.). Apparently a rare species with us. The only British

* For the identification of these fungi, as well as of nearly all others referred to in this paper, I am indebted to my colleague Mr. J. Ramsbottom.

localities known to me are Oxford (*Hamm*); Wyre Forest (*F.W.E.*); and Longworth (*Jenkinson*).

E. dizona Edw. (1925) (*bicincta* Lundst. *nec* Staeg.). This is also decidedly rare, as apart from the two specimens mentioned in my previous paper I have only seen one, a female from Monks Wood, Hunts. (*F.W.E.*).

E. lundstroemi Landr. (1923) (*interrupta* Lundst. *nec* Zett.). There is a male of this species in Mr. Collin's collection.

E. nigra sp. n.

A rather small species; length of body, 3–4 mm.; wing, 3–3·5 mm.

Head dull blackish; palpi dark brown. Antennae black, except for the bare basal half of the first flagellar segment, which is yellowish; flagellar segments slightly longer than broad. *Thorax* entirely dull blackish, with slight grey reflection on the shoulders. *Abdomen* all black in both sexes, including the genitalia. Hypopygium (fig. 63) much as in *E. nana*, but the intermediate clasper relatively shorter and the inner claspers rather longer and broader, in the dry specimen appearing as a conspicuous hyaline membranous piece in side view. Seventh abdominal tergite in female large and prominent, almost hiding the remainder of the ovipositor (fig. 63*a*). *Legs* yellow; hind femora without dark mark at the base beneath; tarsi darkened. Hind tibiae with 3–4 bristles in the dorsal row, and about 4–6 small ones on the inner side near the tip. *Wings* clear; venation as in *E. fusca*; halteres yellowish.

Type ♂ in the British Museum from Loch Alsh, 23 viii. 1909 (*J. J. F.-X. King*); other specimens from Dingwall (*King*); Sannox and Catacol, Arran (*F.W.E.*); Wharnside and Austwick, Yorks. (*Cheetham*); Pateley, Yorks. (*F.W.E.*).

E. lucidula (Zett.). Differs from all the other British species in the distinctly shining thorax. It seems to be local and uncommon, the only known British specimens being those previously recorded from Felden and Newmarket.

E. nana (Staeg.) (*lateralis* Lundst. *nec* Mg.). Fairly common and widely distributed. The female differs from that of *E. fusca* in the stouter abdomen and the more transverse yellow spots, as well as in the structure of the ovipositor.

E. parva Lundst. This also seems to be rather common and widely spread. The male hypopygium varies somewhat in structure, some specimens (perhaps representing a distinct variety) having the upper claspers much more elongate than others; the ventral bristle-bearing projections are also much longer in some specimens than is indicated in Lundström's figures.

E. exigua Lundst. I have captured a fair number of specimens of this species in the neighbourhood of Hitchin, Baldock and Letchworth, Herts., and at Shefford, Beds.

E. separata Lundst. A small species similar to the last three, but apparently distinguishable by the more numerous hind tibial bristles. It is fairly common. I have reared it from *Boletus bovinus*, *B. flavidus* and *Gomphidius viscidus*.

E. festiva Winn. A rather large species, well distinguished from others in this group by the very extensively yellow abdomen of the male. It is widely distributed and common in some districts, but no fresh localities have been recorded.

E. contaminata Winn. A large and not uncommon species. I have reared it from larvae found in a large undetermined agaric at Stanmore, Herts. Additional records are Burnham Beeches, Sherwood Forest, and Arran.

E. pseudocincta Strobl. Apparently less common than the last, which it closely resembles. No fresh records available.

E. nigroscutellata Landr. This seems to differ constantly from the last two in the presence of the black spot beneath the base of the hind femora. A fresh record is Leatherhead, Surrey (*E. Coddington*).

Group II.

E. parallela sp. n.

A small species, length of body or wing, 3 mm.

Head blackish, face dark brown; palpi yellow. Antennae with the scape yellowish, flagellum dark, segments about half as long again as broad. *Thorax* with dark brown ground-colour; mesonotum with three confluent blackish stripes; shoulders rather conspicuously greyish. Mesonotum without discal bristles. Prothorax ochreous; two propleural bristles, placed one above the other, the upper one more than half as long as the lower. *Abdomen* dark brown, the posterior margins of the segments ochreous, more broadly so at the sides. Ovipositor, fig. 64. *Legs* yellowish, tibiae and tarsi darkened; first segment of front tarsi very little longer than the tibia. *Wings* clear. *Sc* ending rather indistinctly in *R*; *Rs* quite straight; *r-m* equal in length to the stem of the median fork, the branches of which are fairly evenly divergent; cubital fork short, its base far beyond that of the median fork, its branches practically parallel; upper branch rather faint, reaching margin, though indistinctly; lower branch stronger but not reaching margin. *An* fairly distinct, but ending before base of median fork. Halteres yellow.

Type ♀ in the British Museum from Newmarket, Cambs., 23 ix. 1888 (*G. H. Verrall*). Although only known from one female this species appears so distinct by the combination of characters indicated in the key, that the male should be recognised easily when it is discovered; it cannot be any one of those hitherto described from Europe. The absence of discal bristles on the mesonotum and the structure of the ovipositor suggest a relationship with *E. trivittata*.

E. trivittata (Staeg.). Although I have not succeeded in rearing this common species, I once found a small swarm of males hovering over old horse-dung in a field, and this may possibly be their breeding-place. The wing-marking is rather distinct when fresh, but not very obvious in dry specimens.

E. trisignata Edw. I cannot discover any external difference between this and the last, unless the second propleural bristle is more strongly developed. The hypopygial difference is of course easily seen even in dry specimens. The species is widely distributed, but perhaps more frequent in the north, where it may partially replace *E. trivittata*.

E. leptura (Mg.) (*membranacea* Lundst.). A specimen of this species from the New Forest which I sent to Lundström in 1912 was returned as *E. leptura*, but his later description of *E. membranacea* evidently applies to the same insect. I see no reason why Meigen's name should not be used, especially as Winnertz also identified the same species as *E. leptura*, as shown by the figures in Dziedzicki's Atlas. The species is rather a distinct one, but far from common. I have taken it at Burnham

Beeches, Bucks., Tilberthwaite, N. Lancs., and Sannox, Arran.

E. unguiculata Lundst. The dark cloud on the wing is quite distinct in fresh specimens, but soon fades, and in old examples is not very noticeable. The wing tip is also faintly darkened, but apart from this the species is very much like several other members of the group. A local species; additional records are Tuckenhay, S. Devon and Wyre Forest (*F.W.E.*); Leigh Woods, Bristol (*Audcent*).

E. subulata Winn. One of the largest species of the genus, and fairly common in most districts. Some fresh records are: Oxhey and Knebworth, Herts.; Strelley and Sherwood, Notts. (*F.W.E.*).

E. fimbriata Lundst. A rare species, the only record additional to the four Scottish localities mentioned in my previous paper being Pateley Bridge, Yorks. (*F.W.E.*).

E. indecisa Walk. (*tenuicornis* v. d. Wulp). I have now traced Walker's type of *E. indecisa*, hence this change of name. The species seems to be rather common. I have reared it from *Boletus bovinus* and *B. flavidus*, the larvae in both cases being in association with those of *E. separata* Lundst.

E. ligulata Lundst. I have seen only the three British male examples of this species recorded by me in 1915 from Cornwall, Hants. and Sussex, but there is a female in the British Museum from the New Forest, which I believe to belong to this species; I give a figure of its ovipositor (fig. 66) for comparison with that of the following new species.

E. hammi sp. n. (wing, fig. 218). Closely allied to *E. ligulata*, differing only in the somewhat shorter abdomen and the details of structure of the hypopygium (figs. 57–59) and ovipositor (fig. 65).

Type ♂ in the British Museum from Oxford, 19 x. 1916 (*A. H. Hamm*); also other specimens taken by the same collector in the Oxford Museum on various dates. Shefford, Beds., 1 ♂ (*F.W.E.*).

E. crucigera Lundst. The almost straight vein *Rs* might occasion doubt as to whether this species should be included in the first or the second group of the genus, but the presence of large *apical* lateral yellow triangles on the first four abdominal tergites seem to place it definitely in the second. It is a very distinct species both by venation and hypopygium. I have taken a few specimens on

windows at Hitchin, Herts.; these and the Cambridgeshire and Suffolk examples previously recorded are the only British specimens known to me.

E. pollicata sp. n.

A rather small, dark species.

Head blackish; palpi and scape of antennae ochreous, the flagellum black, segments almost twice as long as broad, slightly shorter in the female than in the male. *Thorax* almost uniformly dull blackish-grey, even the prothorax dark in colour; only a minute ochreous dot on the shoulders. Discal bristles of mesonotum short but distinct. One propleural bristle. *Abdomen* blackish, with rather ill-defined ochreous apical lateral triangles on each of tergites 2–4 (♂) or 2–5 (♀). Hypopygium, figs. 60, 61; ovipositor, fig. 67. *Legs* ochreous, tibiae and tarsi darkened; first front torsal segment about one-third longer than the tibia. *Wings* slightly and uniformly smoky. *Sc* ending distinctly in *R*; *Rs* rather strongly curved; *r-m* not much over twice as long as the basal section of *Rs*, and not much longer than the stem of the median fork; distance of base of cubital from base of median fork equal to barely twice the length of the stem of the latter; *An* strong, reaching base of cubital fork. Halteres ochreous.

Type ♂ and 2 ♀ in the British Museum from Hitchin, Herts., 25–28 ix. 1915, on window (*F.W.E.*); also Hitchin, ix. 1916, 1 ♂ and Baldock, ix. 1917, 1 ♀ (*F.W.E.*); Oxford, 28 x. 1920, 1 ♂ (*A. H. Hamm*), Logie, Elgin, 7 ix. 1910 (*Jenkinson*; Cambridge Museum). From *E. leptura* Mg., the only other British species of the second group with a uniformly dark mesonotum, the new species differs in the much longer anal vein. The hypopygium is also very distinct.

E. intersecta Mg. (*gracilicornis* Landr.). Meigen's original type being apparently lost, it will be well to follow Winnertz's and Dziedzicki's interpretation of *E. intersecta*, which is the same as *E. gracilicornis* Landr. Under the name *M. intersecta* in the Winthem collection in the Vienna Museum there are specimens of this species and also of *E. magnicauda*. Additional records for this species are Oxhey, Herts., and Sherwood Forest (*F.W.E.*).

E. magnicauda Lundst. I have still only seen the one British example of this species recorded from Oxfordshire in my previous paper.

E. clypeata Lundst. The only fresh record for this species, previously recorded from Scotland, is Llangammarch Wells, Brecknock (*Yerbury*).

E. pulchella Winn. Apparently a rare species, but odd specimens have been taken in widely separated localities. Ovipositor, fig. 69. The following are new records: Logie, Elgin (*Jenkinson*); Burnham Beeches, Bucks.: Baldock, Herts.; Shefford, Beds.; Wyre Forest (*F.W.E.*).

E. jenkinsoni sp. n. Closely allied to *E. pulchella*, differing mainly if not solely in details of structure of the hypopygium (figs. 62, 62*a*, 62*b*), the upper clasper being much more slender, and the lower one with the margin entire, without sub-basal projection. Ovipositor (fig. 68) much as in *E. pulchella*.

Type ♂ in the Cambridge Museum from Logie, Elgin, 19 viii. 1903 (*F. Jenkinson*); also 1 ♂ 1 ♀ in the British Museum from Wyre Forest, 14 ix. 22 (*F.W.E.*).

Genus Rhymosia Winn.*

This genus is very closely allied to *Allodia* and *Exechia*, differing from the former chiefly in the longer and stronger anal vein, and from the latter in the position of the base of the cubital fork well before that of the base of the median fork.

The larvae, like those of *Exechia*, seem often to prefer the stalk of the fungus to the cap, but are more gregarious, and at least in the larger species the cocoon has a different texture, being much stronger and more gummy.

The sixteen British species now known may be distinguished as follows:—

1. Abdominal tergites with the apical margins pale; *Sc* always ending distinctly in *R* . . . . . 2.
   Pale markings of abdomen situated mainly or entirely towards bases of tergites . . . . . 7.
2. Scutellum with four strong bristles; propleurae with 3–4 strong bristles . . . . . 3.
   Scutellum with only two strong bristles . . . 5.
3. Discal bristles of mesonotum very stout and blunt *cristata* Staeg.
   Discal bristles small and thin or even absent . . 4.

* Winnertz wrote *Rymosia*, but I have followed Verrall's emendation.

4. Shoulders not conspicuously grey; discal bristles distinct *maculosa* Mg.
   Shoulders conspicuously grey; discal bristles very minute *domestica* Mg.
5. Shoulders grey; discal bristles absent; hind tibiae with only 3–4 fine bristles in a row on the inner side near the tip *macrura* Winn.
   Shoulders not conspicuously grey; discal bristles small but distinct; hind tibiae on the inner side with a subapical patch of about a dozen fine bristles . . . . 6.
6. Mesonotum with three distinctly separate stripes; only one strong propleural bristle (sometimes one or two weak ones in addition) . . . . . *fenestralis* Mg.
   Mesonotum not distinctly striped; two strong propleural bristles . . . . . *tarnanii* Dz.
7. Three strong propleural bristles; hind tibiae with 12–15 bristles in the dorsal row; *Sc* ending in *R*; discal bristles of mesonotum absent. . . . . *fovea* Dz.
   One or two strong propleural bristles; hind tibiae with 4–6 bristles in the dorsal row; *Sc* very short and ending free 8.
8. A distinct brown cloud on the wing below Cu_2; hind femora with a broad brown ring near the base; mesonotum without discal bristles . . . . . *placida* Winn.
   No cloud below Cu_2; hind femora all yellowish . . 9.
9. Two strong propleural bristles; discal bristles of mesonotum very small; front tarsi of male simple . . *virens* Dz.
   One strong propleural bristle, with sometimes a second weaker one . . . . . 10.
10. Front tarsi of male simple . . . . . 11.
    Front tarsi of male with segments 3 and 4 spinose beneath 13.
11. Pale markings of abdomen large but not sharply defined; *r-m* not much longer than the stem of the median fork *connexa* Winn.
    Pale markings of abdomen sharply defined; *r-m* nearly twice as long as the stem of the median fork . . . 12.
12. Yellow abdominal bands usually complete dorsally, but not reaching the posterior lateral corners of the tergites *fasciata* Mg.
    Yellow abdominal bands incomplete dorsally, but reaching the posterior lateral corners of the tergites . *britteni* sp. n.
13. Base of cubital fork well before the base of *r-m*, which is not much longer than the stem of the median fork; abdomen extensively yellow; hind tibiae with a large patch of fine bristles on the inner side near the tip . *signatipes* v. d. W.

Base of cubital fork little if any before the base of *r-m*, which is almost or quite twice as long as the stem of the median fork; hind tibiae with a row of 3–6 fine bristles on the inner side near the tip . . . . . 14.

14. Abdomen with distinct yellow bands, which extend narrowly on to the posterior margins of tergites 1–4 *gracilipes* Dz.

Abdominal markings less conspicuous; posterior margins of all tergites dark 15

15. Lateral margins of tergites 2 and 3 entirely yellowish *bifida* sp. n.

Lateral margins of tergites 2 and 3 dark except at base *spinipes* Winn.

R. cristata (Staeg.). This species is very well characterised by the remarkably thick though short discal bristles on the mesonotum. Though not common it is widely distributed.

R. maculosa (Mg.). I have seen only two British specimens of this fairly distinct species, a male from Cambridge (*Jenkinson*), and another from Grange-over-Sands (*A. E. Wright*).

R. domestica (Mg.). Another species which is quite easily identified by the chaetotaxy, though it might perhaps be confused with *Allodia crassicornis*. It seems to be fairly common everywhere. I have found the larvae on two occasions in *Tricholoma nudum*, and also in *Clytocybe infundibuliformis* and *Marasmius orcades*.

R. macrura Winn. Though superficially similar to the last, this is always easily distinguished by having only two scutellar bristles. It is widely distributed and not uncommon, though rarer than *R. domestica*.

R. fenestralis (Mg.). Fairly easily recognised by the stripes of the mesonotum, which are nearly always distinct, all other British species having them fused, or the mesonotum unicolorous. It is rather common everywhere. I have reared specimens from a small *Boletus*; from *Cortinarius fulgens*, *Pholiota aurea*, *Pleurotus ostreatus* (on a fallen log), *Entoloma jubatum*, and *Clytocybe infundibuliformis*. In the last instance the larvae were in company with those of *R. domestica*.

R. tarnanii Dz. A rare species of which I have only seen two British examples, the one previously recorded from Logie, and another (now in the British Museum) from Nethy Bridge (*C. G. Lamb*).

R. fovea Dz. This very distinct species has only been found by the late Mr. F. Jenkinson at Logie, Elgin. A second male collected by him is now in the British Museum.

R. placida Winn. Another very distinct species of which the only known British example is the male previously recorded from Mr. Collin's collection.

R. virens Dz. A rather small species of slender build, which though not common is widely distributed. The female has the ovipositor unusually long.

R. connexa Winn. A rather large species with some superficial resemblance to *R. fenestralis*. Some fresh records are: Hitchin, Herts. (*F.W.E.*); Oxford (*A. H. Hamm*).

R. fasciata (Mg.) (*discoidea* Dz.). This is everywhere the commonest species of the genus, especially in winter; it is also rather easily distinguished from most of the others by the conspicuous yellow abdominal bands. It is remarkably variable in size. Considering its abundance it is rather surprising that the larvae have not been more frequently met with. Meigen indeed states that he had found them abundantly, but as he mentions a brown head it seems most probable that he had confused this species with *Mycetophila fungorum*. I have only reared two specimens, one from *Tricholoma aureorubens* and one from *Clavaria inaequalis*; the cocoon of the latter was slight and silky, not gummy as in the other species of the genus.

R. britteni sp. n. A small species much resembling *R. fasciata*, but with darker mesonotum, and somewhat different abdominal markings; the yellow bands are narrowly interrupted in the mid-dorsal line, but are enlarged laterally to reach the posterior corners of the tergites. Chaetotaxy as in *R. fasciata*. Hypopygium of the same type as in *R. fasciata*, but differing conspicuously by the very small upper claspers which are of an entirely different shape (figs. 70, 71).

Type ♂ in the British Museum from Oxford, 30 ix. 1915 (*H. Britten*).

R. signatipes v. d. W. In this and the remaining three species the third and fourth segments of the front tarsi are finely spinose beneath, the exact form and arrangement of the spines varying with the species; the fourth segment in dry specimens is nearly always bent upon the third so that the spines interlock, and it seems evident that the structure is used for holding the front legs of

the female during copulation, though this has not actually been observed. So far as I have noticed the front tarsi of these species are normally held straight in life, as is always the case even in dry specimens with the non-spiny species. *R. signatipes* is readily distinguished from *R. gracilipes* by the much more extensively yellow abdomen, especially of the female. Originally recorded as British from one male from the New Forest, I have since seen a number of specimens from thence, and have also taken it at Hitchin and Knebworth, Herts., and in Wyre Forest.

R. gracilipes Dz. A rather large species, quite distinct from the last alike by the genital structure of both sexes and the chaetotaxy of the hind tibiae. Additional records are Baldock and Royston, Herts.; Babraham, Cambs. (*F.W.E.*); New Forest (*Adams*). I have reared it from *Russula* sp. and from *Amanita* sp.

R. spinipes Winn. This is much smaller than the last two, and with less yellow on the abdomen. It is apparently rare, as no fresh material has been obtained.

R. bifida sp. n. (wing, fig. 219). A small species, closely resembling *R. spinipes*, and with exactly the same armature of the front tarsi, but the pale markings of the abdomen more extensive, the whole of the lateral margins of tergites 2 and 3 ochreous; hypopygium also quite different (figs. 72, 73), the upper claspers being forked. Ovipositor (fig. 74) constructed almost as in *R. spinipes*.

Type ♂ in the British Museum, taken on window at Hitchin, Herts., 25–28 ix. 1915 (*F.W.E.*). Other specimens from Letchworth and Baldock, Herts.; Holker Moss, N. Lancs.; Wyre Forest (*F.W.E.*); Oxford (*Hamm*); Lelant, Cornwall (*Yerbury*; previously identified as *R. spinipes*).

Genus Allodia Winn.

No very sharp division can be drawn between this genus and *Rhymosia* or *Brachypeza*, but it will be useful to maintain it for those species in which the anal vein is either absent or quite short and faint, and the vein immediately below Cu_2 is not unusually long. In this sense it will include *Brachycampta*, as proposed by Johannsen. The Australian *Synplasta* * and the New Zealand *Brevicornu* I would also regard as synonymous.

* The vein in *Synplasta* which Johannsen takes to be *An* seems to be rather Tillyard's "Cu_2"; if it is not so this genus would be synonymous with *Rhymosia*.

The larvae of the few species which I have reared are similar in structure and habits to those of *Exechia*.

We have at least 27 species of *Allodia* in Britain, but many of them are so extremely similar that I have been unable to find any satisfactory characters for separating them except in the male hypopygium. The difficulty of determination is increased by the great variability in colour exhibited by many of the species. Several species have a light form in which the base of the antennae and the shoulders are yellow, the first four abdominal segments of the male mainly yellow, and the femora entirely yellow; and a dark form in which the antennae, thorax, and abdomen are almost entirely black, and the femora with a black mark at the base beneath and at the tip; the dark specimens are often those bred in winter. In the key below I have arranged the species in groups, chiefly on characters of chaetotaxy, which does not seem to be subject to much variation, though occasional exceptions may be found to the usual number of propleural bristles.

1. Posterior coxae with small black spots at the tip on the outer side; four strong scutellar bristles; mesonotum without discal bristles; claws toothed . . . . . *crassicornis* Stan.
   Posterior coxae without black spots at the tip; if four scutellar bristles are present, the outer pair is shorter than the inner 2.
2. Two propleural bristles; hind tibiae without bristles on the inner side; scutellum with two bristles; claws simple 3.
   Three or more propleural bristles; hind tibiae with small bristles on the inner side, at least near the tip . . 5.
3. Mesonotum without bristles on the disc; base of cubital fork beyond base of *r-m* . . . . . 4.
   lugens Wied., *ornaticollis* Mg.; *lundstroemi* Edw.; *anglofennica* Edw.; *truncata* Edw.
   Mesonotum with distinct discal bristles; base of cubital fork before base of *r-m* . . . . . 4.
4. Fourth abdominal segment of male, or fourth and sixth of female, largely yellow, especially towards the base
   grata Mg.; *alternans* Zett.; *czernyi* Landr.
   Fourth abdominal segment with no more yellow than the third *silvatica* Landr., *barbata* Lundst., *pistillata* Lundst., *triangularis* Strobl, *neglecta* sp. n.
5. Three propleural bristles; claws simple or toothed . . 6.
   Four or five propleural bristles; claws simple . . . 11.

6. Claws rather large and with a conspicuous tooth; no distinct empodium; only two scutellar bristles . . *griseola* Zett.
   Claws small, simple or with small tooth; small empodium often distinguishable . . . . . 7.
7. Scutellum with four bristles, the outer pair more than half as long as the inner . . *borealis* Lundst.; *fuscipennis* Staeg.
   Scutellum with two bristles, or the outer pair hardly half as long as the inner . . . . . 8.
8. Base of cubital fork before base of *r-m*; segments of male flagellum broader than long . . *proxima* Staeg.
   Base of cubital fork below or beyond base of *r-m*; segments of male flagellum longer than broad. . . . . 9.
9. Hind tibiae with about 12 fine bristles in a row on the inner side . . . . . *ruficornis* Mg.
   Hind tibiae with 2–4 fine bristles on the inner side near the tip, and sometimes two or three others nearer the base . 10.
10. Mesonotum conspicuously ash-grey at the sides; scutellum with only two bristles; male claspers large . *foliata* sp. n.
    Mesonotum brownish-grey to ochreous-grey; scutellum with four bristles, the outer pair very short; male claspers small *fissicauda* Lundst.; *verralli* sp. n.; *auriculata* sp. n.
11. Outer pair of scutellar bristles rudimentary; four propleural bristles . . . *griseicollis* Staeg.; *nigrofusca* Lundst.
    Outer pair of scutellar bristles more than half as long as the inner; generally five propleural bristles . . . 12.
12. Base of cubital fork well before base of *r-m* . *kingi* sp. n.
    Base of cubital fork below or beyond base of *r-m* *sericoma* Mg.

A. crassicornis (Stan.). This species, though very variable in size and colour, is always easily distinguished from the rest by the characters mentioned in the key, though confusion might easily be possible with some species of *Rhymosia*. The antennae of the female (but not of the male) have the flagellum much thickened at the base, but this is also true of *A. griseicollis* and perhaps one or two other species. *A. crassicornis* is fairly common everywhere, but I have not succeeded in finding the early stages; there are, however, some specimens in the British Museum labelled "truffles."

A. lugens (Wied). Everywhere one of the most abundant species of the family. Together with the following four species, which differ almost solely in the form of the male claspers, it forms a natural group of species which are characterised by the conspicuously grey pubescence on

the shoulders and the absence of discal bristles on the mesonotum. I have reared it from *Russula* sp., and Dr. F. M. Turner has shown me examples bred from *Armillaria mellea*.

A. ornaticollis (Mg.) (*nigricollis* Zett., *longicornis* Walk.). This is even more abundant than *A. lugens*. There are two varieties, one nearly all black, the other with the integument of the shoulders yellow, and the abdomen more extensively so. I have figured these (1920) under the names *A. grata* and *A. longicornis*, but they are certainly not distinct species, and moreover Meigen's *grata* proves on examination of the type to be another species, which Lundström and I had wrongly identified as *A. nigricollis* Zett. I think therefore that it will be best to revive Meigen's name *ornaticollis* for this species instead of treating it as a synonym of *A. lugens* in the sense to which I have restricted it. There appears to be no constant difference, even in the structure of the ovipositor, between the females of this and *A. lugens*.

I have reared *A. ornaticollis* from various ground-fungi, including *Russula sardonia*, *Paxillus involutus* and *Inocybe incarnata*; Mr. H. Audcent has also sent me some reared from *Hygrophorus coccineus*.

A. lundstroemi Edw., 1921. Besides the type from Burnham Beeches, I have seen males of this species from the New Forest (*Sharp*, *Lamb*); Strelley and Sherwood, Notts., and Brodick and Sannox, Arran (*F.W.E.*); Crowborough (*Jenkinson*).

A. anglofennica Edw., 1921. Apparently rare, as apart from the type from Logie, Elgin, I have seen males only from Pateley Bridge, Yorks (*Cheetham*).

A. truncata Edw., 1921. This differs from the above four species not only in the very small upper claspers of the male, but also in the distinctly shorter antennae. Although I have so far been unable to separate the females, I have no doubt it is a distinct species and it appears to be widely distributed if not common. I have seen males from Bonhill, Dumbarton and Ardentinny (*King*); Logie, Elgin and Crowborough, Sussex (*Jenkinson*); Wyre Forest and Arran (*F.W.E.*).

A. grata (Mg.) (*nigricollis* Edw. *nec* Zett., *alternans* Dz.). This is a common species, quite distinct from the last five by the characters mentioned in the key. Together with the next seven it forms a group which have many characters

in common, including the presence of one very long, blunt-tipped bristle on each lobe of the ninth tergite of the male. I have reared *A. grata* from yellowish larvae found in *Paxillus involutus* and *Hebeloma crustuliniformis*.

A. alternans (Zett.) Edw. (*nec* Dz.). This differs from *A. grata* solely in the structure of the male claspers. The two are often found together though *A. alternans* is perhaps less common.

A. czernyi (Landr.). This is also very similar to the last two, differing in the male claspers, which are herewith figured (fig. 75) for comparison with its allies (figured by me in 1920). I have seen only one British specimen, from Logie, Elgin, 19 ix. 1910 (*Jenkinson*).

A. silvatica (Landr.). The very distinct hypopygium of this species renders it easily distinguishable even with a hand lens, the long fringe on the lower claspers being very conspicuous. The only fresh record is Letchworth, Herts. (*F.W.E.*).

A. barbata (Lundst.). Evidently allied to the preceding, but the hypopygium is smaller and simpler in structure, the lower claspers, however, having a rather similar fringe. Apart from the two specimens previously recorded, I have seen only two others, taken by myself on a window at Hitchin.

A. pistillata (Lundst.) and **A. triangularis** (Strobl). No additional examples of these rare species have been found. Male claspers of *A. pistillata*, fig. 77.

A. neglecta sp. n. Closely resembles the last four in colour, chaetotaxy, and venation, but male claspers of very different form (fig. 76); hypopygium otherwise somewhat resembling that of *A. czernyi*, the ninth tergite with two long blunt-tipped bristles as in other species of this group. Type in the British Museum from Baldock, Herts., v. 1918 (*F.W.E.*).

A. griseola (Zett.) (*griseicollis* Lundst. *nec* Staeg.). This species is quite distinct by the conspicuously toothed claws; it is also distinctly larger than most of the other species, almost as large as *A. crassicornis*, from which it differs most obviously in having only two scutellar bristles. Some of the specimens I previously identified as this species were incorrectly named, but I have seen males from Aviemore (*Yerbury*) and Nethy Bridge (*King*).

A. proxima (Staeg.) (*brachycera* Lundst. *nec* Zett.). A rare species of which no British captures have been made since 1913. The figures of *B. brachycera* in Dziedzicki's Atlas apparently represent this species. Male clasper, fig. 81.

A. fuscipennis (Staeg.). This was described by Staeger from females only, but I propose to adopt the name for a species which is not uncommon in Britain and has a hypopygium as shown in figs. 78–80. Apart from the possession of only three propleural bristles it is very similar to *A. sericoma*. The outer pair of scutellar bristles is very little shorter than the inner, and there is in some specimens a small additional pair external to these. I have not definitely distinguished the female, but in Staeger's specimens the antennal flagellum is distinctly swollen at the base, as in *A. griseicollis*. I have seen males from the following localities: Knebworth, Herts.; Holker Moss, N. Lancs., and Wyre Forest (*F.W.E.*); Sheviock, Cornwall (*Yerbury*); New Forest (*Sharp*); Pateley Bridge, Yorks. (*Cheetham*); Dingwall (*King*); Lamport (*Jenkinson*).

A. borealis (Lundst.). A male of this species was taken by Mr. C. A. Cheetham at Austwick, Yorks., 23 vi. 1923, and presented by him to the British Museum. Male clasper, fig. 82.

A. ruficornis (Mg.) (*hastata* Winn.; *cinerea* Lundst.). This change of name is due to the identification of Meigen's type. The name is rather unfortunate as the antennae are not more extensively reddish than in most other species. Some fresh records are Crowborough, Sussex (*Jenkinson*); Llangammarch Wells, Brecknock (*Yerbury*). The species seems well distinguished by the numerous bristles in the inner row on the hind tibiae, no other species known to me having so many. The scutellum usually has a small outer pair of bristles, but these are sometimes lacking. I have not distinguished the female.

A. foliata sp. n. Closely resembles *A. ruficornis*, but the mesonotum is even more conspicuously ashy-grey, especially at the sides, the middle being darker; scutellum with only two bristles; hind tibia on the inner side with only 3–4 fine bristles near the tip and two or three more towards the middle. Hypopygium with large claspers as in *A. ruficornis*, but the details of structure different (figs. 83–85).

Type ♂ in the British Museum from Logie, Elgin, 29 ix. 1913 (*Jenkinson*), also a second ♂ from the New Forest (*Sharp*); another ♂ from Logie in the Cambridge Museum. In most respects the hypopygium is very much like that

figured by Lundström for *A. arctica*, but the ninth sternite is differently shaped.

A. fissicauda (Lundst.). I recorded this as British from one specimen taken by the late Mr. F. Jenkinson at Crowborough, but subsequent experience has shown that it is a rather common and widely-spread species, for which the following additional records may be given: Cambridge (*Jenkinson*); Newmarket (*Verrall*); Felden, Herts. (*Piffard*); Letchworth (*F.W.E.*); Oxford (*Hamm*); Llangammarch Wells (*Yerbury*); Dartmouth and Tipton St. John, S. Devon (*F.W.E.*).

A. verralli sp. n. (wing, fig. 220). Closely allied to *A. fissicauda*, but differing slightly in the hypopygium (figs. 86–88), especially in the upper claspers, which instead of being densely and uniformly bristly all over the inner side, have a small dense patch of bristles at the base. The eighth sternite is also rather differently shaped, but as in *A. fissicauda* (fig. 89) it is emarginate apically, not rounded as in all the other species.

Type ♂ in the British Museum from Llangollen, 17 vii. 1888 (*Verrall*); additional specimens from Logie, Elgin (*Jenkinson*); Snailbeach, Salop (*F.W.E.*); Knebworth, Herts. (*F.W.E.*).

This and *A. fissicauda* were both determined by Verrall as *A. bicolor* Mcq., but Lundström has figured a different species (which I have not found in Britain) as *A. bicolor*, and I therefore describe this as new. In many respects it seems to be very close to *A. radiata* Lundst., but the ninth sternite is differently shaped.

A. auriculata sp. n.

A very small dark species closely resembling the dark forms of *A. griseicollis* or *A. sericoma*, but with only three propleural bristles. Flagellar segments about half as long again as broad. Mesonotum (in the two specimens examined) entirely blackish, with pale pubescence and small scattered dark decumbent bristles as in the other species of this group. Scutellum with the outer pair of bristles distinct, almost half as long as the inner. Abdomen blackish, apical lateral margins of the first few tergites pale. Hypopygium (figs. 90–92) with small claspers, somewhat resembling that of *A. proxima*, but remarkable for the curious ear-like appendage apparently attached to the inner side of the upper clasper; ninth tergite undivided and quite bare. Hind tibiae on the inner side with only two or three bristles near the tip. Base of cubital fork below or only just beyond base of *r-m*.

Type in the British Museum from Oxford, 17 x. 1922, on museum window (*A. H. Hamm*); also 1♂ from Letchworth, Herts., 14 vi. 1923 (*F.W.E.*).

A. griseicollis (Staeg.) (*caudata* Winn.). Staeger's series in the Copenhagen Museum contains specimens of *A. caudata*, *A. fissicauda* and another species, but none of Lundström's *A. griseicollis*. Since the specimens in the Verrall collection determined as *A. griseicollis* are *A. caudata* the name may perhaps be restricted to this species rather than to *A. fissicauda*. It is fairly common everywhere. Male clasper, fig. 94.

A. nigrofusca (Lundst.). Of this species, which is not very easily distinguished from the last, there is a male in the Cambridge Museum from Logie, 19 viii. 1903 (*Jenkinson*). The slight difference in structure between the claspers of the two species is shown in figs. 93–94.

A. kingi sp. n. Distinguished from all the British species except *A. sericoma* by the presence of five distinct propleural bristles in a regular row. Chaetotaxy and most other characters as in *A. sericoma*, but cubital fork longer, its base well before the base of *r-m*, and hypopygial structure different, the claspers being much longer (figs. 96–98).

Type ♂ in the British Museum from Loch Alsh, 23 viii. 1909 (*J. J. F.-X. King*).

A. sericoma (Mg.) (*amoena* Winn.). Meigen's name is substituted for Winnertz's *amoena* as his type appears to agree with our material. Dziedzicki's figures do not correspond well with our specimens, and may represent another species, though I have seen specimens of our species in the Paris museum determined by Winnertz himself as *A. amoena*. The species is common everywhere, and as already noted is subject to extreme variation in colour, though specimens taken at the same time and place do not usually show a great deal of difference. The black form may perhaps be partly seasonal, as a long series was collected by Jenkinson in winter, whilst those captured in the summer are usually of the yellow form. The same remarks apply to the similar variation of *A. fissicauda*. Male clasper, fig. 95.

Genus Brachypeza Winn.

This is evidently related to *Rhymosia* and *Allodia*, the

venation and chaetotaxy being similar to those genera, the main distinction being in the strong vein or fold immediately below *Cu* (and above the vestigial *An*) extending quite half the length of the cubital fork. This difference, however, is only one of degree as the vein is present throughout the family and in some species of *Allodia* (e.g. *A. alternans*) is almost as long though not as strong as in *Brachypeza*. The species are all large, with strongly toothed claws.

The larvae of the species I have reared resemble *Rhymosia* in their habits and form a very tough gummy cocoon.

The three British species are readily separable by wing markings and chaetotaxy.

B. radiata Jenk. Wings (fig. 221) with a dark spot in the middle and a dark transverse shade near the tip. Six or seven propleural and six scutellar bristles. Front tarsi of male with longish spines on the underside of the second segment beneath. The insects are of stouter build than the next two species.

Although the adults of this species are seldom met with, the larvae are abundant in a fungus (*Pleurotus* sp.) which grows on old but standing elm trunks. I have never failed to find them in this fungus, nor on the other hand have I ever found them elsewhere. Mr. A. H. Hamm tells me that he has found them in the same fungus. The species has not yet been found in the north of England or in Scotland, the most northerly record being King's Lynn (*Atmore*).

B. bisignata Winn. Wings with a dark spot in the middle and another of about the same size on the costa towards the tip. Five propleural and four scutellar bristles. Front tarsi of male simple.

B. helvetica (Walk.) (*spuria* Edw.; ? *barbipes* Winn.). Wings unmarked. Three propleural and four scutellar bristles. Front tarsi of male with longish hair beneath, especially on the second segment; third segment with a row of minute blunt spines on the inner side at the base. Walker's type of *Mycetophila helvetica* is fragmentary, but retains a front leg which shows exactly this structure. In most respects Winnertz's description of *A. barbipes* applies to this species. It is widely distributed but not common.

Genus Cordyla Mg.

The remarkably swollen second segment of the palpi distinguishes this genus from all others of the Mycetophilinae, but it should be noted that the swelling is much greater in the male than in the female, which perhaps explains why two generic names (*Cordyla* and *Pachypalpus*) were proposed by the older authors. Another point which seems to be peculiar to the genus is the slight break in the *r-m* cross-vein. The venation otherwise much resembles that of *Allodia*, but the presence of distinct anepisternal bristles shows that the genus belongs to the *Mycetophila* and not to the *Exechia* group of genera.

A peculiarity of the genus is the variation in the number of segments of the antennae in the different species and in the two sexes. According to Winnertz the species he described had either 2+14, 2+12 or 2+10 segments in the male antennae. Most of those I have seen, however, have either 2+13, 2+12 or 2+11, and it seems probable that Winnertz was in error in some cases, indeed this certainly was so at least with two species. Mistakes are easily made as the segments are small, transverse, and clothed with a short dense pubescence which obscures the joints.

The species breed in various ground fungi, especially of the genus *Russula*, and in my experience usually attack the base of the stem rather than the cap. A small and usually very dense cocoon is formed of white silk, and pupation takes place underground.

Instead of the four species recognised in my previous paper I can now distinguish eleven, as follows :—

1. M_2 distinctly reaching the margin; body and palpi dull blackish; male antennae with 2+12 segments . . *crassicornis* Mg.
   M_2 not reaching the margin of the wing . . . . . 2.
2. Large segment of palpi black or dark brown . . . . 3.
   Large segment of palpi yellow . . . . . 9.
3. Mesonotum quite dull . . . . . 4.
   Mesonotum distinctly shining, black . . . . . 8.
4. Base of cubital fork below middle of stem of median fork; thorax and abdomen often largely yellow; male antennae with 2+13 segments . . . . . *semiflava* Staeg.
   Base of cubital fork beyond middle of stem of median fork . 5.
5. Male antennae with 2+12 segments . . *murina* Winn.
   Male antennae with 2+11 or 2+10 segments . . . 6.
6. Second segment of male palpi only slightly enlarged, like that of the female, and partly yellowish . . *parvipalpis* sp. n.
   Second segment of male palpi much enlarged (normal) and all black . . . . . 7.

7. Male antennae with 2+11 segments . . . *fissa* sp. n.
   Male antennae with 2+10 segments *brevicornis* Staeg.; *pusilla* sp. n.
8. Base of cubital fork slightly before that of the median; male antennae with 2+13 segments . . *nitidula* sp. n.
   Base of cubital fork slightly beyond that of the median; male antennae with 2+12 segments . . . *fusca* Mg.
9. Base of cubital fork slightly beyond that of the median in ♂; the two bases about level in ♀ . . . *fasciata* Mg.
   Base of cubital fork well beyond that of the median (♂♀), the branches rather widely divergent . . . *flavicoxa* Staeg.

C. crassicornis Mg. As this appears to be the only species of the genus in which both branches of the media distinctly reach the margin, there can be little doubt that it is correctly identified. Meigen showing such a venation in his figure. It is common and widespread in Britain. I have once reared it from larvae feeding in *Russula aurea*. Hypopygium, figs. 111, 112; ovipositor, fig. 104.

C. semiflava Staeg. The antennae of the male specimens I have examined have 2+13 segments, not 2+14 as stated by Winnertz, and also by myself previously. The colour is variable, the mesonotum having a variable amount of ochreous towards the front, or it may be entirely dark, but the abdomen is always largely ochreous; the second palpal segment deep black and extremely large, and the last two palpal segments yellowish. The hypopygium is almost exactly like that of the next species, except for the peculiar shape of the eighth sternite (fig. 113). It is distinctly the largest as well as one of the rarest of our species; some records are: Lelant (*Verbury*); New Forest (*Sharp*); Logie (*Jenkinson*).

C. murina Winn. As Winnertz's statements regarding the number of segments in the male antennae are evidently unreliable, it may be justifiable to identify with his species a common British form which agrees with his description except that the male antennae have 2+12 instead of 2+14 segments. It is evidently allied to *C. semiflava* owing to the rather close similarity of the hypopygium (figs. 114–116), especially the rather peculiar form of the anal segment. The colour is variable; although most specimens have the thorax and abdomen entirely dark greyish, examples are frequent in which the front of the mesonotum and the posterior margins of the abdominal tergites are more or less extensively ochreous; the pleurae may also be somewhat ochreous

tinged, such specimens showing the spindle-shaped black spot exhibited by all the lighter-coloured members of the genus. The front tarsi are slightly thickened in both sexes. British Museum material is from Cornwall, Hants., Herts., Beds., Cambs. and Notts. The female ovipositor is figured (fig. 103) from a specimen in the Cambridge Museum taken *in cop.* in the New Forest (*Lamb*).

C. parvipalpis sp. n. Much resembles the last, but the second segment of the male palpi is much smaller, being no larger than it usually is in the females of other species of the genus, and in colour is partly yellowish-brown instead of all black; male antennae with only 2+11 segments. Hypopygium (figs. 117, 118) similar in type to the last two, but claspers rather differently shaped.

Type ♂ in the British Museum from Crowborough, Sussex, 2 x. 1903 (*Jenkinson*): a second ♂ from Aviemore (*King*).

C. fissa sp. n. (wing, fig. 222). Closely resembles *C. murina*, and shows a similar variation in colour, but differs in having only 2+11 segments in the male antennae, and also in the hypopygium (figs. 119–121), which is of quite a different type and more nearly resembles that of *C. crassicornis*; it differs somewhat in the form of the claspers, and also in having the ventral cleft very much deeper. The front tarsi are slender. The last segment of the male antennae is longer than in *C. murina* and evidently represents a fusion of two. Female not certainly identified.

Type ♂ in the British Museum from Shefford, Beds., x. 1917 (*F.W.E.*): also numerous other ♂♂ from Hitchin, Letchworth and Felden, Herts.; Babraham, Cambs.; Oxford; Downderry, Cornwall. Other specimens in the Cambridge Museum from Cambridge.

C. brevicornis Staeg. This is somewhat smaller than any of those above mentioned, and the body-colour is apparently always uniformly blackish. The male antennae have 2+10 segments, not 2+12 as stated by Winnertz, but our specimens apparently agree with Staeger's type. The species is abundant everywhere. I have found the larvae in a variety of fungi, including *Boletus edulis*, *Amanita rubescens*, *A. muscaria*, *Amanitopsis vaginata*, *Russula chloroides* and *R. cyanoxantha*. Hypopygium, fig. 122; ovipositor, figs. 108–110.

C. pusilla sp. n. A very small black species (wing-length

in type just 2 mm.): closely resembling *C. bicoriformis*, but the male claspers differently formed (fig. 123).

Type ♂ in the British Museum from Shefford, Beds., 17 xi. 1917 (*F.W.E.*). I have also seen a male from Oxford, 27 x. 1917 (*A. H. Hamm*), and another without data in the Winthem collection in the Vienna Museum.

C. nitidula sp. n.

Head, thorax and abdomen uniformly black and rather conspicuously shining. Palpi of the usual structure, the enlarged segment brownish in colour, not deep black as in most of the grey species. Antennae of male with 2+13 segments. Hypopygium and ovipositor constructed as shown in figs. 124–125 and 102. *Wings* with M_2 abbreviated as usual; base of cubital fork generally slightly beyond that of the median.

Type ♂ in the British Museum from Tewin, Herts., ix. 1922 (*F.W.E.*): paratypes ♂ ♀ from the same place and from Knebworth, Herts.; the specimens were all reared from fungi of the genus *Russula* (*R. chloroides*, *R. lutea* and another species), in two of the three cases in company with *C. fusca*. The species is evidently nearly allied to *C. moravica* Landr., which differs, however, in the lighter, almost yellowish palpi, the partly brownish mesonotum and slightly in the form of the male claspers. I am indebted to Dr. Landrock for specimens of *C. moravica*, the claspers of which are figured for comparison with those of the British species (figs. 126, 127).

C. fusca Mg. (? *nitens* Winn.). This is another shining black species very similar to the last, but larger, some specimens being almost as large as *C. scutellaris*. Both the hypopygium (figs. 128, 129) and ovipositor (figs. 99–101) are quite different in structure, and the male antennae have only 2+12 segments: there is also a slight difference in venation, the base of the cubital fork being a little beyond that of the median. In some females the end of Cu_1 is obliterated, but this is not frequent. I consider the species is undoubtedly Meigen's *C. fusca*, and it is probably also the same as Winnertz's *C. nitens* (with which I previously identified it) in spite of the disagreement in the number of antennal segments.

As mentioned above I have reared this species twice (from *Russula chloroides* and another species of this genus) in company with *C. nitidula*. In both cases the adults

of the two species emerged at slightly different times, *C. fusca* being a few days later in appearance. I have also reared it from *Russula cyanoxantha*, and Mr. A. H. Hamm has sent me specimens reared from *R. nigricans* at Woolhampstead, Berks., in company with *Mycetophila guttata*.

C. fasciata Mg. In my previous paper I suggested that this and *C. flaviceps* were synonymous, but I now find that I had confused two distinct species, and therefore suggest using the two available names for them. Both have 2+11 segments in the male antennae, not 2+12 as I previously stated, nor 2+14 as stated by Winnertz. The form to which I would restrict Meigen's name has the hypopygium and ovipositor constructed as in figs. 130–131 and 105–107. It also differs from the other form in the rather longer and less widely open cubital fork, but there is a certain amount of variation in this respect, and the two sexes differ in the length of the fork, a rather unusual condition of affairs. The thorax is more or less ochreous. British Museum material is from the New Forest, Wyre Forest, and Hertfordshire; I have reared a series from *Russula nigricans*.

C. flaviceps Steag. Both the British species with yellow palpi occur in Staeger's type series, but I would restrict his name to the one with the hypopygium as in figs. 132–134. The ovipositor also differs from that of *C. fasciata*, the sixth tergite lacking the lateral notches. The base of the cubital fork is well beyond that of the median in both sexes. Some records are: New Forest (*Sharp*): Sherwood and Wyre Forests (*F.W.E.*).

Genus Trichonta Winn.

By the weak development of the tibial bristles, the presence of anepisternal bristles, the frequent absence of a basal bristle on the hind coxae, and by the preservation of a distinct group of erect macrotrichia on the anal lobe of the wing, this genus is allied to *Phronia*, from which it differs mainly in the longer cubital fork, the base of which is placed below or before the base of the median fork. It also differs from *Phronia* and from all other members of the Mycetophilinae in the rather long *Sc*, which normally ends in *R* at or beyond the middle. The venation is very similar to that of *Docosia*, which differs in the irregularly arranged microtrichia of the wings and tibiae, as well as in the longer and more horizontal *r-m* cross-vein. The presence of

anepisternal bristles is sufficient distinction from *Rhymosia* and *Allodia*, with which confusion might be possible. There are fairly numerous species in Europe and North America, and some occur in India and Australia.

The larvae of all those species which I have reared feed on bark-growing fungi; but one has been reported from puff-balls. In some cases the larvae feed within the substance of the fungus, in others upon the surface, but these last are always covered by a sheet of dry mucilage which is coextensive with the larva's feeding ground and is enlarged as the larva grows; excrement accumulates under this sheet and forms a sort of case. In both cases pupation takes place in a light silken cocoon.

I am now acquainted with 14 British species; the following key is only a rough attempt at distinguishing them on characters applicable to both sexes:—

1. Tips of hind femora pale . . . . . 2.
   Tips of hind femora rather broadly dark . . . . 10.
2. Abdominal segments 2–4 with basal ochreous bands; tibial bristles all short, at most as long as tibial diameter *stereana* sp. n.
   Abdominal segments usually with the posterior margins only more or less pale; tibial bristles longer, some distinctly longer than the tibial diameter . . . . . 3.
3. Face, or at least the fronto-clypeus, dark grey or brown; thorax mainly dark . . . . . 4.
   Face uniformly ochreous; thorax partly ochreous . . 6.
4. Branches of media and cubitus dark; hind tibiae with about 8–12 bristles in the inner row and about 8 in the outer; largish species . . . . . 5.
   Branches of media and cubitus pale; hind tibiae with about 4–6 bristles in the inner row, and about 10 in the outer; small species . . . . . *subfusca* Lundst.
5. *An* dark like the other veins . . . *falcata* Lundst.
   An faint . . . . . *terminalis* Walk.
6. *An* extending distinctly beyond base of cubital fork, which is slightly before base of *r-m* *hamata* Mik; *flavicauda* Lundst.
   An not reaching beyond base of cubital fork, which is below or (usually) beyond base of *r-m* . . . . . 7.
7. Hind coxa with small but distinct pale basal bristle; hind tibiae on the inner side with about 12 not very close-set bristles; hind femora all yellow . . . . . .
   Hind coxa without basal bristle; hind tibiae on the inner side with about 15–20 closely-set bristles; hind femora dark at the base beneath . . . . . 9.
8. Bristles about the middle of the inner side of the hind tibia long, scarcely shorter than those of the dorsal and outer rows; median thoracic stripe distinctly reaching the front margin *venosa* Staeg.
   Bristles about the middle of inner side of hind tibia short; median thoracic stripe obsolete in front *bicolor* Landr.
9. Two strong propleural bristles . . . *atricauda* Zett.
   Three or four strong propleural bristles . . *melanura* Staeg.
10. Hind tibiae slender on the basal two-thirds, slightly swollen on the apical third, the bristles all very short and inconspicuous; costa produced slightly beyond the tip of *Rs* *vernalis* Landr.
    Hind tibiae rather stout, slightly and evenly enlarged from base to tip; an outer row of about 10 strong bristles, and a dorsal row of weaker bristles, but no bristles on the inner side . 11.
11. Wings with a dark shade towards costa on the apical third; *Sc* ending in middle of *R*. . . . . *vitta* Mg.
    Wings clear; *Sc* ending before middle of *R* *leonica* sp. n.; *nigritula* sp. n.

T. stereana *sp. n.*

A rather large species, but of slender build; length of wing or body, 3·5–5 mm.

Head dark greyish; subantennal area ochreous, but fronto-clypeus dark; palpi, scape and base of first flagellar segment ochreous, remainder of antennae blackish. Flagellar segments of female twice as long as broad, of male rather longer. *Thorax* rather variable in colour; usually the ground-colour is dull ochreous, the mesonotum with three separate dull brown stripes, postnotum and lower part of sternopleura dark brown; in the male the mesonotal stripes are often fused, and the scutellum dark brown on the basal half or more. Bristles mostly dark; two propleural bristles. *Abdomen* blackish, scarcely shining; segments 2–6, or at least (in the darker males) 2–4 with basal ochreous bands, sometimes interrupted dorsally, just extending on to the apical margins of the preceding tergites. Hypopygium (figs. 135, 136) rather small and rounded. claspers short. *Legs* yellowish; tibiae and tarsi darkened; hind femora with the extreme tip only dark. Tibial bristles very short and inconspicuous, the longest hardly as long as the diameter of the tibia; about 6–8 in each row on the hind tibia. Hind coxa with a distinct but pale bristle at the base. Front tarsi of female quite slender. *Wings* (fig. 223) clear; veins all about equally dark; *Sc* reaching to just beyond two-thirds the length of *R*; base of cubital fork

distinctly beyond base of *r-m*, but rather variable in relation to the base of the median fork, being placed just before, below, or immediately beyond it. *An* strong and reaching just to the base of the cubital fork. Halteres yellowish.

Type ♂, paratypes ♂♀ in the British Museum from Shefford, Beds., ii. 1918 (*F.W.E.*); other specimens from Hitchin, Hitch Wood, and Letchworth, Herts., and Clent Hills, Birmingham. All the specimens were reared from larvae found under patches of mucilage and excrement on the under surface of the fungus *Stereum hirsutum* growing on fallen trunks and stumps; in most cases in association with *T. falcata*. Some of the Mycetophilid larvae were apparently attacked by a small red Cecidomyiid larva.

As this is one of the largest and in some ways one of the most distinct species of the genus, it is surprising that it does not appear to have been described before, but it seems to be one of those cases of insects which are of frequent occurrence in the larval state and easily reared, though hardly ever seen on the wing.

T. falcata Lundst. (*albescens* Dz.). This species, like the last, is commonly found in the larval state on *Stereum hirsutum*; in fact I do not think I have ever examined a large patch of this fungus without finding one or both of these species. *T. falcata* is probably the commoner of the two, but as the larval habits are identical breeding is necessary to distinguish them. The adults are easily distinguished by the abdominal markings and the almost uniformly dark thorax.

T. terminalis (Walk.) (*funebris* Winn.). This is a widely-distributed species, though not very common. It is closely allied to the last, there being no obvious external difference except for the fainter anal vein. The hypopygium is rather small and rounded, as in the last two, but of quite different structure. I have found the larvae on one occasion only, feeding on a flat purplish encrusting fungus (*Corticium?*) on a fallen branch at Babraham, Cambs. In habits they resemble those of the last two species.

T. hamata Mik. This and the following five species apparently form a natural group, which is distinguished by the large size of the hypopygium and the elongate claspers. *T. hamata* is a widely spread species, not uncommon in some districts; the following additional records may be given: Austwick, Yorks. (*Cheetham*); Grange, N. Lancs., and Teesdale (*F.W.E.*).

T. flavicauda Lundst. (*largolamellata* Landr.). Only known as British from Nethy Bridge (*Sharp*). The hypopygium is very distinct on account of the large, broad claspers, but I can find no other distinction from *T. hamata*.

T. venosa (Staeg.) (*spinosa* Lundst.). Apparently a rather rare and local species. Mr. H. Britten obtained specimens at Arden Hall, Cheshire, from larvae living in puff-balls, thus differing markedly in habits from those of the other species.

T. bicolor Landr. Of this species I have seen one male, taken by Mr. J. J. F.-X. King at Dingwall, Cromarty, 24 vii. 1909, and presented by him to the British Museum.

T. atricauda (Zett.). A widely-distributed species, but only occurring singly. I have reared a specimen from a bark-encrusting fungus (*Corticium?*) at Hitch Wood, Herts. The larva apparently fed within the fungus; no cocoon was observed.

T. melanura (Staeg.) (*melanopyga* Zett., Lundst.). The difference in the number of propleural bristles between this and the last seems to be constant, but otherwise the two are closely similar. The specimens I previously recorded as *T. fissicauda* really belong to this species, though *T. adunca* (=Lundström's *fissicauda*) probably does occur with us. Additional records for *T. melanura* are: Brodick, Arran (*F.W.E.*).

T. vernalis Landr. A small dark-coloured species which is very distinct from all the others so far known from Britain by the characters mentioned in the key, and also by the small rounded upper claspers which are fringed with long bristles as in many species of *Phronia*. Since recording the species from Felden I have seen two males from King's Lynn (*Atmore*), one presented by the collector to the British Museum.

T. subfusca Lundst. Although on account of the absence of a dark tip to the hind femora this falls in my key with *T. falcata*, it seems really to be more related to *T. vitta*, which it resembles in size and hypopygial structure; it may be distinguished from dark specimens of *T. vitta* by the absence of a dark cloud on the wing and the presence of a few small bristles on the inner side of the hind tibiae. Though superficially resembling *T. vernalis* in size and colour it is quite distinct by its stouter build and row of strong bristles on the outer side of the hind tibiae. The British Museum possesses specimens from Crowborough,

Sussex (*Jenkinson*): Leland, Cornwall (*Verbury*): Hitchin and Baldock, Herts., and Sherwood Forest (*F.W.E.*). I have also seen it from Logie, Elgin (*Jenkinson*).

T. vitta (Mg.) (*submaculata* Staeg.: *umbratica* Winn.). This species is very variable in colour, the thorax being sometimes almost entirely ochreous, sometimes entirely blackish, though the mesonotum usually shows three more or less distinct dark stripes. The abdomen of the lighter-coloured specimens has distinct yellowish bands, chiefly at the bases of the segments though extending narrowly on to the apical margins; in the darker specimens (var. *umbratica* Winn.) the abdomen lacks the basal yellow segmental bands, though the tip remains rather conspicuously yellow. The dark cloud on the wing when present is diagnostic, but in the lightest specimens it is sometimes absent. The vein *Sc* is usually faint at the tip, apparently ending free as in the next two species.

T. vitta is perhaps the only member of the genus in Britain which can be called common. I have repeatedly reared it from larvae feeding in *Poria vaporaria*; the presence of the larvae in the fungus may be detected by the brownish discoloration of the surface.

T. icenica sp. n.

A small blackish species allied to the last; length of body or wing, 2·5 mm.

Head entirely black, only the palpi and scape of antennae obscurely yellowish; flagellar segments less than twice as long as broad. *Thorax* blackish; bristles mostly dark, including the two propleural bristles. *Abdomen* blackish, but the genitalia ochreous. Hypopygium, figs. 137–139. *Legs* ochreous; hind femora with the tips broadly blackish; tibiae and tarsi darkened. Hind tibiae with about 10 strong bristles in the outer row; about 6 shorter and weaker ones in the dorsal row, but none at all on the inner side. Front tarsi of female with the tip of the first and the whole of the next three segments considerably swollen beneath. *Wings* clear; anterior veins dark, branches of media and cubitus pale. *Sc* short, ending before middle of *R*, which it does not distinctly touch. Base of cubital fork well beyond base of *r-m*. *An* short and faint.

Type ♂, paratypes 1 ♂ 1 ♀ in the British Museum from Hitchin, Herts., taken on windows ix. 1916 and ix. 1917 (*F.W.E.*); also 1 ♀ from Letchworth, Herts. and 1 ♂ from Snailbeach, Salop (*F.W.E.*). The conspicuously swollen front tarsi of the female will distinguish the species from all others known to me, except perhaps the following new one. According to Landrock's key the female front tarsi are also similarly swollen in *T. atricauda*, *T. venosa* and *T. vitta*, but in the specimens of these species which I have examined the swelling is hardly noticeable.

T. nigritula sp. n. Closely resembles the preceding, except in the black hypopygium, which is also rather differently constructed (figs. 140–142).

Type ♂ in the British Museum from Shefford, Beds., x. 1917 (*F.W.E.*). A female taken in the same place a month later may belong to this species or to *T. icenica*, from which it shows no obvious differences.

Genus Phronia Winn.

This genus is readily separable from most other genera of the subfamily by the short cubital fork, the branches of which are rather widely divergent. The genus *Exechia* has a superficially similar venation, and has sometimes been confused with *Phronia*, but the absence of the hind coxal bristle and the presence of anepisternal bristles will sufficiently diagnose the present genus. In spite of the weak development of the tibial bristles and the difference in venation, *Phronia* is really more nearly related to *Mycetophila* than to *Exechia*. *Coelosia* has been placed by some writers near *Phronia*, but as already explained I would place it in the Sciophilinae near *Boletina*. Dziedzicki's genus *Macrobrachius* seems to me to be merely a slightly aberrant *Phronia*, while Becker's *Telmaphilus* is certainly not separable. There are numerous European and North American species, but hardly any have been reported from elsewhere.

So far as known the larvae all feed exposed on old fallen barkless branches (generally of oak) which are in a sodden condition and attacked by moulds or other fungi and green algal growth. They are of very unusual form, short and rounded and looking like small limpets or slugs, the resemblance being often increased by a slimy coating of mucilage and by the fact that the head is usually hidden under the front part of the body. Some of the species form a case out of their own excrement, the tip of the abdomen being curled up over the back and the substance moulded by it

into a more or less regular covering. In spite of this protection the species seem to be very liable to the attacks of parasites. All the species, even the case-forming ones, form a light silken cocoon before pupation, which usually takes place in crevices of the wood.

Some 24 species have already been found in Britain, and possibly almost as many more await discovery. It is a tribute to the thoroughness of Dr. Dziedzicki's monograph of the genus that every one of these species is to be found figured therein. As he has pointed out, the colouring is in some species so variable that it is of hardly any use for purposes of identification, the only sure guide being the structure of the terminal abdominal segments of both sexes. It would seem that specimens bred in winter are liable to be much darker than the spring and summer broods. Thus specimens of *praecox*, *tarsata* and *strenua* which I collected at Babraham, Cambs., in the middle of January were all exceptionally dark, the last two so much darker than usual that they were at first thought to be distinct species. The same phenomenon has been observed in the case of several species of *Allodia*. If due allowance be made for this the colour characters (*e.g.* of the coxae) may be found very useful for separating certain species. I have been hardly more successful than Dziedzicki in discovering diagnostic characters applicable to both sexes, but as a partial key is perhaps better than none I have attempted to compile one, which should assist in the recognition of at least a few species.

A useful character for grouping the females is found in the condition of the front tarsi. These are quite slender in *exigua*, *flavipes*, *praecox*, *basalis*, *cinerascens*, *ferruginea*, *strenua* and *annulata*: slightly swollen beneath in *forcipula*, *signata* and *dubia*: and rather more distinctly swollen in *tarsata*, *conformis* and *vitiosa*. (I have not identified the females of the remaining species.)

1. Hind femora entirely yellow . . . . . 2.
   Hind femora with the tip distinctly blackish . . . . 5.
2. *Sc* ending in R_1; base of cubital fork only a little beyond that of the median, the distance being scarcely as great as the length of the stem of the median fork . *vulcani* Dz.
   Sc ending free (normal); cubital fork shorter . . . . 3.
3. Outer claspers of male entire . . . . . 4.
   Outer claspers of male divided, with ventral arm *indistincta* Dz.

4. Claspers with long fringe of black bristles . *furipes* Winn.
   Claspers with shorter fringe of brown hair . *exigua* Zett.
5. Wings with distinct markings . . . . . 6.
   Wings quite unmarked . . . . . 7.
6. The whole wing tip dark; also a band across the middle (♀) or a cloud below Cu_2 (♂) . . . . . *praecox* Winn.
   A conspicuous dark cloud below Cu_2, but tip of wing scarcely darkened . . . . . *forcipula* Winn.
7. Costa very distinctly produced, reaching almost one-third of the distance from the tip of R_5 to that of M_1 . *basalis* Winn.
   Costa usually only slightly and indistinctly produced, reaching at most one-quarter of the distance from R_5 to M_1 . . 8.
8. The four posterior coxae all blackish-brown; small species, body almost uniformly blackish . . . . *dubia* Dz.
   Middle coxae almost entirely yellowish (at least in summer broods) . . . . . 9.
9. Hind coxae almost entirely dark brown outwardly; outer claspers of male forked . . . . . 10.
   Hind coxae dark only towards the tip if at all . . 11.
10. Abdomen usually with distinct yellow basal bands on at least the first few tergites . . . . *cinerascens* Winn.
    Abdomen without distinct yellow basal bands
    tarsata Staeg.; *bicolor* Dz.; *tenuis* Winn.
11. Hypopygium yellow; almost the apical third of hind femora blackish; hind coxae with a very distinct brown mark on the apical half . . . . . *conformis* Walk.
    Hypopygium dark brown or black; the black tip of the hind femora usually less extensive . . . . . 12.
12. Outer clasper of male undivided, and more or less rounded or oval . . . . . 13.
    Outer clasper otherwise shaped . . . . . 14.
13. Outer claspers large and very bristly . . *signata* Winn.
    Outer claspers smaller and less bristly
    obtusa Winn.; *elegans* Dz.; *taczanowskii* Dz.; *triangularis* Winn.
14. Outer claspers undivided, but small and sickle-shaped *nubila* Dz.
    Outer claspers divided . . . . . 15.
15. Hypopygium large; outer claspers with two branches, the lower of which is very hairy . *forcipata* Winn.; *annulata* Winn.
    Hypopygium quite small
    strenua Winn.; *disgrega* Dz.; *vitiosa* Winn.

P. vulcani Dz. This is very distinct from all the other members of the genus in venation. It might almost equally well be placed in *Trichonta*, and has in fact been described

by Lundström as *T. trifida*. I took a male at Holker Moss, N. Lancs., 11–13 vii. 1923.

P. flavipes Winn. A fairly common species which is fairly easily known by its yellow femora, though the next two species are also similarly coloured. The large oval outer claspers of the male, with their terminal fringe of long stiff black bristles are very characteristic and easily identified even under a lens.

P. exigua (Zett.) (*rustica* Dz.). Another common species, closely resembling the last externally, and often found in association with it.

P. interstincta Dz. The male previously recorded from Scotland was taken in June; it has the shoulders very extensively yellow, and the coxae and femora all yellow. A second male from Grange-over-Sands (*A. E. Wright*), taken in February, has the mesonotum entirely black, the four posterior coxae blackish, and the hind femora slightly blackened at the tip and at the base beneath. This seems to be another instance of a species with a dark winter variety.

P. praecox Winn. (Winnertz MS.: *nitidicentris* Winn. *nec* v. d. W.) (wing of ♀, fig. 224). I have examined two of van der Wulp's original specimens of *nitidicentris* and find they belong to quite a different species from that described under this name by Winnertz, and a change of name is therefore necessary. As no other is certainly available, I propose to adopt the name *praecox*, which was mentioned by Winnertz at the time of publication of his description of *P. nitidicentris* as being a manuscript one attached to a specimen in the Berlin museum.

The fairly obviously darkened wing-tip and the dark cloud below Cu_2 will distinguish this species from all others known in Europe, but it should be noted that the markings are often rather faint, especially in old preserved specimens. The fact seems to have escaped the attention of previous writers that the wing-markings differ in the two sexes, the female having a rather broad band in the middle of the wing extending from the hind margin almost to the costa, which in the male is confined to the dark patch below Cu_2. In Becker's *Telmaphilus abbreviatus*, and *T. biarcuatus* from the Canary Is. (for specimens of which I am indebted to Dr. Santos Abreu) the wings are marked respectively as in the male and female of our *P. praecox*, and there is no sexual dimorphism. *T. abbreviatus* is quite distinct,

but *T. biarcuatus* is structurally identical with our *P. praecox* and is perhaps a local race of it. *P. praecox* is quite common and widely distributed in Britain.

P. forcipula Winn. (*umbricola* Grz., according to description and figure). Another well-marked species, on account of the distinct dark cloud on the wing. It is common everywhere in Britain. I have reared specimens from whitish, non-case-bearing larvae sent me by Mr. J. C. F. Fryer from Kew. The larvae were said to occur in such numbers on a certain fungus of the genus *Corticium* as to render its cultivation almost impossible.

P. basalis Winn. The rather strongly produced costa is distinctive of this species, the appearance being partly due to *Rs* running straight to the margin and not curving down somewhat at the tip as it does in most of the other species of the genus. The costa is also somewhat produced, though not quite to the same extent, in *P. annulata* and a few other species. *P. basalis* also resembles *P. annulata* and *P. forcipata* in its large and somewhat similarly constructed hypopygium. It is fairly common.

P. annulata Winn. (*braueri* Dz.). Dziedzicki described *P. braueri* from male and female specimens captured at the same place which he assumed to belong to the same species. I have, however, obtained definite evidence by breeding that *P. annulata* Winn. is really the female of *P. braueri*: it differs from the female described by Dziedzicki in its quite slender front tarsi and in the very distinctive structure of the ovipositor. The difference in colour between the two sexes is rather marked, the male being nearly all blackish, while the female has rather conspicuous yellowish bands on the abdomen.

The larvae are covered with a thick black slimy covering and are therefore particularly slug-like in appearance. They are not at all uncommon in England in damp woods. I had on several occasions reared specimens of either *annulata* ♀ or *braueri* ♂ from precisely similar looking larvae, and though definite proof was lacking the assumption seemed justified that the two were the sexes of one species. Confirmation has now been provided by Mr. C. A. Cheetham, who has reared the two from one batch of larvae. The species of *Phronia* reared by Swanton and recorded by Bloomfield (1911) as *P. basalis* was really *P. annulata*.

P. forcipata Winn. This might easily be passed over as a

slightly smaller edition of the last, and is at least equally common.

P. cinerascens Winn. This is one of a small group of species which have the outer clasper of the male produced into two rather long slender arms, thus appearing forked in side view. It is usually distinguishable from the other members of the group (*tarsata* and *bicolor*) by the largely yellowish thorax and the distinct yellow bands at the bases of the abdominal segments, but the colour as usual is very variable and entirely blackish specimens are not uncommon. The species is very abundant in the neighbourhood of *mountain streams*.

P. tarsata (Staeg.) (*crassipes* Winn.). This is closely related to the last, but always dark in colour. It is common in many districts. I have reared specimens from whitish larvae with only a slight covering of mucilage.

P. bicolor Dz. Very similar to the last, the hypopygium differing slightly. Apart from the specimen recorded previously from Shropshire, I have seen males from Arran and Sherwood.

P. tenuis Winn. Similar to *P. tarsata* in appearance, but the arms of the male clasper are short and stout, and the front tarsi of the female are not thickened. The larvae are similar to those of *P. tarsata*. The species is generally common.

P. conformis (Walk.) (*leioides* Walk.; *girschneri* Dz.; ? *braueri* Dz. ♀). The male of this species is very distinct by its entirely yellow hypopygium, with large outer claspers which are emarginate at the tip and very bristly. The female, which has not hitherto been recognised, has the front tarsi strongly swollen, and the ovipositor constructed almost exactly as figured by Dziedzicki for *P. braueri*, though more or less yellowish in colour and not blackish-brown as stated; Dziedzicki may very probably have described a dark specimen of this species. In my previous paper I indicated that Walker's *M. leioides* was the same as Winnertz's *P. crassipes*, but a re-examination of the type shows that it more probably belongs here.

I have reared specimens of both sexes from whitish larvae similar to those of *P. tarsata* found at Radwell and Clothall, Herts.

P. dubia Dz. All the specimens of this species which I have seen have the thorax and abdomen entirely blackish, except for a small pale humeral spot, and the four posterior coxae entirely blackish-brown. This latter point will usually distinguish the species from all others so far found in Britain, but it should be noted that similarly coloured examples of *P. interstincta*, *P. tarsata* and *P. strenua* have been taken in winter. The female, which has not been described, resembles the male in colour: it has the front tarsi moderately but quite distinctly thickened. The small cerci are stouter than in *P. tarsata* but not so small and stout as in *P. conformis*. I have taken the species abundantly on the Lickey Hills near Birmingham, and at Strelley and Sherwood Forest, Notts. The British Museum also possesses specimens from Middlesex, Cornwall and Elgin.

P. signata Winn. The lighter forms of this species may be recognised by the largely ochreous thorax, including even the scutellum, but as usual colour is no safe guide and darker individuals are frequent. From the lighter-coloured examples of *P. cinerascens* it may be known by the pale bands of the abdomen embracing the apical as well as the basal margins of the segments. It seems to be common in mountainous districts. My record of *P. petulans* from Arran really refers to a specimen of this species: the differences between the two as figured by Dziedzicki are not very well marked.

P. obtusa Winn. Of this species, which is very similar to the last in genitalic characters, I have taken males in Sherwood Forest, ix. 1922.

P. elegans Dz. and P. **taczanowskii** Dz. Of these no fresh British records are available.

P. triangularis Winn. Additional localities for this apparently rare species are Lelant, Cornwall (*Verrall*) and Tuckenhay, S. Devon (*F.W.E.*).

P. notata Dz. A very distinct species by the small sickle-shaped outer clasper and the long hypopygium which is yellow at the base. I took a male at Knebworth, Herts., 5 viii. 1922.

P. strenua Winn. An obscure species with no very obvious distinguishing marks. Originally recorded from Logie and Crowborough. I have taken it at Babraham, Cambs. and Hitch Wood, Herts. The specimens from the latter locality were reared from larvae bearing regular and fairly hard conical black cases resembling tiny limpets. When removed from their cases the larvae almost at once began to construct new ones from their excrement, though these had not the same regular appearance. I have fre-

quently found similar cases in other localities, but do not know whether they belong to this or to some other species of *Phronia*.

P. disgrega Dz. A very minute species apparently more or less related to the last, of which I have seen only two British examples, the one previously recorded from Nethy Bridge, and one from King's Lynn (*Atmore*).

P. viticosa Winn. (? *nitidiventris* v. d. Wulp). The two existing male specimens of van der Wulp's species closely resemble *P. vitiosa*, which is very distinct in genital structure, but until an exact comparison can be made Winnertz's name may be retained. The female has the front tarsi much thickened and is very similar to that of *P. conformis* except that the brown spot on the hind coxae is less distinct.

Genus Dynatosoma Mg.

The species of this genus bear a rather considerable resemblance to those of *Mycetophila*, on account of the strong development of the tibial bristles and the somewhat similar type of wing-markings. Apart from the absence of pteropleural bristles and the divergent branches of the cubitus the species of *Dynatosoma* may be known from those of *Mycetophila* by possessing eight strong bristles on the margin of the scutellum instead of four. The genus is apparently confined to Europe and North America. The new generic name *Johannseni* has recently been proposed for one of the North American species.

The larvae live in Polyporaceae and other bark-growing fungi, and their presence may often be detected by white frass on the surface of the fungus; no other fungus-gnats, so far as I am aware, extrude frass from their burrows. Pupation takes place in a rather earthy cocoon underground.

Only two British species are known at present, though others ought to occur. The fungus *Polyporus sulphureus*, for instance, should be searched for *D. rufescens*.

D. fuscicorne (Mg.) (wing, fig. 225). The coxae are usually all yellow, though in one variety of which I have a few specimens of both sexes the posterior coxae are dark apically. I have reared it from *Polyporus squamosus*, *P. betulinus*, *Polystictus versicolor*, *Daedalia quercina* and *Lenzites betulina*.

D. reciprocum (Walk.). Differs from the above in the hypopygium, in having the four posterior coxae all black,

and also in having no bare patch at the base of the wing below the anal vein.

Genus Mycetophila Mg.

The parallel or approximated branches of the cubital fork will almost invariably distinguish this genus from others which also have strong tibial bristles. I have previously included *Mycothera* in this genus, on the ground that the presence of a median ocellus is not always constant even in the same species. I would now include also *Opistholoba*, which was merely founded on the unusually large hypopygium. These two are typical *Mycetophila* as regards venation and chaetotaxy. I have not seen Enderlein's *Plastacephala*, but there appears to be no character of importance to separate it from *Mycetophila*; it may be synonymous with *Mycetophila* or perhaps with *Delopsis*. The genus is one of the largest of the family, species occurring in all parts of the world, though they are most numerous in the temperate regions.

The larvae, with possibly a few exceptions (*e.g.* *M. merdigena* Knab, which may not be a true member of the genus), live in the interior of fungi, some species attacking many different kinds, others being restricted to a single fungus-host. They may be found either in terrestrial or lignicolous fungi, though the same species will usually occur only in one of these classes of host. A distinct cocoon is always formed, which may be placed either in the ground or in the fungus, if this is of a species which will not decay too readily. Some of the species which pupate within the fungus have very interesting arrangements for the escape of the imago, either a lobster-pot-like arrangement of stiff threads or a thin papery cap being formed at the front end of the tough cocoon. The cocoon of those species which pupate in or at the surface of the ground is generally of a slighter texture and without any special arrangements for emergence. As is very often also the case in other genera of this family, the imagos after hatching from the pupa often remain quiescent in the cocoon for quite a long time, though they will rush out and take to the wing with amazing celerity if the cocoon is touched. I have not observed this quiescent period to last more than a week, but it is quite probable that hibernation may often take place in this manner.

The imagos almost always rest with the wings flat over

the back, the only exception known to me being *M. signatoides* Dz. The middle legs are never raised in repose as they so frequently are in the *Exechia* group of genera.

For the grouping of the species the chaetotaxy of the middle and hind tibiae is very important. Winnertz was the first to point out that the hind tibiae of some species have an additional (subdorsal) series of bristles between the usual two (external and dorsal) series, and that some have a very distinct row of fine bristles on the inner side: while Johannsen made use of the number of ventral spines in the mid tibiae in his classification of the American forms. Mr. Tonnoir has pointed out to me that the bristles or spines on the middle tibiae are normally arranged in four rows: dorsal, external, ventral and internal, and that the number in each of these rows is fairly constant for each species. The number of pteropleural bristles also varies somewhat in different species, though there are never less than two or more than six. For the rest, the chaetotaxy is rather constant throughout the genus: there are always four strong scutellar bristles: three or four propleural; and three or four anepisternal.

There are now no less than 42 British species of *Mycetophila* known, the largest number of any genus in the family with the exception of *Sciara*. In view of the considerable increase in our faunal list since the publication of my last paper, I offer a fresh key to our species, making use of some of the chaetotactic characters mentioned above.

1. Middle tibiae without ventral bristles: hind tibiae on the inner side with numerous fine bristles . . . . . 2.
   Middle tibiae with at least one ventral bristle; hind tibiae usually with few or no bristles on the inner side . . . . 3.
2. Wings yellowish-tinged, unspotted; palpi of male with broad flat segments; five or six pteropleural bristles *fungorum* Deg.
   Wings not yellowish, with a more or less distinct central black spot; *palpi* of male normal, slender; four pteropleural bristles . . . . . *lineola* Mg.
3. Hind tibiae without a middle row of bristles . . . 4.
   Hind tibia with at least one subdorsal bristle, between the external and dorsal rows . . . . . 35.
4. Middle tibiae with only one ventral bristle (normaly); wings banded . . . . . 5.
   Middle tibia with two or three long ventral bristles . 7.

5. Cubital fork extremely short; ventral bristle on middle tibiae long; very small species . . . . *semifusca* Mg.
   Cubital fork long, its base little if any beyond that of the median fork; ventral bristle of mid tibiae short . . . 6.
6. Wing tip dark, especially towards costa, and including an oval pale spot; central spot small . . . *ocellus* Walk.
   Wing tip clear, but a broad dark subapical band present; central spot large, usually distinctly reaching costa *formosa* Lundst.
7. Wings largely smoky, especially towards costa on apical half; middle tibia with only one small bristle on the inner side *adumbrata* Mik.
   Wings otherwise; middle tibiae with at least two longish bristles on the inner side, and generally some small ones in addition . . . . . 8.
8. Wings with a central spot only, or quite clear . . 9.
   Wings with dark markings beyond the middle . . 12.
9. Mesonotum shining reddish with three darker stripes *unipunctata* Mg.
   Mesonotum mainly shining black . . . . . 10.
10. Large pale patches on shoulders and above wing-roots; posterior margins of abdominal tergites pale; four pteropleural bristles *stolida* Walk.
    No pale markings above wing-roots or on abdomen; only two pteropleural bristles . . . . . 11.
11. Shoulders yellow . . . . . *pumila* Winn.
    Thorax entirely black . . . . . *unicolor* Stan.
12. Wings with the whole tip dark or with a dark shade towards costa on apical third . . . . . 13.
    Wings with a more or less distinct subapical fascia or spot . 14.
13. Mesonotum almost all dark; bristles of hind tibiae unusually long; whole wing-tip more or less dark . *stylata* Dz.
    Mesonotum distinctly striped; bristles of hind tibiae not unusually long; wing-tip dark towards costa only *exiseki* Landr.
14. Subapical wing-fascia broad and distinct but leaving the end of cell R_1 clear . . . . . *cingulata* Staeg.
    Subapical wing-fascia or spot smaller, but usually filling the end of cell R_1 . . . . . 15.
15. The fascia or spot distinctly reaching back to the tip of R_1 16.
    The fascia or spot entirely distal to the tip of R_1 . . 22.
16. Base of cubital fork well before base of *r-m*; subapical wing-spot small; hind femora with a dark dorsal line *maculicauda* Strobl.
    Base of cubital fork below or beyond base of *r-m*; central and subapical wing-spots larger . . . . . 17.

17. Tip of R_1 rather broadly involved in the spot; front tarsi simple in both sexes . . . . . 18.
Tip of R_1 only narrowly involved in or just touched by the spot; hind femora with only the apical fourth black . . 26.
18. Hind femora without continuous dark dorsal line, but with nearly the apical half black; base of cubital fork well beyond base of median . . . . . *dwardsi* Lundst.
Hind femora with a continuous dark dorsal line . . 19.
19. Mesonotum almost all dark . . . . . *vittipes* Zett.
A large pair of yellow humeral spots . . *gibbula* sp. n.
20. A dark cloud below the cubital fork; front tarsi of male swollen beneath . . . . . *bialorussica* Dz.
No dark cloud below cubital fork; front tarsi of female swollen beneath . . . . . 21.
21. Subapical wing-spot continued faintly across the wing from M_1 to the hind margin; genitalia of both sexes short *bimaculata* F.
Subapical wing-spot stopping short just before M_1; genitalia of both sexes elongate . . . . *forcipata* Lundst.
22. Hind tibiae with a distinct row of fine bristles on the inner side near the tip; subapical fascia forming four more or less separate spots . . . . . *orinda* Stph.
Hind tibiae with at most two or three fine bristles on the inner side; subapical fascia not distinctly divided into spots 23.
23. Mesonotum quite dull; scutellum largely yellow . . 24.
Mesonotum more or less shining . . . . . 28.
24. A slight cloud in the anal cell below Cu_2; mid tibiae with two ventral bristles . . . . . 25.
No trace of a cloud in the anal cell . . . . . 27.
25. Mesonotal stripes separate; posterior margins of abdominal segments distinctly pale . . . . . *spectabilis* Winn.
Mesonotal stripes more or less completely fused; abdomen usually all dark . . . . . 26.
26. Cloud in anal cell distinct and large (normally)
excisa Lundst.
Cloud in anal cell very faint . . *marginata* Winn.
27. Mid tibiae with two ventral bristles . . *fulvra* Winn.
Mid tibiae with three ventral bristles . . *paludica* Edw.
28. Mid tibiae with two ventral bristles; thorax nearly all black, except for small spots on the shoulders and scutellum 29.
Mid tibiae with three ventral bristles . . . . 30.
29. Subapical wing-spot small, faint and ill-defined (compare also *M. stolida* Walk.) . . . . . *strigata* Staeg.
Subapical wing-spot usually larger and well-defined
lactuosa Mg.

30. Thorax almost entirely black, including the whole scutellum; only two pteropleural bristles . . *occultans* Lundst.
Thorax yellow at least on the shoulders, and with the scutellum partly yellow; 3–4 pteropleural bristles . . . 31.
31. Mesonotal stripes more or less separate; abdomen with a median dorsal pale line, or at least indications of such a line on the segments 2 and 3
signata Mg.; *signatoides* Dz.; *sigillata* Dz.; *guttata* Dz.
Mesonotal stripes fused; abdomen without pale mid-dorsal line . . . . . 32.
32. Basal ventral spine of mid tibiae small; pre-apical wing-spot not reaching costa . . . . . *radis* Winn.
The three ventral spines of the mid tibiae subequal; pre-apical wing-spot reaching costa . . . . . 33.
33. Branches of cubital fork distinctly approximated apically; subapical wing-spot as dark as the central spot . . 34.
Branches of cubital fork parallel apically; subapical spot lighter than the central spot . . . *obscura* Dz.
34. Male hypopygium large, claspers spiny . . *dentata* Lundst.
Male hypopygium smaller, claspers not spiny . *Ulonda* Winn.
35. Hind tibiae with only one or two bristles in the sub-dorsal row . . . . . 36.
Hind tibiae with 4–6 bristles in the sub-dorsal row . 37.
36. Subapical wing-fascia conspicuous; one sub-dorsal bristle on hind tibia; mesonotum with three dark brown stripes
trivittata Staeg.
Subapical wing-spot small and rather faint; two sub-dorsal bristles on hind tibia; mesonotum nearly all reddish
confusa Dz.
37. Thorax entirely reddish, abdomen mainly so; 5–6 sub-dorsal bristles on hind tibia; one ventral bristle on mid tibia; wings with conspicuous dark central spot and subapical fascia . . . . . *cingulum* Mg.
Thorax and abdomen shining black; 4 sub-dorsal bristles on hind tibia; three ventral bristles on mid tibia; wings unmarked . . . . . *immaculata* Dz.

M. tarsata Winn. is omitted from the above key; it would probably fall near *M. obscura* Dz.

M. semifusca Mg. This is interesting as affording the connecting link between *Mycetophila* and *Zygomyia*, the cubital fork being very short and its upper branch faint. It is the smallest species of the genus, even smaller than the

species of *Zygomyia*. It is widely distributed but apparently always rare.

M. fungorum Deg. (*punctata* Mg.). By the characters mentioned in the key and by its dull reddish thorax this species is easily recognised. It is everywhere abundant, probably outnumbering all other members of the family put together. Outside Britain it has a very wide distribution, being recorded from North America, the Amur region and Assam.

The natural food-plant appears to be *Armillaria mellea*, from which it is hardly ever absent, but it has also been recorded from a great variety of other ground-fungi; my records include the following: *Boletus edulis*, *B. calopus*, *B. luridus*, *B. subtomentosus*, *B. versicolor*, *Russula atropurpurea*, *R. chloroides*, *R. cyanoxantha*, *R. fellea*, *R. lutea*, *R. ochroleuca*, *R. sardonia*, *Paxillus giganteus*, *Lactarius vellerius*, *Hypholoma fasciculare*, *Amanita muscar.*, *Amanitopsis vaginata*. On the other hand, in spite of the examination of large numbers of specimens I have never found it in *Agaricus campestris*, and am therefore inclined to be sceptical as to the reports of damage caused to mushroom beds by this species; the only larvae I have ever found in *A. campestris* are *Sciara* or *Aphiochaeta*. The larvae may readily be distinguished under a hand lens from those of most other species of *Mycetophila* and of all *Exechia*, *Rhymosia*, etc., by the brown instead of black head; the only other brown-headed species I have found is *M. lineola*, and therefore to save trouble in continually rearing these common species in my breeding jars I have usually discarded all brown-headed larvae in the field. Pupation takes place in the ground in an earthy cocoon.

M. lineola Mg. There are several rather distinct varieties of this species, one of which has a very small and faint central spot on the wing and might therefore be mistaken for *M. fungorum*, but has not the thickened male palpi of that species; in this variety the mesonotum is almost black, but in the normal form it is usually more or less reddish with three darker stripes. Though not quite so abundant as the last it is to be found everywhere and has similar breeding habits. I have reared it from *Sparassis laminosa*, *Russula fellea*, *R. nigricans*, *R. sardonia*, *Lactarius vellerius*, *L. volemus*, *Cortinarius hinnuleus* and *Hebeloma crustuliniformis*.

M. ocellus Walk. (*dimidiata* Staeg.; *cinerea* Zett.). As

the name *Mycetophila dimidiata* was used by Meigen in 1804 it is inadmissible for this species, even though Meigen's *dimidiata* belongs to the genus *Rondaniella*. I therefore adopt *M. ocellus* as the next oldest name. The species is usually easily recognisable by the clear spot in the dark apical third of the wing, though in pale specimens the clear spot is not so obvious, and the species might easily be confused with *M. czizeki* or *M. stylata*. The middle tibiae occasionally have a second small ventral bristle. The species is common everywhere, and breeds in various bark-growing fungi; I have reared it from *Poria vaporaria*, *Phlebia merismoides* and *Sparassis crispa*, and Dr. F. M. Turner has obtained it from *Pleurotus ostreatus*. A slight network cocoon is formed.

M. formosa Lundst. This rather common species is very distinct by wing-markings, but the colour of the body varies very much. Normally the thorax is ochreous with three brown stripes, and the abdomen has distinct ochreous bands, but a form occurs, perhaps chiefly in winter, in which the body is almost all black. I have reared both forms together from *Phlebia merismoides*. The cocoons are of a light texture as in the last species.

M. adumbrata Mik. In this species the pleurotergites are rather small, and the shape of the thorax approximates to *Epicypta*, but the costa is not at all produced. The wing-markings are very suggestive of *Epicypta testata* (rather than *E. punctum*, as I suggested before). The species is rare: apart from the Scotch example recorded I have seen only one, from Snailbeach, Salop (*F.W.E.*).

M. unipunctata Mg. I have taken this fairly distinct species in Arran; Sherwood Forest; Burnham Beeches; and there is also a specimen in the national collection from the New Forest (*Adams*). Apart from the tibial chaetotaxy it differs from *M. lineola* in the shining mesonotum.

M. stolida Walk. Many examples of this species have traces of a small preapical spot on the costa. Such specimens might be regarded as falling with *M. strigata* in the key, from which they differ obviously in the large yellow shoulder-spots. Most of the specimens I have seen are from the New Forest, though the Museum also has examples from Wormsley Park, Oxfordshire (*Verrall*) and Spey Bridge, Inverness (*Yerbury*).

M. pumila Winn. A small black species, always with a distinct central wing-spot, and sometimes as in *M. stolida* with traces of a spot at the tip of R_5. I have taken it at Harrow Weald Common, Middlesex, and at Strelley and Sherwood, Notts.

M. unicolor Stan. (*posticalis* Lundstr.). Apart from the uniformly black thorax, this differs from the last in having the tip of the hind femora much more narrowly black. The central wing-spot is smaller and not infrequently absent (var. *posticalis*). The pleurotergite and sternopleurite are also unusually small, so that the species approaches rather closely to *Epicypta* or *Delopsis* in appearance, but the venation is that of a typical *Mycetophila*, and the second abdominal segment lacks the long ventral hairs in both sexes. It is rare in Britain: the following localities where odd specimens have been obtained may be mentioned: Crowborough, Sussex (*Jenkinson*); Blaise Castle, Glos. (*Womersley*); Wyre Forest (*F.W.E.*); Manchester (*Britten*).

M. stylata Dz. A rather distinct species by the dark wing-tip and by having the two outer bristles in the dorsal row of the hind tibiae extremely long; the ventral bristles of the mid tibiae are also very long. Only known as British from Logie (*Jenkinson*).

M. czizeki Landr. Very similar to *M. ocellus*, but the mid tibiae always have two strong bristles beneath, and the wing-markings are fainter and without the clear oval spot. This also has only been found in Scotland.

M. caudata Staeg. As stated above, I do not see sufficient reason for retaining the genus *Opistholeba*, which was founded for this species, a very distinct one in its wing-markings, though in venation and chaetotaxy a typical *Mycetophila*. No fresh records are available, the known British specimens being three females from Scotland.

M. magnicauda Strobl. This has also been referred to the genus *Opistholeba*, though it is not particularly nearly related to the last. I have seen two British specimens, a male taken at Dingwall, Cromarty, by Mr. J. J. F.-X. King, and presented by him to the British Museum; and a female in the Cambridge Museum from Logie, 12 ix. 1910 (*Jenkinson*). Apart from the characters mentioned in the key the light-coloured thorax with three narrow dark stripes is rather distinctive.

M. edwardsi Lundst. (*nebulosa* Edw.). Additional localities for this pretty little species are Llangammarch Wells, Brecknock (*Verbury*); Snailbeach, Salop; Wyre Forest; Sherwood Forest; Grange and Holker Moss, N. Lancs. (*F.W.E.*).

M. vittipes Zett. As I suspected, the two forms of this mentioned in my previous paper prove on close examination to represent two different species. The name *vittipes* may be restricted to the one which has the mesonotum almost entirely dark, and a fairly obvious and uniform darkening of the margin of the wing from the tip of R_5 to that of Cu_2. Hypopygium as in figs. 143-145. This is a fairly common form.

M. gibbula sp. n. (*gibba* Dz. 1884, *nec* Winn.). Differs from *M. vittipes* in having distinct yellowish patches on the shoulders; no trace of darkening on the apical margin of the wing (fig. 226), but often a small spot on Cu_1 before the tip and a slight dark seam at the ends of M_1 and M_2. Coxae clearer yellow than in *M. vittipes*, but hind femora similarly coloured. Hypopygium as in figs. 146-148.

Type ♂ in the British Museum from York (*A. Beaumont*); others from Crowborough, Sussex (*Jenkinson*) and Knebworth, Herts. (*F.W.E.*).

M. bialorussica Dz. Known as British only from the two males from Logie recorded by me in 1915.

M. bimaculata F. A fairly common species, which I have reared from larvae feeding in *Poria vaporaria*, and forming a slight silky cocoon.

M. forcipata Lundst. (*luteicauda* Edw.). I have taken this species in the island of Arran; in Sherwood Forest, and at Witherslack, Westmorland. It is very similar to *M. bimaculata*, and as in that species the front tarsi of the female are greatly thickened; it differs distinctly, however, in the dark subapical spot stopping quite short just above M_1, the rest of the wing tip being clear. The anal cerci of the male are extremely long, and in correlation with this the female ovipositor proves to be also unusually long, so that the species may be recognised easily in both sexes.

The Sherwood Forest specimens were mostly obtained from larvae which were found in *Polyporus betulinus*; they fed in the layer at the base of the tubes and not on the flesh of the cap. Pupation took place in a slight cocoon underground. Mr. H. Britten has also sent me specimens of this species, from Goyt Valley, Cheshire,

reared from *Polyporus betulinus*, and there may perhaps be a definite connection with this species of host.

M. ornata Steph. (*rufescens* auct. *nec* Zett.). I have elsewhere shown that although Zetterstedt included our *M. rufescens* in his series, yet his original type is a *Dynatosoma*, hence Stephens' name should be used for this species. It is a large, common, and quite unmistakable form, though varying a good deal in size. I have reared it from various bark-growing fungi, including *Polystictus versicolor*, *Polyporus giganteus*, *Stereum* sp., and *Pleurotus ostreatus*. Pupation usually takes place within the fungus; the cocoons are of rather tough texture with a more or less open network at the head end.

M. spectabilis Winn. A widely distributed species, though nowhere very common. Together with the next two it belongs to a small group of species with very conspicuous wing-markings, the central spot being very large and the subapical fascia long and curved.

M. curviseta Lundst. Additional localities for this apparently rare species are Oxford (*Hamm*) and Witherslack, Westmorland (*F.W.E.*).

M. marginata Winn. Common everywhere. The larvae feed in bark-growing fungi: I have found them in *Polyporus versicolor*: *Poria vaporaria*: *Fistulina hepatica*: *Stereum* sp.; and in an undetermined agaric on a fallen elm. The cocoons resemble those of *M. rufescens*, with which they were sometimes associated: pupation took place either in the ground or in the fungus, if this was of a sufficiently firm texture.

M. fraterna Winn. Widely distributed and not rare. Lighter in colour than the last three, and with less extensive wing-markings.

M. finlandica Edw. Much resembles the last, but appears to differ constantly in having three ventral bristles on the mid tibiae, its entirely dull thorax distinguishing it from other species with similar chaetotaxy.

M. strigata Staeg. (*fuliginosa* Dz.). Rather easily distinguished from all except the following by its somewhat shining and nearly all black thorax and two ventral bristles on the mid tibiae. Apparently rare; an additional record is Shefford, Beds. (*F.W.E.*).

M. luctuosa Mg. Closely resembles the last, except in the hypopygium: common and generally distributed. I have found larvae in *Paxillus involutus* and in an undetermined agaric on an elm trunk, in the latter case in company with *M. marginata*. Pupation in the ground; cocoon slight.

M. occultans Lundst. According to Lundström's description this species has only a small and indistinct central spot on the wings, but I have seen several specimens with a hypopygium as figured by him, and agreeing for the most part with his description, though differing in having quite a large central spot and a more or less conspicuous though ill-defined subapical mark also, this mark in some specimens almost reaching the tip of R_1, though in others it is smaller and less distinct. It would seem probable that the wing-markings are variable, and that Lundström described an unusually pale-winged specimen. The species would seem to be allied to *M. pumila* and *M. unicolor*, all three agreeing in having only two pteropleural bristles, and two ventral bristles on the mid tibiae, as well as in the small hypopygium. Plain-winged examples may be known from *M. unicolor* by the less shining thorax. Besides the example recorded from Arran, I have seen males from Cambridge (*Jenkinson*): Ampton, Suffolk (*Nurse*): and Blaise Castle, Glos. (*Audcent*): also a female from Oxford (*Hamm*) which probably belongs here; this last has the front tarsi thickened, which was not the case in Lundström's specimen.

M. signata Mg. I can discover no characters other than those of the hypopygium by which the four members of this group may be distinguished. *M. signata* in Dziedzicki's sense appears to be one of the rarest of the four, the only fresh record available being Wyre Forest (*F.W.E.*).

M. signatoides Dz. A rather common species in most districts. Dr. C. L. Withycombe has pointed out to me, what I have also observed myself since, that the adults have the peculiar habit of holding their wings vertically at the sides of the abdomen when running, the anal area of the wing apparently folding beneath the abdomen. Such a habit has not been noted in any other species of *Mycetophila*, though I have frequently observed it in *Sceptonia nigra*. Mr. H. Womersley has sent me specimens reared from larvae feeding in a species of *Boletus*; pupation was underground.

M. sigillata Dz. No fresh records are available for this rare species.

M. guttata Dz. Although the adults seem morphologically

reared from *Polyporus betulinus*, and there may perhaps be a definite connection with this species of host.

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M. sigillata Dz. No fresh records are available for this rare species.

M. guttata Dz. Although the adults seem morphologically

indistinguishable from *M. signatoides* apart from the hypopygium, the habits of the species are quite different. *M. guttata* apparently never holds its wings in the position assumed by *M. signatoides*, and the larvae appear to be definitely associated with the fungus *Russula nigricans*, in which I have found them on many occasions; in fact this fungus seems to be hardly ever free from infestation by this species. The cocoons are of tough texture except for a very neat papery cap in front; they are placed in the fungus a little way from the surface, and before pupation the larva cuts a nearly circular slit in the skin of the fungus to ensure safe emergence.

M. rudis Winn. Known as British only from the specimens previously recorded from Cornwall and the New Forest.

M. obscura Dz. I have taken this rather uncommon species at Baldock, Herts., Shefford, Beds., and Strelley, Notts.

M. dentata Lundst. A single male from the New Forest, July 1904 (*D. Sharp*), is in the Cambridge Museum. It agrees closely with Lundström's description and figure, which was based on a male from Hungary. Of previously recorded British species, *M. dentata* most resembles *M. rudis* Winn.; from this it differs in having a distinct subapical wing fascia reaching the costa, as well as in the very remarkable spiny hypopygium.

M. tarsata Winn. Still only known as British from a single male from Herefordshire.

M. blanda Winn. I have reared this species from *Lactarius deliciosus*: pupation took place within the decaying remains of the fungus, the cocoons being similar to those of *M. guttata*.

M. trinotata Staeg. (*russata* Dz.: *ujhelyi* Lundst.). The extra subdorsal spine on the hind tibiae is diagnostic of this species, otherwise it is very similar to *M. spectabilis*. It is fairly common and seems to be specially associated with *Polystictus versicolor*, from which I have reared it on several occasions, though I have also had it from *Polyporus adustus*. Cocoon slight.

M. confluens Dz. A rather rare species occurring in Scotland and the New Forest.

M. cingulum Mg. A very distinct species which is fairly common everywhere and appears to breed exclusively in *Polyporus squamosus*, from which I have reared it on a number of occasions. Cocoon slight, underground.

M. immaculata Dz. A small shining black species with unspotted wings resembling *M. unicolor*, and with rather small pleurotergites as in that species, but very distinct by the chaetotaxy of the hind tibiae, and also by the venation, the cubital fork being short and narrow and the main stem of the radius wavy. There is a male in the Cambridge Museum from the New Forest, ix. 1904 (*Sharp*), and another specimen in the British Museum from Sheviock, Cornwall (*Verbury*).

Genus Zygomyia Winn.

This is essentially similar to *Mycetophila*, which it resembles in pleural structure and chaetotaxy, and in the strong tibial bristles, almost the only difference being in the simple cubitus, which has lost the anterior branch. Even this difference is bridged by *Mycetophila semifusca*, which has Cu_1 present but very short and faint at the base, and might almost equally well be placed in either genus. The species of *Zygomyia* might be confused with those of *Sceptonia*, but in the British forms at least the chaetotaxy of the middle tibiae provides a ready distinction, all our species of this genus having four or five dorsal and two ventral bristles on the mid tibiae. Also the mesonotum is dull in *Zygomyia*, shining in *Sceptonia*. *Zygomyia* apparently attains its greatest development in New Zealand, but there are a number of European and North American representatives.

The life-history is unknown: in spite of the abundance of some of the British species I have never succeeded in finding the larvae in any fresh fungi, and suspect that they may be saprophagous in their habits. The reduction in size and general black colouring of the adults are very frequent accompaniments of the adoption of a saprophagous mode of life by the larvae in other groups of Diptera.

There are five British species, all of which are widely distributed and more or less common.

1. Both ventral bristles of mid tibiae quite short; normally four dorsal bristles . . . . . 2.
   One or both ventral bristles of mid tibiae very long; five dorsal bristles; wings with a small dark central spot . . . 4.
2. Wings with a large dark mark filling the end of cell R_1 *pictipennis* Staeg.
   Wings practically unmarked . . . . . 3.

3. Cross-vein *r-m* and adjoining veins rather distinctly darkened; often a slight dark shade in cell R_1; female with front tarsi simple . . . . *vara* Staeg.
   Wings quite clear: female with front tarsi much thickened beneath . . . . *valida* Winn.
4. Mid tibiae with two bristles in the external row (as in the above three species); shoulders distinctly yellow . *humeralis* Wied.
   Mid tibiae with three bristles in the external row; mesonotum all blackish . . . . *notata* Stan.

Z. pictipennis (Staeg.) (*binotata* Hal.). A very interesting species on account of the remarkable sexual difference in the wing-markings, the female having a large dark cloud in the middle of the wing (fig. 227) connecting the spot over *r-m* with the larger spot in cell R_1: this cloud is absent in the male. The only other case of such a form of sexual dimorphism in the family which has come under my notice is in *Phronia praecox*.

Z. vara (Staeg.). A fairly common species which is easily confused with the following, though with very different hypopygium (figs. 149, 150) and in the female easily distinguished by the simple front tarsi.

Z. valida Winn. Very abundant on windows everywhere in certain seasons, especially during October and November. Hypopygium, figs. 151, 152.

Z. humeralis (Wied.) (*nigritula* Walk.: ? *canescens* Winn.). A fairly common species in Britain, though hitherto not properly distinguished from the following. British Museum material is from Stoke Gabriel and Tipton St. John, S. Devon; Hitchin district, Herts.; Sherwood Forest; Ffrith, N. Wales; Holker Moss, N. Lancs.; Arran (*F.W.E.*). I have examined Wiedemann's type and find it agrees with our specimens. Hypopygium, figs. 153, 154.

Z. notata (Stan.). Perhaps less common than the last, as the British Museum only possesses specimens from Woodbridge, Suffolk (*Verrall*); New Forest (*Adams*); Felden, Herts. (*Piffard*) and Letchworth (*F.W.E.*). In all the specimens there is only a minute pale dot on the shoulders instead of a distinct patch as in the last. Hypopygium, figs. 155, 156.

Genus Sceptonia Winn.

Although resembling *Zygomyia* in the simple cubitus, this genus seems to be rather more nearly related to *Epicypta* and *Delopsis* on account of the shape of the thorax and the structure of the pleurae. Apart from this the most obvious distinction from *Zygomyia* is in the closer approximation of the veins R_1 and R_5; but this varies somewhat in the different species, and the safest distinction between the two genera is in the chaetotaxy of the middle tibiae. In all species of *Sceptonia* there are only three dorsal bristles and no ventral ones; there is a single short internal bristle which is placed lower down the side than usual and thus occupies a position somewhat intermediate between lateral and ventral. There are only a few species known, from Europe, North America, and Australia, also one (undescribed) from South Africa. Enderlein's *Platyprosthiogyne metameromelina* from the Seychelles is practically a *Sceptonia*, differing only in the more produced costa. This last genus was merely distinguished from *Sceptonia* by the depressed instead of compressed abdomen, an obviously untenable distinction, since the shape of the abdomen depends largely on its contents (food or eggs).

The life-history is hardly known. Bouché records *S. nigra* from rotten fungi. The adults have the curious habit of resting with the wings held vertically at the sides of the abdomen. They run with great rapidity.

I find that each of the two species hitherto recognised as British is really composite, and can now distinguish eight in all.

1. R_5 very closely approximated to the costa and to R_1, separated from them by only about the width of a vein . . . 2.
   R_5 separated from costa and R_1 by two or three times the width of one of the veins . . . . 3.
2. Abdomen all black, at least in the male; hind coxae normally dark at the base only . *nigra* Mg.; *membranacea* sp. n.
   Abdomen in both sexes with the apical margins of the first few tergites distinctly yellow; hind coxae (always?) with nearly the basal half black . . . . . *costata* v. d. W.
3. All femora with a more or less distinct dark line beneath, running the whole length; hind femora mainly blackish; front tarsi of female hardly swollen . . . . *fumipes* sp. n.
   Femora yellow, except for the black apical third of the hind pair; front tarsi of female distinctly swollen . . . 4.
4. Mesonotum all black . . . . 5.
   A distinct yellow spot on the shoulders . *flavipuncta* sp. n.
5. Palpi yellow . . . . *concolor* Winn.; *tenuis* sp. n.
   Palpi dark brown or blackish . . . *fuscipalpis* sp. n.

S. nigra (Mg.). Of the three British species which have been confused here, I would restrict Meigen's name to the one which appears to be commonest. It has a hypopygium constructed as in figs. 158, 159. Though usually entirely black in body colour, the females may have a certain amount of yellow on the abdomen. The hind coxae have a variable amount of black at the base, rarely covering more than the basal fourth. The female cerci are very long and narrow.

S. membranacea sp. n. Closely resembles *S. nigra*, no external distinctions being obvious, but hypopygium differing as shown in figs. 160–163; the upper claspers especially are very differently formed and smaller, but as in the last species the lower claspers are membranous and more or less fused on to the hypopygium.

Type male in the British Museum from Sherwood Forest, ix. 1922 (*F.W.E.*); others from Downderry, Cornwall, 8 ix. 1912 (*Verbury*), and Tarrington, Hereford, 7 ix. 1905 (*Verrall*); others in the Cambridge Museum from the New Forest (*Sharp*), and Crowborough, Sussex (*Jenkinson*).

S. costata (v. d. W.) (wing, fig. 228). Differs from *S. nigra* in having the abdomen more or less yellow at the sides of the first few segments, much more so in the female than in the male; the coxae are clearer yellow, but the hind pair more extensively black at the base. The hypopygium also differs, as shown in figs. 164–166.

There are two males in the British Museum, from Lelant, Cornwall (*Verbury*) and New Forest (*Adams*), also a female from Lelant. A second female from Sheviock has the abdomen very extensively yellow, but the hind coxae are entirely yellow; it may possibly represent another species. There are also specimens in the Cambridge Museum from the New Forest (*Sharp*).

S. concolor Winn. According to the structure of the hypopygium this seems to be a composite of a rather large number of species, of which I have already distinguished five in Britain among the rather small amount of material available. Some of these seem to be fairly well characterised by colour, but I have seen two which agree with Winnertz's description in having the thorax entirely black; palpi yellow; and hind femora yellow except towards the tip. Of these I would provisionally use Winnertz's name for one with the hypopygium as in figs. 167, 168.* Of this

* The ninth tergite and anal segment of this species are formed almost as in *S. fuscipes* (fig. 178).

species I have seen 5 ♂ 3 ♀ collected by the late Dr. D. Sharp in the New Forest in 1904 and now in the Cambridge Museum.

S. tenuis sp. n. Apparently differs only from *S. concolor* as identified above in the structure of the hypopygium, which is as in figs. 169, 170.

Type ♂ and one ♀ in the British Museum from Downderry, Cornwall, 8 ix. 1912 (*Verbury*).

S. fuscipalpis sp. n. Closely resembles *S. concolor*, but slightly larger; palpi dark brown or blackish; mesonotum appearing somewhat less shining, apparently owing to the rather longer pubescence; hypopygium larger, so that the tip of the abdomen appears broader from above, structure as in figs. 171–173.

Type ♂ in the British Museum from the New Forest, ix. 1904 (*D. Sharp*); a second male from the same place in the Cambridge Museum, also one from Nethy Bridge, vi. 1907 (*D. Sharp*).

S. flavipuncta sp. n. Closely resembles *S. concolor*, but rather larger; a small yellow spot on the shoulders; mesonotal pubescence longer, and mesonotum therefore appearing less shining; R_5 perhaps a little longer and more curved; hypopygium as in figs. 174, 175.

Type ♂ in the British Museum from Mildenhall, Suffolk, 24 vi. 1909 (*Verbury*).

S. fumipes sp. n. Body all black as in *S. concolor*, and venation also similar, but differs conspicuously as follows: Palpi more or less dark. All femora with a more or less obvious dark line ventrally, the hind femora gradually darkened from the base, so that the apical half or more is blackish. Front tarsi of female less distinctly swollen beneath. Hypopygium as in figs. 176–178.

Type ♂ in the British Museum. Tottington, Norfolk, 21 v. 1909 (*Verrall*); a second ♂ in the Cambridge Museum from Auchencairn (*Jenkinson*). I have also seen females, probably of the same species, from Logie (*Jenkinson*); Dingwall (*King*); Arran (*Waterston*); and Austwick (*Cheetham*).

Genus Epicypta Winn.

This genus evidently represents a development of *Mycetophila*, to which it is closely allied in all essential respects, differing in having the costa distinctly produced beyond

the tip of R_5, in the distinctly divergent branches of the cubital fork, and also in the structure of the pleurae, the pleurotergites and sternopleurites being very small. A few species of *Mycetophila*, such as *M. adumbrata* Mik, show a reduction in the size of these parts, so that the distinction is not very sharply defined, but is probably correlated with differences in the life-history.

Johannsen in 1909 indicated *E. scatophora* Winn. as the type of *Epicypta*, but in its unproduced costa and some other respects this species does not correspond to Winnertz's diagnosis of the genus, and I have shown below that it is referable to *Delopsis*. If the two genera are kept separate (they are indeed so closely related that they may have to be united) I consider that Johannsen's designation of the genotype should be set aside and the name *Epicypta* applied to those species with produced costa and shorter cubital fork, of which *E. testata* Edw. (*trinotata* Winn.) may be taken as the type.

The larvae according to Swanton live under limpet-like cases; and probably, as in the allied *Delopsis*, pupation takes place within the case.

E. testata Edw., 1925 (*trinotata* Winn. *nec* Staeg.). In a short note (Ent. Mo. Mag., 1909, p. 280) the late Mr. F. Jenkinson pointed out that the species previously identified by himself as *Epicypta trinotata* could not be Staeger's species as the front tarsi of the female were described as not enlarged. Jenkinson's specimens, however, are evidently the same species as those described by Winnertz as *E. trinotata*. Lately I have found by examination of Staeger's type that it is a *Mycetophila*, and have renamed this species. It is readily distinguished from the next by the reddish front part of the duller mesonotum, the larger dark spot over *r-m*, the more distinct dark apex of the wing, and the swollen front tarsi of the female. Widely distributed, but not common. This is the species reared by Swanton and referred to by Bloomfield (1911).

E. punctum (Stan.). Mesonotum entirely shining black; wings without well-defined markings; front tarsi of female simple. The two forms mentioned in my first paper (one with the coxae all yellow, the other with the posterior coxae black) have identical hypopygia. The one with the black coxae is the commoner of the two, but the species is not often met with.

Genus Delopsis Skuse.

This genus is evidently closely related to *Epicypta*, having much the same structure of the thorax, the sternopleurites and pleurotergites being very much reduced in size, the reduction in some cases being extreme. From *Epicypta* it differs in the costa normally ending at the tip of R_5, as in *Mycetophila*; in the absence of strong pronotal bristles; in the much longer cubital fork, the base of which is far before the base of *r-m*, and also in the possession of a pair of long bristles projecting from a pit in the second abdominal sternite. This latter character was first noted by the late Mr. F. Jenkinson, and seems to be constant throughout the genus. From *Mycetophila* the genus differs not only in thoracic structure as noted above, but also in the long cubital fork, the branches of which are straight and evenly divergent, and in the longer and stronger axillary vein, which nearly reaches the hind margin. Enderlein's *Platurocypta* is very close to *Delopsis*, but has the costa distinctly produced, and no long bristles beneath the second abdominal segment.

Besides the genotype (*D. thoracipunis* Skuse, from Australia) there are numerous Oriental and African species, most of which I have examined. Judging from the descriptions the South American *Mycetophila axilliformata* Holmgren and the North American *M. anomala* Johannsen both belong here, and there are also two European species, both of which occur in Britain.

The larvae construct a case out of excrement, the form of the case apparently varying according to the species. Pupation takes place within the case; not, as in *Phronia*, in a separate cocoon. The form of the thorax and the remarkably close fitting of the backwardly bent head into the front of the mesothorax, are probably adaptations to assist the imago in escaping from the pupal case. Unfortunately, however, the life-history and habits of this interesting genus are insufficiently known. The two British species are both rare.

D. scatophora (Perris) (*aterrima* Strobl). In my previous paper I gave reasons for supposing that two species had been confused under this name, and I still believe that this has been so, although my conclusions regarding the probable synonymy of the two must be modified. I have not seen a male of Perris' species, but have little doubt that two females taken by Jenkinson at Cambridge are correctly

identified. These have the abdomen extensively orange at the sides, as described by Perris.

D. aterrima (Zett.) (*scatophora* Winn.; *Mycetophila selecta* Walk.). I have examined Zetterstedt's and Walker's types and find they are both males of an all-black *Delopsis* with a small hypopygium, quite different from that described by Perris for *D. scatophora*. Winnertz's description would pass well enough for these specimens, and most probably referred to this species and not to *Mycetophila unicolor* as I previously suggested. This last is a typical *Mycetophila* and does not possess the long ventral hairs of the second abdominal segment in either sex. Apart from Walker's type of *M. selecta* I have seen British examples of *D. aterrima* from Gibside, Durham (*Bagnall*), and Crowborough, Sussex (*Jenkinson*). The figure of the male hypopygium (fig. 157) is taken from the Durham specimen.

Synonymic List of British Species.

In Verrall's 1901 list 212 species of British Mycetophilidae were enumerated, but no less than 70 of these were regarded as doubtful. The notes published by Jenkinson and the present writer in 1908 and 1913, while eliminating a large number of the doubtful names, brought the admitted total to just about 300. The present list includes 397 species, an increase of 30 per cent. since 1913. Only species which I have been able to verify as British are included, many recorded by Verrall and earlier authors having been omitted: the specimens on which these records were based have been examined in many cases and proved to be incorrectly determined. Walker's names have been included in all cases where the descriptions could be identified or the types traced, but a few appear to be lost. Verrall's estimate of 150 British species of *Sciara* was probably excessive, but at least another 30 British species of this genus must await identification. The final British total is not likely to be much less than 500.

Ditomyiinae.

Symmerus Walk.
1. annulatus Mg.
   zonatus Walk.
   ferrugineus Walk.

Ditomyia Winn.
1. fasciata Mg.

Bolitophilinae.

Bolitophila Mg.
1. occlusa Edw.
2. maculipennis Walk.
   bimaculata Zett.
3. pseudohybrida Landr.
4. glabrata Lw.
5. hybrida Mg.
   fusca Mg.

6. disjuncta Lw.
7. tenella Winn.
8. cinerea Mg.
9. saundersi Curt.
   trullata Lundst.
10. spinigera Edw.

Diadocidiinae.

Diadocidia Winn.
1. ferruginosa Mg.
   testacea Zett.
2. valida Mik.

Macrocerinae.

Macrocera Mg.
1. anglica Edw.
2. vittata Mg.
3. lutea Mg.
4. parva Lundst.
5. fasciata Mg.
6. crassicornis Winn.
7. fusca Lw.
8. bipunctata Edw.
9. centralis Mg.
10. angulata Mg.
11. fascipennis Staeg.
12. maculata Mg.
13. phalerata Mg.
14. stigma Curt.
15. stigmoides Edw.

Ceroplatinae.

Asindulum Latr.
1. nigrum Latr.
2. flavum Winn.
   rostratum Edw.

Antlemon Lw.
1. seivulum Walk.

Ceroplatus Bosc.
1. testaceus Dalm.

Cerotelion Rd.
1. lineatus F.
2. humeralis Zett.

Apemon Joh.
1. marginata Mg.
   ? *atrata* F.

Monocentrota Edw.
1. lundstromi Edw.
   brunnipennis Lundst.

Isoneuromyia Brun.
1. semirufa Mg.
   vitripennis Walk.
   unicolor Walk.
   brunnipennis Staeg.
2. zonata Zett.
   concisa Walk.
   forcipula Lundst.
3. perpusilla Edw.
4. macrocera Edw.
5. biumbrata Edw.
6. nigricauda Strobl.
7. modesta Winn.
8. flava Macq.
9. atriceps Edw.
10. ochracea Mg.
   dorsalis Staeg.
   mycetophiloides Walk.
   nigriceps Walk.
   humeralis Winn.

Platyura Mg.
1. ruficornis Zett.
   pectinifera Edw.
2. nemoralis Mg.
   flavipes Mg.
   nana Winn.
   cincta Winn.
3. pallida Staeg.
   aestivalis Winn.
4. nigricornis F.
   nigricostris Zett.
   antica Walk.
   infuscata Winn.
5. fasciata Mg.
6. discoloria Mg.
   unicolor Staeg.

Sciarinae.

Zygoneura Mg.
1. sciarina Mg.

Trichosia Winn.
1. hirtipennis Zett.
   splendens Winn.
2. absurda Winn.

PHORODONTA Coq.
1. flavipes F.

SCIARA Mg.
1. thomae L.
2. longiventris Zett.
? canulata Walk.
3. trochanterata Zett.
4. ruficauda Mg.
5. pilosa Staeg.
elegans Winn.
6. subpilosa Edw.
7. subspinulosa Edw.
8. scotica Edw.
9. hispida Winn.
10. autumnalis Winn.
11. glabra Mg.
12. carbonaria Mg.
13. bicolor Mg.
rufiventris Macq.
14. annulata Mg.
15. brunnipes Mg.
16. continis Winn.
17. semialata Edw.
18. flavicauda Zett.
19. insignis Winn.
20. hyalipennis Mg.
21. inflata Winn.
22. quinquelineata Macq.
23. pallida Walk.
compressa Walk.
24. pectoralis Staeg.
tritici Coq.
25. albinervis Winn.
26. praecox Mg.
27. varians Joh.
28. nitidicollis Mg.
paucista Felt.
29. agraria Felt.
30. tilicola Lw.
31. tricuspidata Winn.
32. longispina Pettey.

PLASTOSCIARA Berg.
1. pictiventris Kieff.
2. pernitida Edw.
? lignicola Winn.
3. keilini Edw.
4. perniciosa Edw.

PNYERIMHOFFIA Kieff.
1. brevipennis Walk.
2. brachyptera Kieff.

EPIDAPUS Hal.
1. atomarius Dzg.
venaticus Hal.
pumila Winn.
gracilis Walk.
2. gracilis Winn.

Sciophilinae.

Mycomyiini.

MYCOMYIA Rond.
1. marginata Mg.
punctata Mg.
2. exigua Winn.
3. winnertzi Dz.
4. wankowiczii Dz.
5. hyalinata Mg.
6. cinerascens Zett.
7. trivittata Zett.
marginata Dz.
8. tenuis Walk.
apicalis Winn.
radoszkowskii Dz.
9. duplicata Edw.
trivittata Dz.
10. flavicollis Zett.
11. macrurata Zett.
? annulata Mg.
12. circumdata Staeg.
lucorum Winn.
13. wrzesniowskii Dz.
14. fimbriata Mg.
affinis Dz.
15. ornata Mg.
tumida Winn.
16. melanocera Edw.
nigricornis Lundst.
17. dignifera Edw.
18. parva Dz.
19. maura Walk.
lugubris Winn.
? penicillata Dz.
20. flava Stan.
21. trilineata Zett.

NEOEMPHERIA O.-S.
1. pictipennis Hal.
2. lineola Mg.

Sciophilini.

LEPTOMORPHUS Walk.
1. walkeri Curt.

ALLOCOTOCERA Mik.
1. pulchella Curt.
silacea v. d. W.
flava Dz.

POLYLEPTA Winn.
1. guttiventris Zett.
andalusia Winn.

NEURATELIA Rond.
1. nemoralis Mg.
elongatus Walk.

PARANEUROTELIA Landr.
1. dispar Winn.

SYNTEMNA Winn.
1. hungarica Lundst.
2. nitidula Edw.

PARATINIA Mik.
1. sciarina Mik.

PITHINIA Winn.
1. winnertzi Mik.
2. humilis Winn.

SCIOPHILA Mg.
1. limbatella Zett.
sharpi Edw.
2. rufa Mg.
3. ochracea Walk.
4. interrupta Winn.
5. varia Winn.
6. pluriseta Edw.
7. lutea Macq.
var. *analis* Winn.
8. fenestella Curt.
9. cliftoni Edw.
10. hirta Mg.
11. adamsi Edw.
12. nigra Landr.
13. geniculata Zett.

MEGALOPELMA End.
1. nigroclavatum Strobl.
jenkinsoni Edw.

MONOCLONA Mik.
1. rufilatera Walk.
unicornuta Dz.

ACNEMIA Winn.
1. longipes Winn.
2. nitidicollis Mg.
defecta Walk.
3. amoena Winn.

AZANA Walk.
1. anomala Staeg.
scutopsichis Walk.

Gnoristini.

SPELOLEPTA Edw.
1. leptogaster Winn.

COELOSIA Winn.
1. thoracica Winn.
2. tenella Zett.
flavicauda Winn.
3. flava Staeg.
flava Walk.
4. silvatica Landr.

DZIEDZICKIA Joh.
1. marginata Dz.
2. alpicola Strobl.
3. flava Edw.

GNORISTE Mg.
1. bilineata Zett.
trilineata Zett.

SYNAPHA Mg.
1. vitripennis Mg.
finalis Walk.
2. fasciata Mg.
paradoxa Edw.

PALAEOMPALIA Meun.
1. collaris Mg.
? stylifera Grz.

APOLEPTHISA Grz.
1. subfasciana Curt.
melanocera Hal.
rara Grz.

BOLETINA Staeg.
1. trivittata Mg.
2. reuteri Lundst.
3. plana Walk.
dubia Staeg.
grzegorzeki Dz.
4. dubia Mg.
analis Mg.
inermis Lundst.

5. villosa Landr.
6. dispecta Dz.
7. lundbecki Lundst.
8. pallidula Edw.
9. basalis Mg.
10. digitata Lundst.
11. nigricans Dz.
12. nioravica Lundst.
13. trispinosa Edw.
14. gripha Dz.
15. sciarina Staeg.
16. brevicornis Zett.
17. lundstroemi Landr.
18. griphoides Edw.
19. nigrofusca Dz.

Leiini.

Rondaniella Joh.

1. dimidiata Mg.
   terminalis Mg.
   elegans Winn.

Leia Mg.

1. winthemi Lehm.
2. fascipennis Mg.
3. crucigera Zett.
4. cylindrica Winn.
5. subfasciata Mg.
   tricuspidata Strobl
6. bimaculata Mg.
   octomaculata Curt.
   var. *fasciola* Mg.
7. piffardi Edw.

Ectrepesthoneura End.

1. hirta Winn.
   diana Walk.

Tetragoneura Winn.

1. sylvatica Curt.
   compressa Walk.

Megophthalmidia Dz.

1. crassicornis Curt.
   brevicornis Zett.
   helvola Hal.
   calida Walk.
   ferruginea v. d. W.
   zugmayriae Dz.
   ? *rufina* Schnuse.

Docosia Winn.

1. gilvipes Hal.
   sciarina Winn.
2. fumosa Edw.
3. nioravica Landr.
4. sciarina Mg.
   basalis Walk.
   pubescens Walk.
   valida Winn.
5. fuscipes v. Ros.
   pseudoralida Landr.

Psyxia Joh.

1. scabiei Hopkins.
   subterranea Schmitz.

Mycetophilinae.

Exechiri.

Anatella Winn.

1. setigera Edw.
2. unguigera Edw.
   ? *flavicauda* Winn.
3. incisurata Edw.
4. ciliata Winn.
5. piligera Edw.
6. flavomaculata Edw.
7. minuta Staeg.

Exechia Winn.

1. pallida Stan.
   seriata Mg.
   ochracea Zett.
2. spinigera Winn.
   spinuligera Lundst.
3. frigida Holmg.
4. fusca Mg.
   fungorum Allet.
   gutticulis Mg.
   lateralis Mg.
5. continis Winn.
6. dorsalis Staeg.
   bispinosa Lundst.
7. lundstroemi Landr.
   interrupta Lundst.
8. bicincta Staeg.
   interrupta Zett.
   serpentina Lundst.
9. dizona Edw.
   bicincta Lundst.
10. lucidula Zett.
11. nigra Edw.
12. exigua Lundst.
13. separata Lundst.
14. nana Staeg.
   lateralis Lundst.
15. parva Lunsdt.
16. festiva Winn.

17. contaminata Winn.
18. pseudocincta Strobl.
19. nigroscutellata Landr.
20. parallela Edw.
21. trivittata Staeg.
22. trisignata Edw.
23. leptura Mg.
   membranacea Lundst.
24. unguiculata Lundst.
25. subulata Winn.
26. fimbriata Lundst.
27. indecisa Walk.
   tennicornis v. d. W.
28. ligulata Lundst.
29. hammi Edw.
30. pollicata Edw.
31. intersecta Mg.
   gracilicornis Landr.
32. magnicauda Lundst.
33. clypeata Lundst.
34. pulchella Winn.
35. jenkinsoni Edw.
36. crucigera Lundst.

Rhymosia Winn.

1. cristata Staeg.
   brachycera Zett.
2. maculosa Mg.
3. domestica Mg.
4. macrura Winn.
5. fenestralis Mg.
6. tarnanii Dz.
7. fovea Dz.
8. placida Winn.
9. virens Dz.
10. connexa Winn.
11. fasciata Mg.
   discoidea Dz.
12. britteni Edw.
13. signatipes v. d. W.
14. gracilipes Dz.
15. bifida Edw.
16. spinipes Winn.

Brachypeza Winn.

1. bisignata Winn.
2. radiata Jenk.
3. helvetica Walk.
   spuria Edw.

Allodia Winn.

1. crassicornis Stan.
   punctipes Staeg.
2. lugens Wied.
3. ornaticollis Mg.
   longicornis Walk.
   nigricollis Zett.
4. lundstroemi Edw.
5. anglofennica Edw.
6. truncata Edw.
7. grata Mg.
   nigricollis Edw.
   alternans Dz.
8. alternans Zett.
9. ezernyi Landr.
10. silvatica Landr.
11. barbata Lundst.
12. pistillata Lundst.
13. triangularis Strobl.
14. neglecta Edw.
15. griseola Zett.
   griseicollis Lundst.
16. fuscipennis Staeg.
17. borealis Lundst.
18. proxima Staeg.
   brachycera Lundst.
19. ruficornis Mg.
   hastata Winn.
   cinerea Lundst.
20. foliata Edw.
21. fissicauda Lundst.
22. verralli Edw.
23. auriculata Edw.
24. griseicollis Staeg.
   caudata Winn.
25. nigrofusca Lundst.
26. kingi Edw.
27. sericoma Mg.
   amoena Winn.

Mycetophilini.

Cordyla Mg.

1. crassicornis Mg.
   cinereus Zett.
2. semiflava Staeg.
3. murina Winn.
4. parvipalpis Edw.
5. fissa Edw.
6. brevicornis Staeg.
7. pusilla Edw.
8. nitidula Edw.
9. fusca Mg.
   ? *nitens* Winn.
10. fasciata Mg.
11. flaviceps Staeg.

Trichonta Winn.

1. stereana Edw.

2. falcata Lundst.
   albescens Dz.
3. terminalis Walk.
   funebris Winn.
4. hamata Mik.
5. flavicauda Lundst.
6. venosa Staeg.
   spinosa Lundst.
7. bicolor Landr.
8. atricauda Zett.
9. melanura Staeg.
   melanopyga Zett.
10. vernalis Landr.
11. subfusca Lundst.
12. vitta Mg.
    submaculata Staeg.
    var. *umbratica* Winn.
13. icenica Edw.
14. nigritula Edw.

Phronia Winn.

1. vulcani Dz.
2. interstincta Dz.
3. flavipes Winn.
4. exigua Zett.
   rustica Dz.
5. praecox Winn.
   nitidiventris Winn.
   ? *biarcuata* Beck.
6. forcipula Winn.
7. basalis Winn.
8. annulata Winn.
   braueri Dz. ♀
9. forcipata Winn.
10. cinerascens Winn.
11. tarsata Staeg.
    crassipes Winn.
12. bicolor Dz.
13. tenuis Winn.
14. conformis Walk.
    leioides Walk.
    girschneri Dz.
    braueri Dz. ♀.
15. dubia Dz.
16. signata Winn.
17. obtusa Winn.
18. elegans Dz.
19. taczanowskii Dz.
20. triangularis Winn.
21. notata Dz.
22. strenua Winn.
23. disgrega Dz.
24. vitiosa Winn.
    ? *nitidiventris* v. d. W.

Dynatosoma Winn.

1. fuscicorne Mg.
2. reciprocum Walk.
   nigricosa Zett.

Mycetophila Mg.

1. fungorum Deg.
   punctata Mg.
2. lineola Mg.
3. semifusca Mg.
4. ocellus Walk.
   dimidiata Staeg.
5. formosa Lundst.
6. adumbrata Mik.
7. stylata Dz.
8. czizeki Landr.
9. unipunctata Mg.
10. pumila Winn.
11. unicolor Stan.
12. occultans Winn.
13. caudata Staeg.
14. magnicauda Strobl.
15. edwardsi Lundst.
16. vittipes Zett.
17. gibbula Edw.
18. bialorussica Dz.
19. bimaculata F.
20. forcipata Lundst.
    bifurcata Edw.
21. ornata Steph.
    rufescens Auct.
22. spectabilis Winn.
23. curviseta Lundst.
24. marginata Winn.
25. fraterna Winn.
26. finlandica Edw.
27. stolida Walk.
28. strigata Staeg.
    fuliginosa Dz.
29. luctuosa Mg.
30. signata Mg.
31. signatoides Dz.
32. sigillata Dz.
33. guttata Dz.
34. tarsata Winn.
35. rudis Winn.
36. obscura Dz.
37. dentata Lundst.
38. blanda Winn.
39. trinotata Staeg.
    russata Dz.
    ujhelyi Lundst.
40. confluens Dz.
41. cingulum Mg.
42. immaculata Dz.

Zygomyia Winn.

1. pictipennis Staeg.
   binotata Hal.
2. vara Staeg.
3. valida Winn.
4. humeralis Wied.
   nigritula Walk.
5. notata Stan.

Sceptonia Winn.

1. nigra Mg.
2. membranacea Edw.
3. costata v. d. W.
4. concolor Winn.
5. tenuis Edw.
6. fuscipalpis Edw.
7. flavipuncta Edw.
8. fumipes Edw.

Epicypta Winn.

1. punctum Stan.
2. testata Edw.
   trinotata Winn.

Delopsis Skuse.

1. scatophora Perris.
   aterrima Strobl.
2. aterrima Zett.
   scatophora Winn.
   selecta Walk.

Literature.

The following list of titles includes most of the published references to Mycetophilidae in Britain, as well as the more important papers on the European and North American faunas. Where British species are figured in papers by continental authors, the names of such are added in square brackets.

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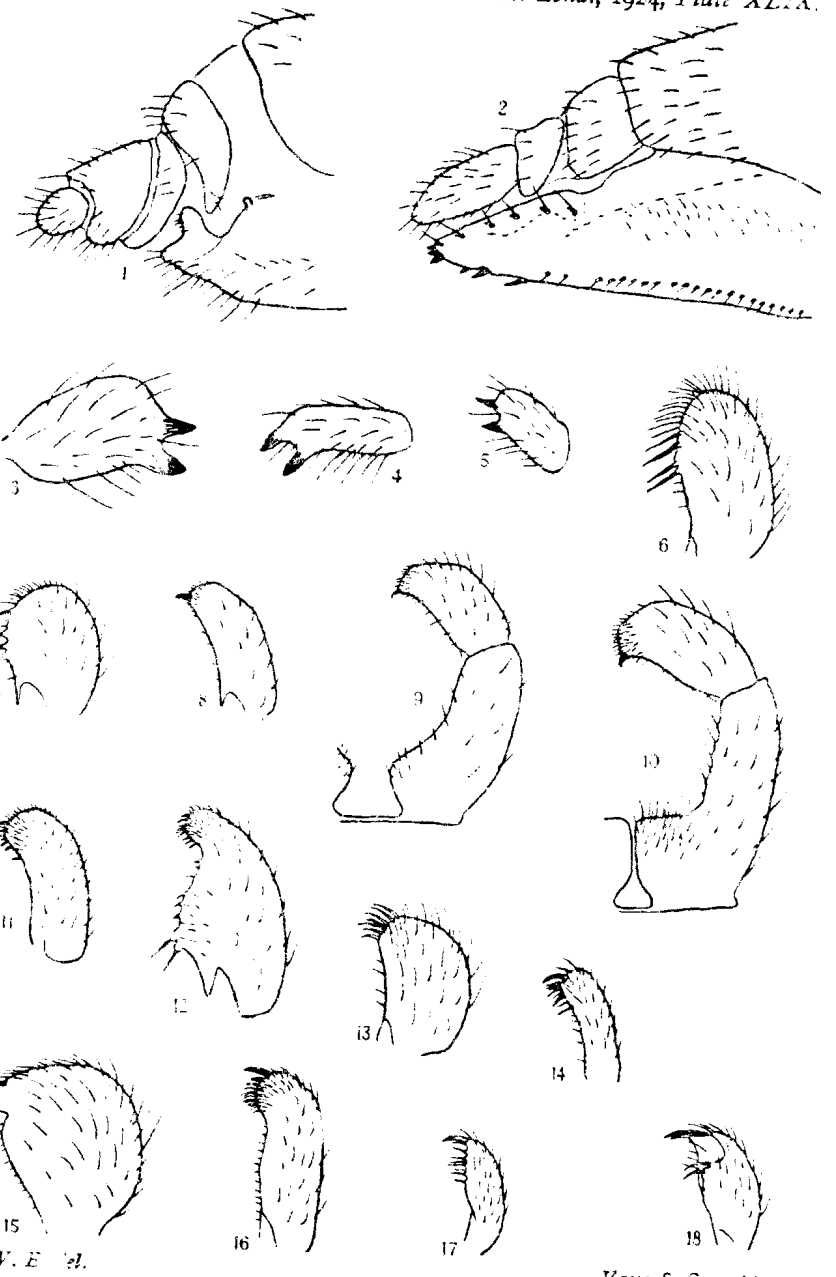
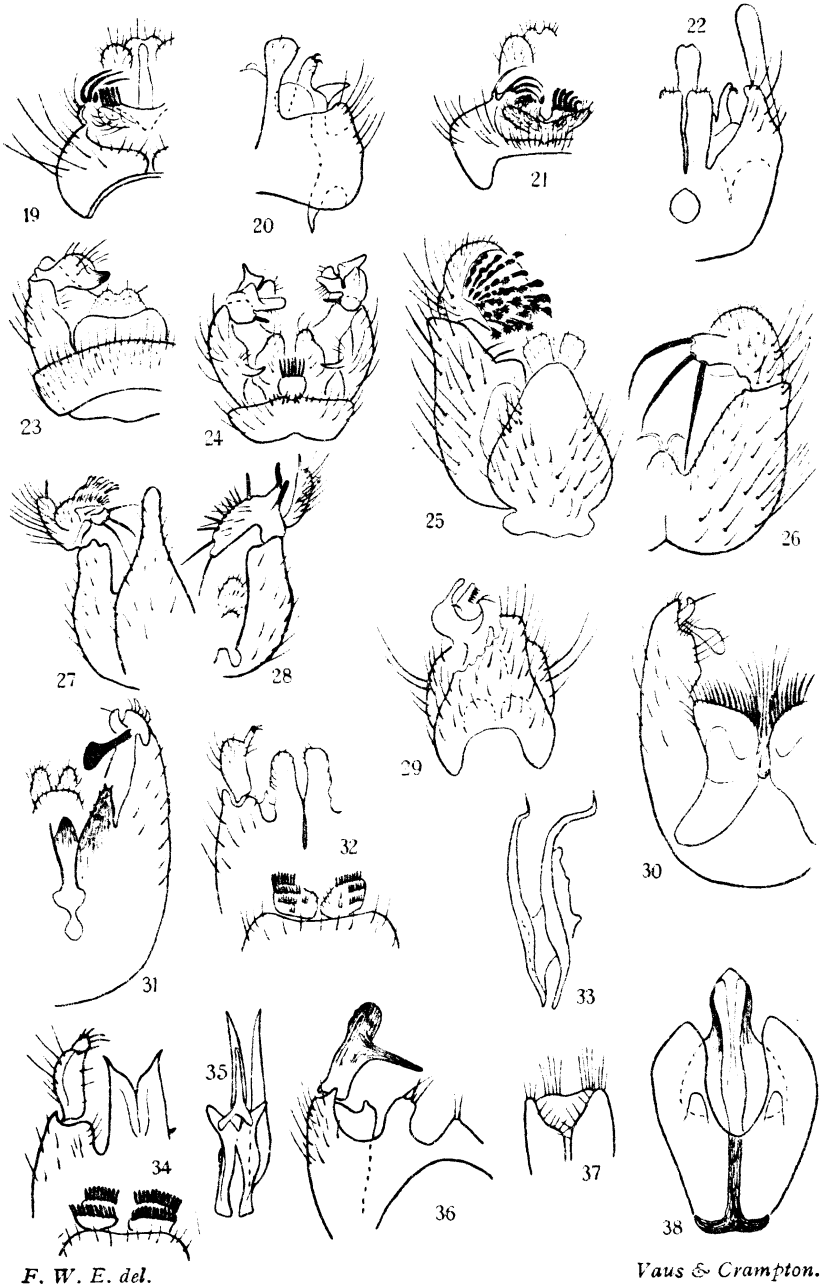
Index to Genera.

(Synonyms given correctly in Johannsen's revision are mostly omitted.)



BOLITOPHILA, MACROCERA, SCIARA.



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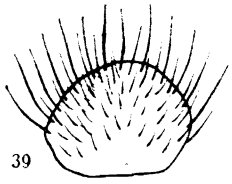
SCIOPHILINÆ.

32-35 Bolitophila.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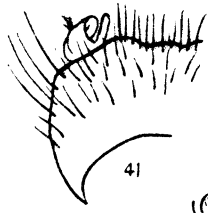
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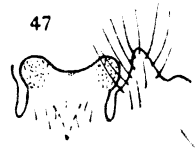
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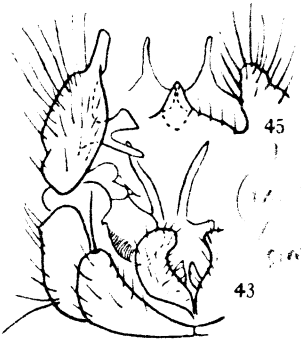
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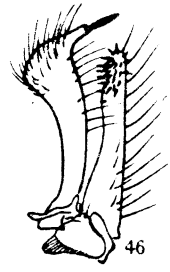
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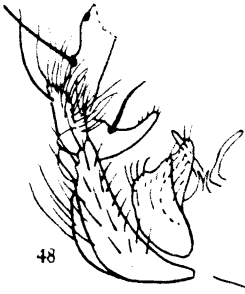
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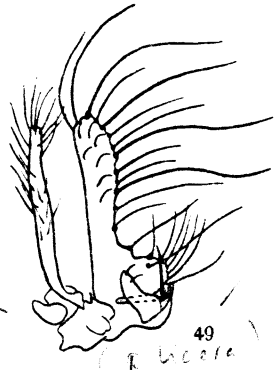
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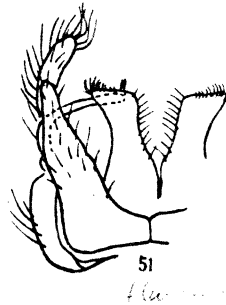
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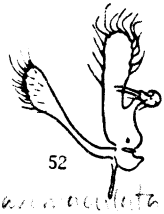
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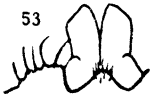
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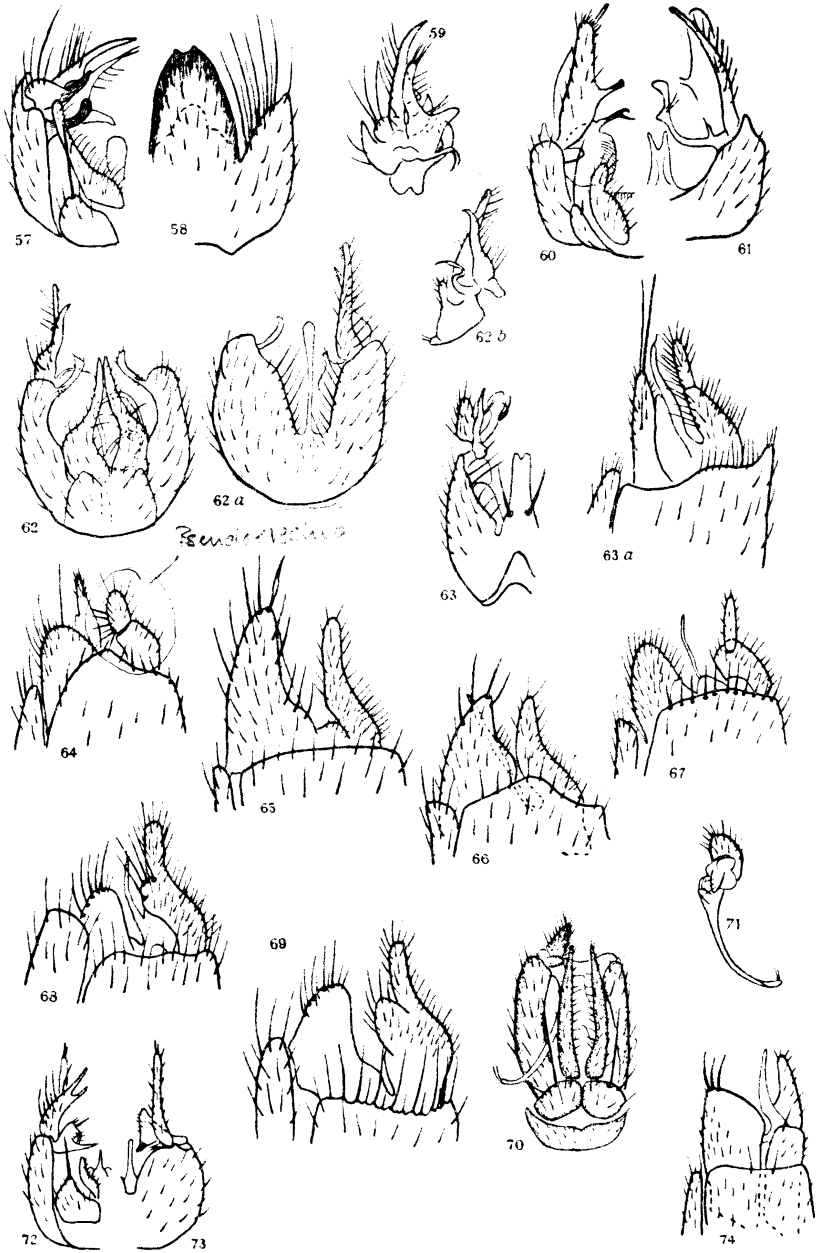
DOCOSIA, ANATELLA.



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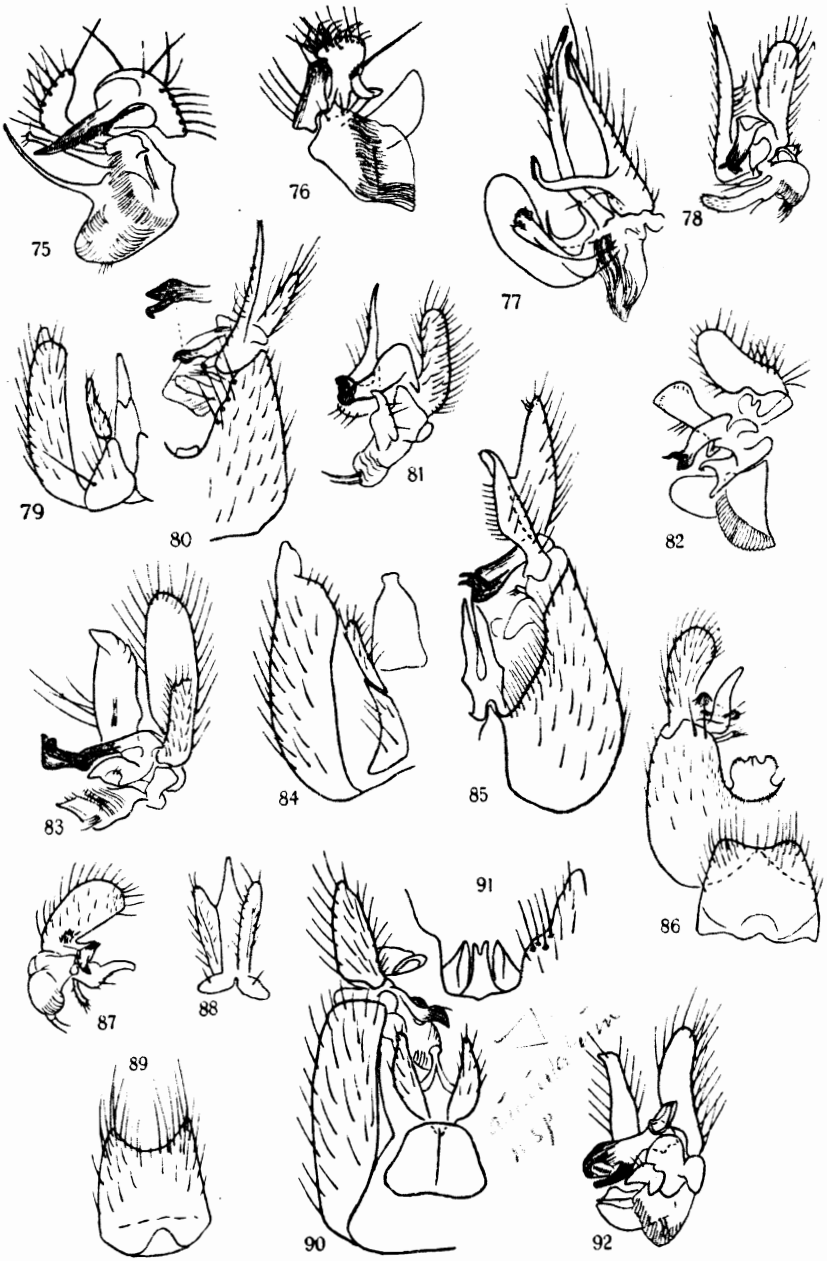
EXECHIA, RHYMOSIA.



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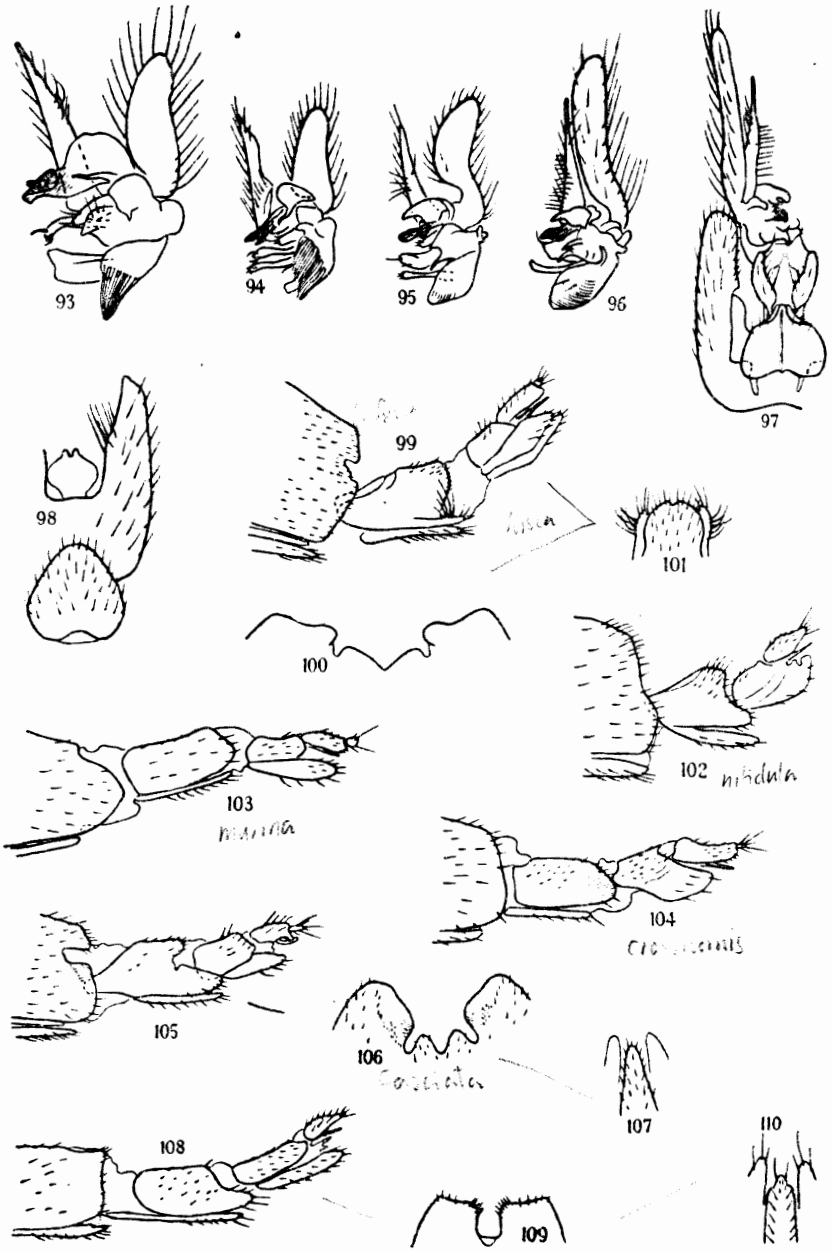
ALLODIA.



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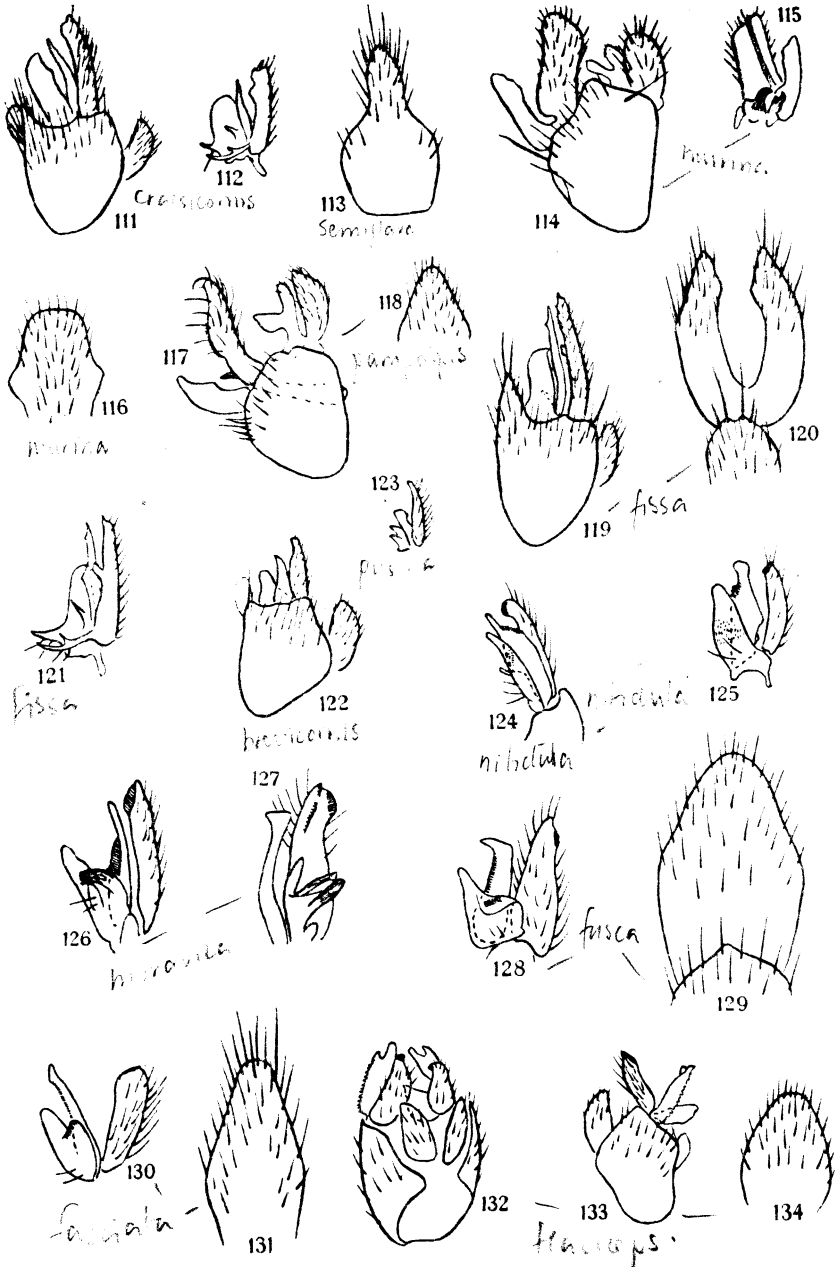
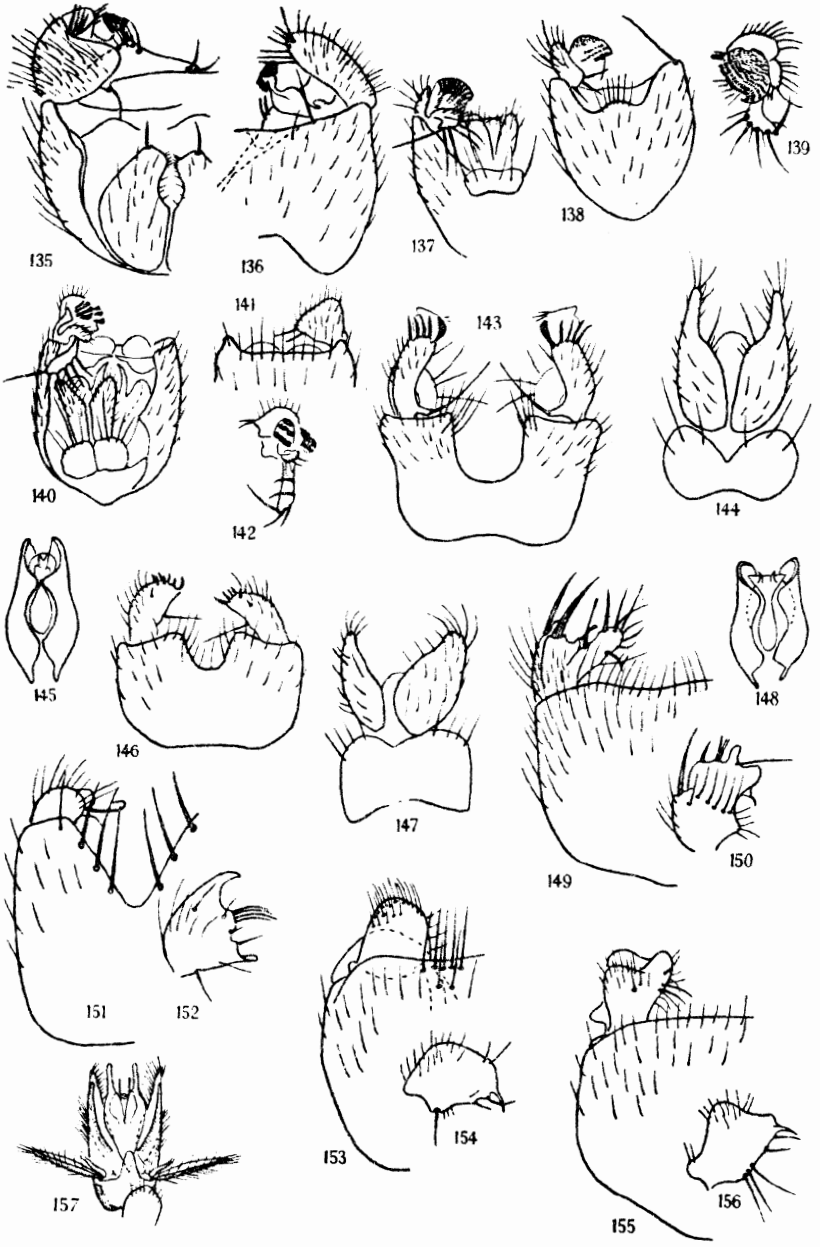
ALLODIA, CORDYLA ♀♀.



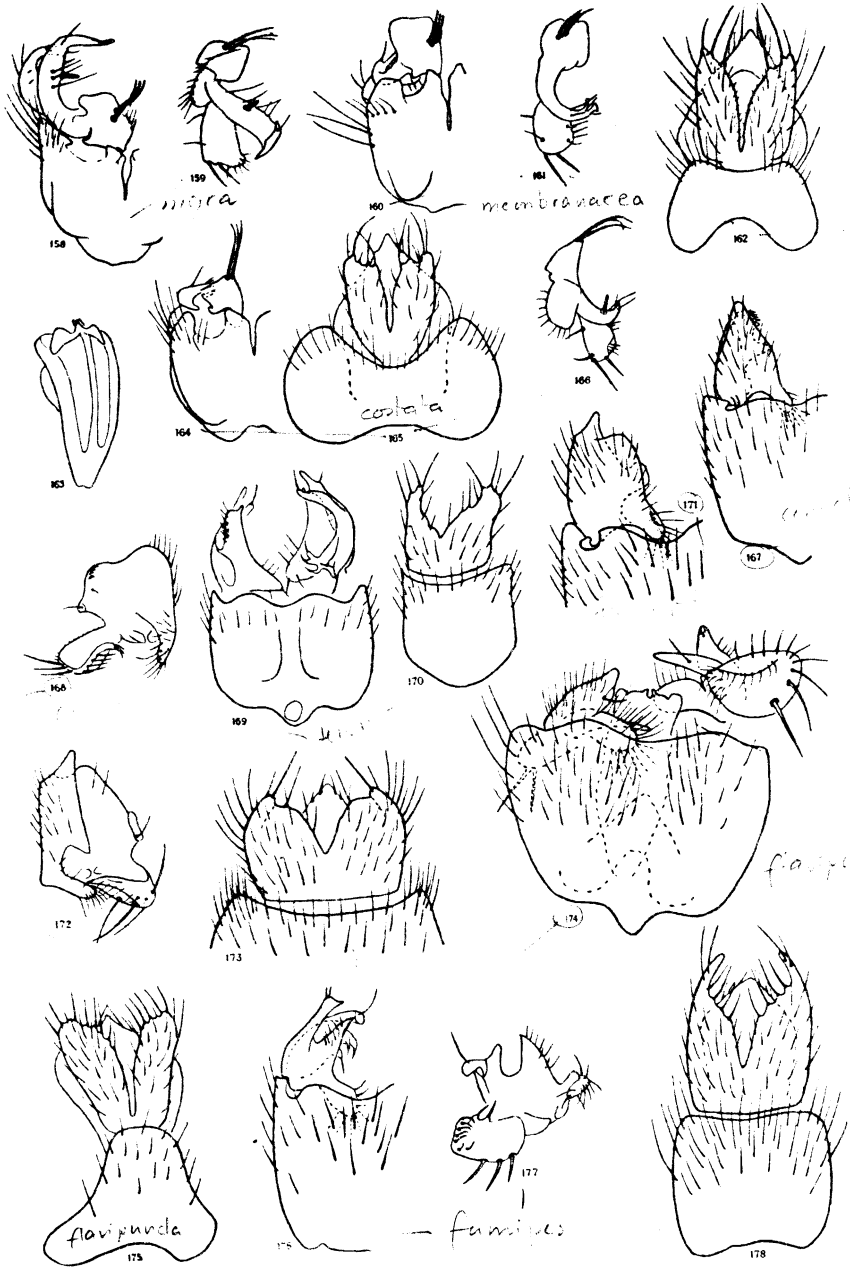
F. W. E. del. *Vaus & Crampton.*

CORDYLA ♂♂.



F. W. E. del. *Vaus & Crampton.*

TRICHONTA, ZYGOMYIA, etc.



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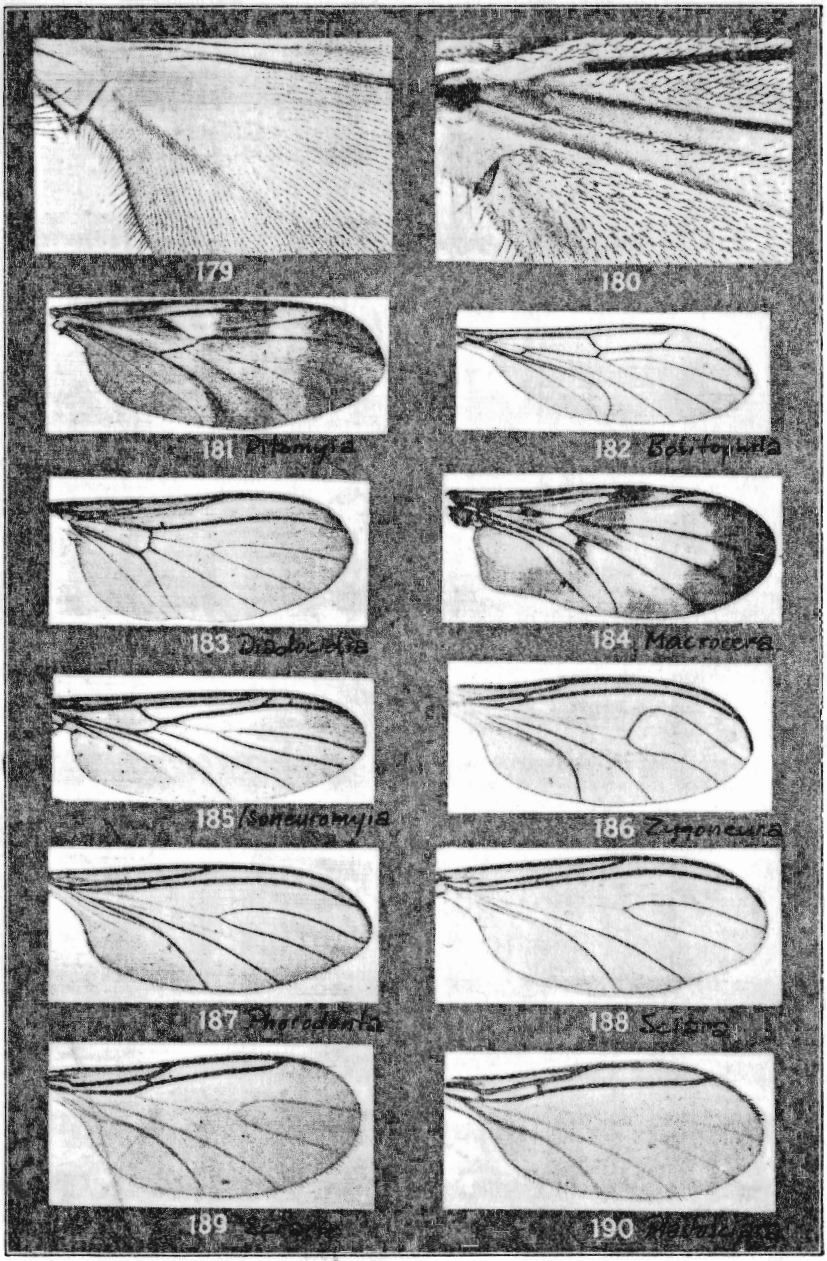
SCEPTONIA.



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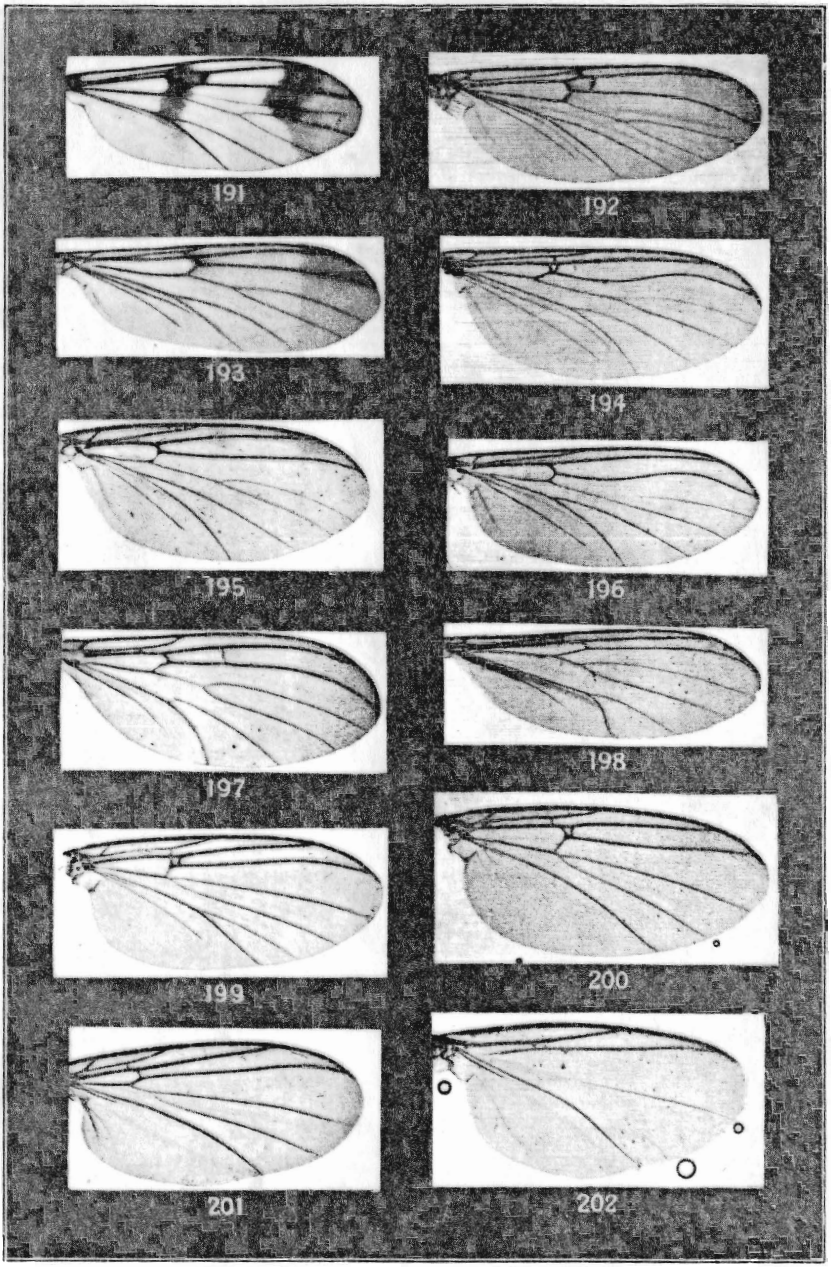

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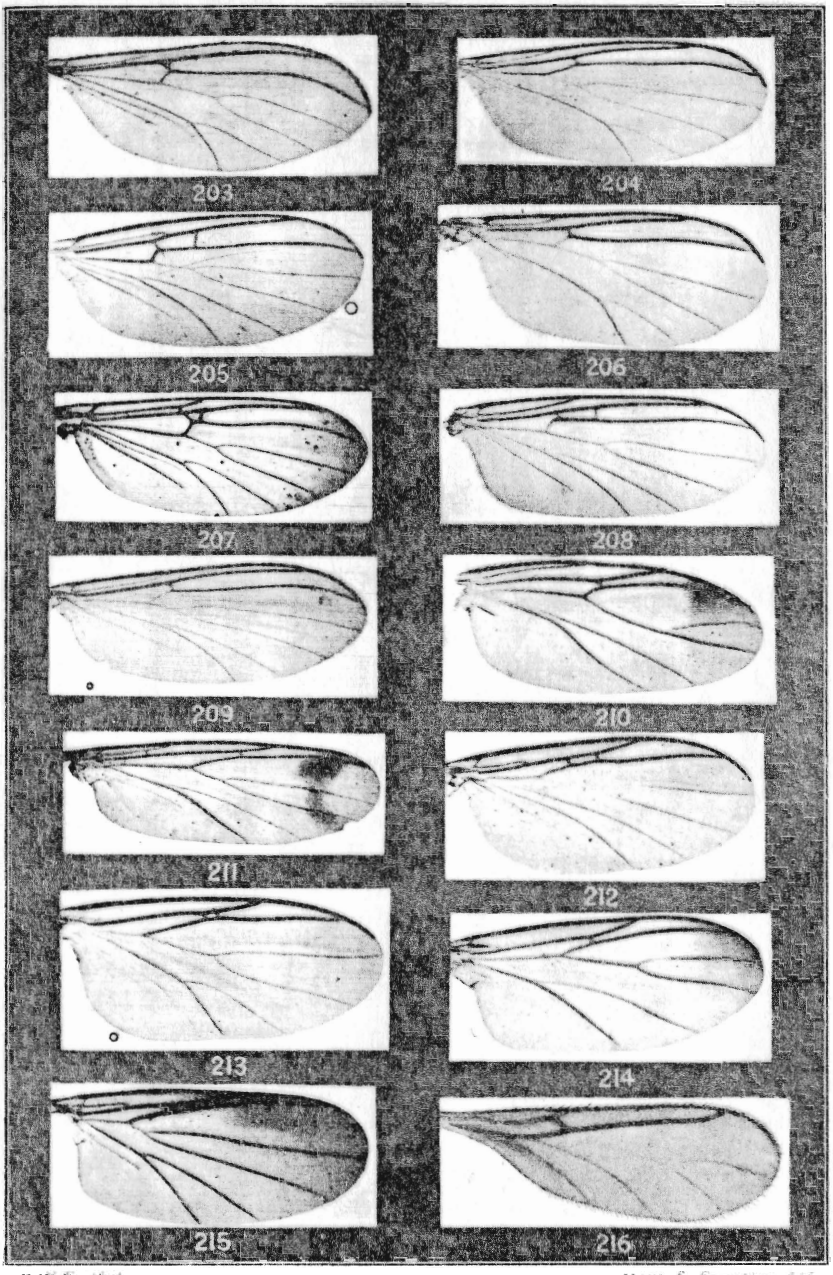
MYCOMYIINI, SCIOPHILINI.



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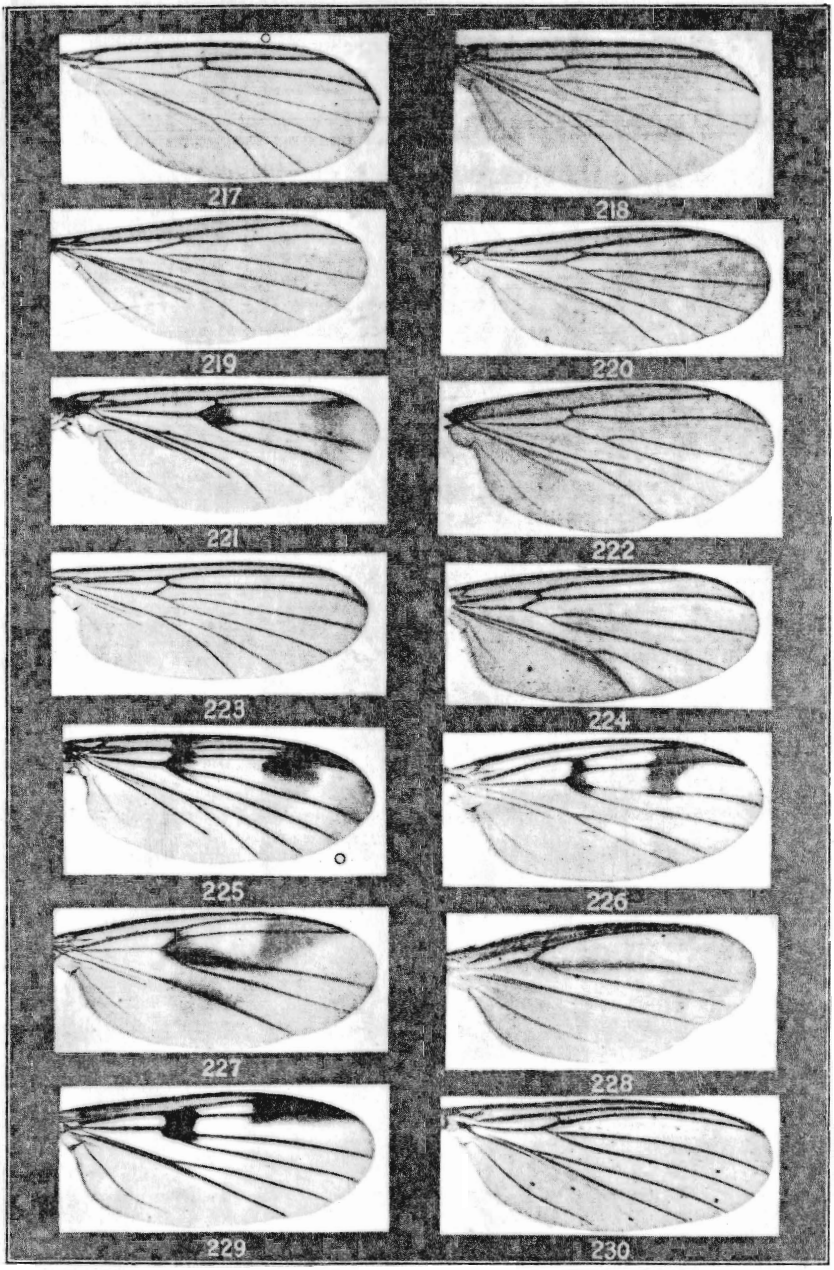
GNORISTINI, LEJINI.



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MYCETOPHILINÆ.

Explanation of Plates XLIX–LXI.

PLATE XLIX.

Fig. 1. *Beliophila saundersi* Curt. Ovipositor in side view.
2. ,, *spinigera* sp. n. ,, ,,
3. *Macrocera vittata* Mg. Male clasper.
4. ,, *intica* Mg. ,,
5. ,, *sigmoides* sp. n. ,,
6. *Sciara longicuttris* Zett. Male clasper.
7. ,, *trochanterata* Zett. ,,
8. ,, *hispida* Winn. ,,
9. ,, *pilosa* Staeg. Hypopygium (half) from beneath.
10. ,, *subpilosa* sp. n. ,, ,, ,,
11. ,, *subspinulosa* sp. n. Male clasper.
12. ,, *scotica* sp. n. ,,
13. ,, *glabra* Mg. ,,
14. ,, *subvenatalis* Winn. ,,
15. ,, *flavicauda* Zett. ,,
16. ,, *confinis* Winn. ,,
17. ,, *hyalipennis* Mg. ,,
18. ,, *inflata* Winn. ,,

(Figs. 3–18 all to same scale.)

PLATE L.

19. *Mycetophila ornata* Mg., var. Hypopygium (half) from above.
20. ,, *ornata* Mg., var. Hypopygium (half) from beneath.
21. ,, *digitifera* sp. n. Hypopygium (half) from above.
22. ,, *digitifera* sp. n. Hypopygium (half) from beneath.
23. *Sciophila morosa* Winn. Hypopygium (half) from side.
24. ,, *nitidula* sp. n. ,, ,, ,,
25. *Sciophila ochracea* Walk. ,, ,, ,,
26. ,, ,, ,, ,, ,,
27. ,, *adamsi* sp. n. Hypopygium (half) from above.
28. ,, ,, ,, ,, below.
29. *Dziedzickia alpicola* Strobl. Hypopygium from above (part of ninth tergite removed to show clasper of one side).

Fig. 30. *Dziedzickia flava* Edw. Hypopygium (half) from above.
31. .. .. below.
32. *Boletina griphoides* sp. n. Details of hypopygium.
33. .. .. Aedoeagus.
34. .. *nigrofusca* Dz., var. Details of hypopygium.
35. .. .. Aedoeagus.
36. *Leia pilifera* sp. n. Hypopygium (half) from beneath.
37. .. Anal segment.
38. .. Aedoeagus.

(Various magnifications.)

PLATE LI.

39. *Docosia [illegible]* sp. n. ♂ Ninth tergite.
40. .. .. Anal segment.
41. .. .. Hypopygium from beneath.
42. .. .. Aedoeagus.
43. *Anatella [illegible]* Edw. Hypopygium (half) from above.
44. .. .. Claspers from inner side.
45. .. .. Middle part of ninth sternite.
46. .. *[illegible]ata* Winn. Claspers from inner side.
47. .. .. Middle part of ninth sternite.
48. .. *piligera* sp. n. Hypopygium (half) from above.
49. .. .. Claspers from inner side.
50. .. .. Middle part of ninth sternite.
51. .. *[illegible]maculata* sp. n. Hypopygium (half) from above.
52. .. .. Claspers from inner side.
53. .. .. Middle part of ninth sternite.
54. .. *[illegible]ata* Staeg. Hypopygium (half) from above.
55. .. .. Claspers from inner side.
56. .. .. Middle part of ninth sternite.

(All to about same scale.)

PLATE LII.

57. *Exechia hamoni* sp. n. Hypopygium (half) from above.
58. .. .. below.
59. .. .. Clasper from inner side.
60. .. *pollicata* sp. n. Hypopygium (half) from above.

Fig. 61. *Exechia pollicata* sp. n. Hypopygium (half) from below.
62. .. *jenkinsoni* sp. n. .. .. above.
62*a*. .. .. below.
62*b*. .. .. Clasper from inner side.
63. .. *nigra* sp. n. Hypopygium (half) from below.
63*a*. .. .. Ovipositor from side.
64. .. *parallela* sp. n. .. ..
65. .. *hamoni* sp. n. .. ..
66. .. *ligulata* Lundst. .. ..
67. .. *pollicata* sp. n. .. ..
68. .. *jenkinsoni* sp. n. .. ..
69. .. *pulchella* Winn. .. ..
70. *Rhymosia brittoni* sp. n. Hypopygium from above.
71. .. .. Clasper from inner side.
72. .. *bifida* sp. n. Hypopygium (half) from above.
73. .. .. below.
74. .. .. Ovipositor from side.

PLATE LIII.

75. *Allodia [illegible]* Landr. Male clasper from inside.
76. .. *neglecta* Edw. .. ..
77. .. *pistillata* Lundst. .. ..
78. .. *fuscipennis* Staeg. .. ..
79. .. .. Hypopygium from above (without clasper).
80. *Allodia fuscipennis* Staeg. Hypopygium from below.
81. .. *[illegible]* Staeg. Male clasper from inside.
82. .. *borealis* Lundst. .. ..
83. .. *foliata* sp. n. .. ..
84. .. .. Hypopygium from above (without clasper).
85. .. .. Hypopygium from below.
86. .. *[illegible]alli* sp. n. Hypopygium from below.
87. .. .. Clasper from inside.
88. .. .. Ninth and tenth tergite.
89. .. *fissicauda* Lundst. Eighth sternite.
90. .. *auriculata* sp. n. Hypopygium (half) from above.
91. .. .. Middle part of ninth sternite.
92. .. .. Male clasper from inside.

(Various magnifications.)

PLATE LIV.

Fig. 93. *Allodia nigrofusca* Lundst. Male clasper from inside.
94. .. *grisecollis* Staeg. .. ..
95. .. *sericoma* Mg. .. ..
96. .. *[illegible]* sp. n. .. ..
97. .. .. Hypopygium from above.
98. .. .. below (without clasper).
99. *Cordyla fusca* Mg. Ovipositor from side.
100. .. .. Outline of sixth abdominal tergite from above (flattened).
101. .. .. Seventh abdominal segment from beneath.
102. *nitidula* sp. n. Ovipositor from side.
103. .. *murina* Winn. .. ..
104. .. *crassicornis* Mg. .. ..
105. .. *fasciata* Mg. .. ..
106. .. .. Outline of sixth abdominal tergite.
107. .. .. Seventh segment from beneath.
108. .. *[illegible]* Staeg. Ovipositor from side.
109. .. .. Outline of sixth abdominal tergite.
110. .. .. Seventh abdominal segment from beneath.

(Figs. 99–110 to same scale, others various.)

PLATE LV.

111. *Cordyla crassicornis* Mg. Hypopygium from side.
112. .. .. Clasper from inside.
113. .. *semiflava* Staeg. Eighth sternite.
114. .. *murina* Winn. Hypopygium from side.
115. .. .. Clasper from inside.
116. .. .. Eighth sternite.
117. .. *parvipalpis* sp. n. Hypopygium from side.
118. .. .. Eighth sternite.
119. .. *fissa* sp. n. Hypopygium from side.
120. .. .. beneath.
121. .. .. Clasper from inside.
122. .. *brevicornis* Staeg. Hypopygium from side.
123. .. *pusilla* sp. n. Clasper from inside.
124. .. *nitidula* sp. n. Clasper from side.

Fig. 125. *Cordyla nitidula* sp. n. Clasper (another position).
126. .. *monarica* Landr. ,, from side.
127. .. .. .. (another position).
128. .. *fusca* Mg. .. from side.
129. .. .. Eighth sternite.
130. .. *fasciata* Mg. Clasper from side.
131. .. .. Eighth sternite.
132. .. *flaviceps* Staeg. Hypopygium from above.
133. .. .. side.
134. .. .. Eighth sternite.

(All to same scale, except figs. 126, 127, which are a little larger.)

PLATE LVI.

Fig. 135. *Trichonta stramea* sp. n. Hypopygium (half) from above.
136. .. .. below.
137. .. *icenica* sp. n. .. .. above.
138. .. .. below.
139. .. .. Clasper from inside.
140. .. *nigritula* sp. n. Hypopygium from above.
141. .. .. .. (tip) from below.
142. .. .. Clasper from side.
143. *Mycetophila [illegible]* Zett. Hypopygium from beneath.
144. .. .. Anal segment and ninth tergite.
145. .. .. Aedeagus.
146. .. *gibbula* sp. n. Hypopygium from beneath.
147. .. .. Anal segment and ninth tergite.
148. .. .. Aedeagus.
149. *Zygomyia vara* Staeg. Hypopygium (half) from beneath.
150. .. .. Upper clasper.
151. .. *valida* Winn. Hypopygium (half) from beneath.
152. .. .. Upper clasper.
153. .. *humeralis* Wied. Hypopygium (half) from beneath.
154. .. .. Upper clasper.
155. .. *notata* Stan. Hypopygium (half) from beneath.
156. .. .. Upper clasper.
157. *[illegible]* Zett. Hypopygium from beneath.

(Various magnifications.)

PLATE LVII.

FIG. 158. *Sceptonia nigra* Mg. Hypopygium (half) from beneath.
159. ,, ,, Clasper from side.
160. ,, *scutellaris* sp. n. Hypopygium (half) from beneath.
161. ,, ,, Clasper from side.
162. ,, ,, Ninth tergite and anal segment.
163. ,, ,, Aedeagus.
164. ,, *exilis* v. d. W. Hypopygium (half) from beneath.
165. ,, ,, Clasper from side.
166. ,, ,, Ninth tergite and anal segment.
167. ,, *exilior* Winn. Hypopygium (half) from beneath.
168. ,, ,, Clasper from side.
169. ,, *bonis* sp. n. Hypopygium from beneath (claspers on right shown as from above).
170. ,, ,, Ninth tergite and anal segment.
171. ,, *fusciapicis* sp. n. Hypopygium (part) from beneath.
172. ,, ,, Clasper from side.
173. ,, ,, Anal segment with end of ninth tergite.
174. ,, *flexiseta* sp. n. Hypopygium from beneath (claspers on right shown as from above).
175. ,, ,, Ninth tergite and anal segment.
176. ,, *fumipes* sp. n. Hypopygium (half) from beneath.
177. ,, ,, Clasper from side.
178. ,, ,, Ninth tergite and anal segment.

(All to same scale.)

PLATE LVIII.

179. *Dynatosoma fuscicorne* Mg. Base of wing showing bare patch and microtrichia in straight rows, also three or four scattered macrotrichia near anal angle.

FIG. 180. *Polylepta guttiventris* Zett. Base of wing, showing dense macrotrichia; minute dots bordering the veins representing vestigial microtrichia, irregularly arranged.
181. *Ditomyia fasciata* Mg.
182. *Boletophila glabrata* Lw.
183. *Diadocidia ferruginosa* Mg. (Macrotrichia mostly rubbed off.)
184. *Macrocera fasciventris* Staeg.
185. *Isoneuromyia biumbrata* Edw. (The photograph does not bring out the dark cloud at the tip of Cu_2.)
186. *Zygoneura sciarina* Mg.
187. *Phorbiopsis flavipes* F.
188. *Sciara subpicinosa* Edw.
189. ,, *tricuspidata* Winn. } Note irregular microtrichia.
190. *Plastosciara perniciosa* Edw. } as in Sciophilinae.

(Various magnifications.)

PLATE LIX.

191. *Neosciophria platypenis* Hal.
192. *Mycomyia marginata* Mg.
193. *Leptomorphus walkeri* Curt.
194. *Polylepta guttiventris* Zett.
195. *Allocotocera pulchella* Curt.
196. *Neuratelia nemoralis* Mg.
197. *Paratinia sciarina* Mik.
198. *Phthinia humilis* Winn.
199. *Sciophila ochracea* Walk.
200. *Monoclona regelationis* Walk.
201. *Acnemia nitidicollis* Mg.
202. *Azana anomala* Staeg.

(Various magnifications.)

PLATE LX.

203. *Speolepta leptogaster* Winn.
204. *Coelosia tenella* Zett.
205. *Dziedzickia marginata* Dz.
206. *Synapha fasciata* Mg.
207. *Palaeocampylia collaris* Mg.
208. *Apolephthisa subcincta* Curt.
209. *Boletina basalis* Mg.

Fig. 210. *Rondaniella dimidiata* Mg.
211. *Leia fascipennis* Mg.
212. *Ectrepesthoneura hirta* Winn.
213. *Tetragoneura sylvatica* Curt.
214. *Megophthalmidia crassicornis* Curt.
215. *Docosia fumosa* Edw.
216. *Pnyxia scabiei* Joh.

(Various magnifications. The photographs do not bring out the dark cloud below the small cell in fig. 207, nor the slight cloud below the middle of Cu_2 in figs. 211 and 214.)

PLATE LXI.

Fig. 217. *Anatella setigera* Edw.
218. *Exechia hamata* Edw.
219. *Rhymosia bifida* Edw.
220. *Allodia verralli* Edw.
221. *Brachypeza radiata* Jenk.
222. *Cordyla fissa* Edw.
223. *Trichonta stercaria* Edw.
224. *Phronia praecox* Winn.
225. *Dynatosoma fuscicorne* Mg.
226. *Mycetophila gibbula* Edw.
227. *Zygomyia pictipennis* Staeg.
228. *Sceptonia costata* v. d. W.
229. *Epicypta testata* Edw.
230. *Delopsis aterrima* Zett.

(Various magnifications. In fig. 224 the photograph does not sufficiently bring out the darkened wing-tip.)

February 20, 1925.

Psyche or butterfly, written probably about 345 B.C., has also been considered by Prof. D'Arcy Thompson, F.R.S., to refer to *Pieris brassicae* or an allied species. From his translation, quoted below, it was clear that the food-plant supplied the evidence on which this conclusion had been reached.

"The so-called psyche or butterfly is generated from caterpillars which grow on green leaves, chiefly leaves of the raphanus, which some call crambe or cabbage. At first it is less than a grain of millet; it then grows into a small grub; and in three days it is a tiny caterpillar. After this it grows on and on, and becomes quiescent and changes its shape, and is now called a chrysalis. The outer shell is hard, and the chrysalis moves if you touch it. It attaches itself by cobweb-like filaments, and is unfurnished with mouth or any other apparent organ. After a little while the outer covering bursts asunder, and out flies the winged creature that we call the psyche or butterfly. At first, when it is a caterpillar, it feeds and ejects excrement; but when it turns into the chrysalis it neither feeds nor ejects excrement." (The Works of Aristotle, Vol. IV, Historia Animalium, Book V, 19 (p. 551A), Oxford, 1910.)

"Raphanus" is said in the dictionary to mean cabbage in Attic, but radish in other Greek dialects. The "small grub" probably described the immature caterpillar visible through the egg-covering. The whole account was an admirable condensed statement of the life-history of a butterfly, and it was of the highest interest that confirmation of the conclusion that a common Pierine was being described should now have reached us from the remote period of Minoan culture.

The Greek symbolism might be compared with an ancient British belief illustrated in one of Thomas Hardy's Wessex tales—"The Superstitious Man's Story" in "Life's Little Ironies." Two men had been mowing "and in the heat of the day they sat down to eat their bit o' nunch under a tree, and empty their flagon. Afterwards both of 'em fell asleep as they sat. John Chiles was the first to wake, and as he looked towards his fellow-mower he saw one of those great white miller's souls as we call 'em—that is to say, a miller-moth—come from William's open mouth while he slept.