

ERRATA
Volume 20, Part 2, 1987

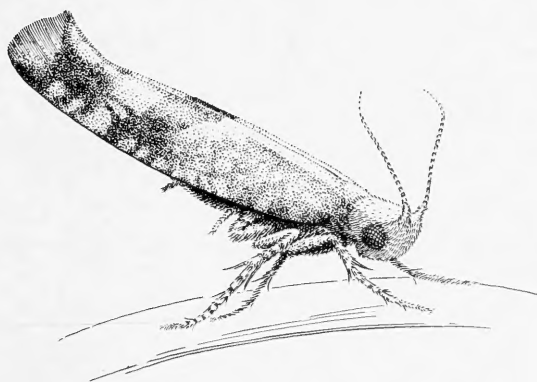
The Editor would like to apologise for a number of typographic errors and omissions in the captions to the 1985 and 1986 Annual Exhibition plates. Please cut out and attach the self-adhesive patches below as follows: Plate III facing page 43; Plate IV centre spread left; Plate V centre spread right; Plate VI facing page 74.

Please note also the following corrections to earlier parts:
Volume 20, part 1, 1987, Plate 1 (British Argysthinae) 1. Caption should read:

Volume 19, Parts 1/4, 1986 Page 62, line 26, *Pseudepipona herrichii*. Data should read: Godlington Heath, East Dorset.

Volume 18, Part 1, 1985, Page 8, lines 18 and 19, *A. paphia*. Data should read: (7 examples, including the three in the exhibit, known from 1860 to date).

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Editorial

Editor: R.A. Jones, B.Sc., F.R.E.S.
10 Nunhead Grove
Nunhead
London SE15 3LY

with the assistance of:

T.R.E. Southwood, K.B., D.Sc., F.R.S.
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Plate I British Argyresthiinae x 2½

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| 2. <i>glabratella</i> | 13. <i>brockeella</i> | 23. <i>conjugella</i> |
| 3. <i>praecocella</i> | 14. <i>brockeella</i> | 24. <i>conjugella</i> |
| 4. <i>arceuthina</i> | 15. <i>brockeella</i> | |
| 5. <i>abdominalis</i> | 16. <i>goedartella</i> | 25. <i>semifusca</i> |
| 6. <i>aurulentella</i> | 17. <i>goedartella</i> | 26. <i>pruniella</i> |
| 7. <i>dilectella</i> | 18. <i>pygmaeella</i> | 27. <i>bonnetella</i> |
| 8. <i>trifasciata</i> | 19. <i>sorbiella</i> | 28. <i>bonnetella</i> |
| 9. <i>retinella</i> | 20. <i>curvella</i> | 29. <i>semitestacella</i> |
| 10. <i>glaucinella</i> | | |
| 11. <i>spinosella</i> | 21. <i>albistria</i> | 30. <i>albistria</i> |

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THE BRITISH ARGYRESTHIINAE AND YPONOMEUTINAE

by DAVID J.L. AGASSIZ

The Rectory, 10 High View Avenue, Grays, Essex RM17 6RU

With colour photographs by G.B. SENIOR

THE BRITISH ARGYRESTHIINAE

Moths of the genus *Argyresthia* are familiar to most entomologists because some species are so common; the tumbling flight among birch trees of *A. goedartella*, for example, must have been seen by almost every field worker. They are easily recognised by their resting attitude for they 'stand on their heads' with the abdomen and hind legs elevated at a considerable angle to the surface. The name *Argyresthia* means silver garment, and many of the species are of shining silver or gold coloration.

The species form a compact group. They all have one brood in the summer, there is similarity in their size and appearance and the majority have shoot-feeding larvae; for this reason some species are known as economic pests. Two species have larvae living in berries or fruit and another in bark.

There are at present 22 species known to be resident in Britain. *A. trifasciata* has also been found and could become established. The number has been reduced in recent years, for *A. illuminatella* seems to have been recorded from our Islands only in error and *A. spiniella* has been sunk as a synonym of *A. semifusca*. It is conceivable that one or two other continental species could be found here, especially those feeding on conifers.

CLASSIFICATION

All authors seem to agree that the genus *Argyresthia* is closely related to the *Yponomeutidae*. Many continental authors have tended to regard the species treated as belonging to a family *Argyresthiidae* alongside *Yponomeutidae* and related families. British authors, and more recently Schnack in the Danish list, have restricted them to subfamily rank within the *Yponomeutidae*. This notation is followed as I would not venture to revise the higher classification.

Within the subfamily there was originally the one genus *Argyresthia*, although Meyrick distinguished two groups within it which differed in wing venation. Pierce and Metcalfe placed three species in *Blastotere* on account of the corniform signum in the female genitalia, however their specimens of *illuminatella* which they cited as the type species were misidentified specimens of *glabratella*. *A. illuminatella* has a scobinate signum more like the rest of *Argyresthia*.

More recently some continental authors have assigned the species which Meyrick called group A to the genus *Blastotere* and his group B to *Argyresthia*. In Kloet & Hincks (2nd edition) these groupings are accepted as subgenera which seems a good solution in view of the strong generic similarity in other respects. However *dilectella* is placed by them in the wrong subgenus.

IDENTIFICATION

Most species can be identified readily by the wing pattern. Caught examples of the unicolorous conifer-feeding species *laevigatella* and *glabratella* can be more difficult to separate as the colour is liable to change with time. In this case the genitalia,

especially of the females, are quite distinct. For the most part it is not necessary to make dissections, and the genitalia, which are weakly sclerotised, may not make certain determination easy. For this reason it has not been felt necessary to illustrate them in this paper.

The majority of moths are likely to be taken in the vicinity of their foodplants, and whilst this cannot be relied on for identification it may well give a helpful clue. This is especially so for example with *pruniella* and *bonnetella*.

HABITS

Larvae of most species can be found in affected shoots in the spring, the two berry-feeding species *praecocella* and *conjugella* being obtainable in the late summer. Most will be found readily as adults by tapping branches of their host plant in dull weather over a beating tray. This method is particularly effective for juniper-feeding species. All species are on the wing in the day, some also come to light at night, the very common species *goedartella* and *laevigatella* being two of the more likely ones to be encountered in this way.

The majority of species are monophagous, but a few will infest two or more species of tree as given in the description of species. Most species are widespread and often common throughout the British Isles where their foodplants occur. A few become rare or absent as one moves northwards and westwards.

CHARACTERISTICS OF THE GENUS

Head with tuft of hairs above, face smooth, labial palpi fairly long and pointed, terminal segment about as long as second; antenna: scape with pecten below, flagellum $\frac{3}{4}$ length of forewing, annulated. Forewing elongate ovate; hindwing lanceolate. Hindleg with two pairs of tibial spurs, midleg with one pair.

Male genitalia: uncus absent, gnathos developed into a pair of lobes with specialised scales, valvae weak, ovate; aedeagus long and simple. Saccus variable. On the eighth abdominal segment is a two- or three-pronged plate often of a characteristic shape for each species. A pair of long coremata in eighth segment.

Female genitalia: simple, ductus usually bearing a sclerotised ring below the ostium, signum usually scobinate with two prongs. In *laevigatella* and *glabratella* the signum is corniform, single and variable in the former, double in the latter.

GENUS ARGYRESTHIA HÜBNER

1.	Forewing unicolorous, or nearly unicolorous	2
—	Forewing not unicolorous	11
2.	Forewing deep purplish brown or brown	3
—	Forewing a pale colour or shining bronzy gold	4
3.	Head and forewing deep purplish brown	<i>conjugella</i> (part)
—	Head white, forewing purplish brown or brown	<i>albistria</i> (part)
4.	Thorax white	5
—	Thorax not white	6
5.	Forewing shining golden	<i>arceuthina</i>
—	Forewing creamy white, a few fuscous scales at apex	<i>bonnetella</i> (part)
6.	Forewing greyish or greyish ochreous, head ochreous	7
—	Forewing golden, yellowish or pale greyish ochreous, head not ochreous ...	8
7.	Forewing shining mid-grey or bronzy grey	<i>laevigatella</i>
—	Forewing pale shining grey or greyish ochreous	<i>glabratella</i>

8. Forewing golden metallic, moth associated with birch or alder 9
 — Forewing pale brown or ochreous, associated with juniper 10
9. Forewing deep bronzy gold *brockeella* (part)
 — Forewing yellowish gold *goedartella* (part)
10. Forewing broad, yellowish or pale brown, adult May. *praecocella*
 — Forewing narrow, greyish ochreous, adult July to September *aurulentella*
11. Forewing with basal third white, except on costa *ivella*
 — Basal third with more markings 12
12. Forewing with a white or ochreous dorsal streak, uninterrupted for at least the first third of dorsum 13
 — Forewing with dorsum darker, or interrupted before $\frac{1}{2}$ 21
13. Forewing with a second white streak along fold *abdominalis*
 — Without a second streak 14
14. White dorsal streak continuous to tornus *brockeella* (part)
 — Dorsal streak not reaching tornus 15
15. Dorsal streak terminated by a fascia, distinct at least half way across forewing 16
 — Dorsal streak terminated or constricted by a dark spot, not clearly continued into a fascia 18
16. Pale markings of forewing ochreous tinged, dark fuscous markings with purplish reflections *conjugella* (part)
 — Pale markings of forewing white or creamy white, markings brown 17
17. Median fascia slender and curved towards termen, nearing costa towards apex *bonnetella* (part)
 — Median fascia bold, bent outwards to meet or nearly meet the costa before $\frac{3}{4}$ of its length *pruniella*
18. Forewing above dorsal streak largely plain golden brown, a large species, wingspan exceeding 11 mm *semitestacella*
 — Forewing purplish fuscous, dark brown or brown 19
19. Forewing with pronounced whitish costal strigulae, markings purplish fuscous, adults before mid-July *spinoseella*
 — Forewing brown, dark brown or purplish brown, with at most shallow costal strigulae, adults after mid-July 20
20. Forewing dark brown, dorsal streak interrupted by a well-defined nearly square spot *semifusca*
 — Forewing brown, rich brown or purplish brown, dorsal streak tapered or obscure *albistria* (part)
21. Forewing with three straight white fasciae on gold *trifasciata*
 — Forewing without three clear fasciae 22
22. Forewing with bold dark fascia near base 23
 — Forewing without such a fascia 24
23. Thorax and tegulae metallic, pale brassy, darker central Y-shaped fascia normally separated from terminal markings, darker markings golden brass *goedartella* (part)
 — Thorax and tegulae white, darker central Y-shaped fascia connected to terminal markings to form a W-shape, darker markings golden bronze *brockeella* (part)
24. Costal half of forewing predominantly pale shining brass *pygmaeella*
 — Costal half of forewing reticulated or shining purplish fuscous 25
25. Forewing heavily suffused golden brown or deep shining fuscous, markings indistinct 26

- Forewing with ground colour whitish, with fuscous or brownish reticulation 27
- 26. Forewing heavily suffused golden brown *dilectella*
- Forewing shining purplish fuscous, interrupted dorsal streak shining pale ochreous *glaucinella*
- 27. Forewing with median fascia replaced by a suffused fuscous spot *retinella*
- Forewing with a curved or bent median fascia 28
- 28. Markings golden brown, associated with rowan *sorbiella*
- Markings greyish brown, associated with apple *curvella*

DESCRIPTION OF SPECIES

Subgenus *Blastotere* Retz.

Forewing with veins 7 and 8 stalked.

Argyresthia laevigatella Herr.-Schäff. (*amoriella* Bankes) Plate I, Fig. 1

Wingspan 9–13 mm. Head ochreous, face and scape creamy white; antenna ringed grey and whitish. Thorax and forewing shining bronzy grey, female more ochreous tinged, hindwing dark grey.

Larva pale yellow, head black with two triangular brownish plates, blackish posteriorly, prolegs and anal claspers black. It mines a shoot of larch, normally European (*Larix decidua*), but also attacks Japanese (*L. kaempferi*) and the hybrid, feeding through the winter until April. The leaves beyond the mine become discoloured and then fall off. Pupa within the mine in May. A circular hole covered with silk on the underside of the twig betrays its presence. Pupal state lasts about one month.

On the wing May to July. Comes to light, sometimes well away from larch trees.

Widely distributed throughout the British Isles and often very common amongst larch plantations, populations occasionally reaching pest proportions.

A. illuminatella Zell.

8–10 mm. Head ochreous-white, foreleg dark brownish; thorax and forewing pale straw, a slight grey-black costal strip between base and $\frac{1}{4}$.

Larva yellowish-white to pink, head shining black, prothoracic and anal plates brown. Overwinters until April or May in a shoot of silver fir (*Abies alba*) causing the leaves to become discoloured and then the affected tip to drop off; the open end of the mine is then sealed by the larva with silk. Shortly before pupation the silk is removed and the pupa is formed at the base of the mine where it is enclosed by a silken membrane. The pupa has on its head four short spines with which the membrane is ruptured before emergence.

All records from Britain are misidentifications of *laevigatella* or *glabratella*, especially the ochreous grey form of the latter. On the continent it is local and uncommon and is unlikely to occur here when so little of its foodplant is to be found.

A. glabratella (Zell.) Plate I, Fig. 2

8–11 mm. Head ochreous, face creamy white, scape whitish, antenna ringed light and dark fuscous. Forewing pale shining greyish ochreous, females more ochreous than males. Hindwing grey.

The genitalia shown and described as of this species by Pierce & Metcalfe are

laevigatella, whereas those named *illuminatella* are in fact this species.

Larva whitish, head black, prothoracic plate small and grey. In a shoot of Norway spruce (*Picea abies*) feeding until April. The pupa is within the mine. A small circular hole, usually on the underside of the shoot a few cm from the tip betrays its presence. Leaves of affected shoots become discoloured and eventually fall off.

Adults on the wing May–June.

Widely distributed in Britain, but not recorded from Ireland, records from the north are few. Sometimes common in plantations.

A. praecocella Zell. Plate I, Fig. 3

9–10 mm. Head and scape ochreous, face greyish; antenna ringed fuscous and ochreous. Thorax and forewing light ochreous brown. Hindwing grey.

Larva greenish, head light brown; prothoracic plate spotted brown, in green fruits of juniper (*Juniperus communis*), July–September. Overwinters as a pupa in a feeble shining pink cocoon on the ground. It is best found by searching for berries with holes in during August.

On the wing in May. It may be beaten out of juniper and can be distinguished from *arceuthina* by its distinctive colour and slower more direct flight.

Local and seldom common in southern England and the Highlands of Scotland. There are old records from Nottinghamshire.

A. arceuthina Zell. Plate I, Fig. 4

8–9 mm. Head and thorax white, scape ochreous-white, antenna ringed white and pale fuscous. Tegulae and forewing shining brass. Hindwing light grey.

Larva mines a shoot of juniper (*Juniperus communis*), overwintering when small and feeding up in the spring. Affected shoots dry out and turn yellow. Pupa within the mine.

Adults on the wing April–June, they may readily be tapped out of the foodplant, on a dull day a beating tray is useful but they are very lively if it is warm.

Widely distributed in Britain and often common among its foodplant.

A. dilectella Zell. Plate I, Fig. 7

7–9 mm. Head white, scape ochreous, antenna distinctly ringed fuscous and whitish. Thorax white, tegulae golden. Forewing with ground colour purplish-white, basal third much suffused brassy-gold with some pale fuscous scales, white along fold and dorsum. Median fascia oblique, golden brown, from middle of dorsum more or less joining blotches on costa before $\frac{1}{2}$ and at $\frac{2}{3}$. A further indistinct oblique fascia from tornus and three strigulae on costa. Two fuscous lines in terminal cilia. Hindwing pale grey.

Larva light green, sometimes with reddish rings, in a shoot of juniper (*Juniperus* spp.) including ornamental varieties, and other conifers such as *Chamaecyparis* spp., in which it overwinters until May. In the late spring affected shoots dry out and become discoloured. Pupa in a cocoon inside a silken web, not within the mine.

Moths on the wing July–August.

Widely distributed in Britain. Often found in gardens as well as on wild junipers.

Subgenus *Argyresthia* Hübn.

Differs from *Blasotere* in having veins 7 and 8 of forewing separate.

A. abdominalis Zell. Plate I, Fig. 5

7–9 mm. Head white, antenna ringed white and pale golden, tegulae golden. Forewing white, pattern golden orange comprising a broad irregular streak from base to middle between costa and fold, another between fold and dorsum; median fascia from dorsum beyond middle outwardly oblique to about half-way across wing, a spot on costa opposite; a futher inwardly oblique fascia towards tornus sometimes confluent with costal spot, irroration in the terminal area. A few fuscous scales on termen below apex, terminal cilia pale brownish-white. Hindwing whitish.

Larva reddish-yellow, spots reddish-brown; head black, prothoracic plate dark grey, spotted black. In leaves of juniper (*Juniperus communis*). It is uncertain when the egg hatches. The larva eats its way from base to tip of a leaf and back, then under the bark into the next leaf. The leaves become discoloured: only the last eaten has a hole after the larva has left for pupation. This takes place on the leaves or the ground in a tissue-like cocoon. The larva is fully grown in May, the pupal state lasting about three weeks.

Moths on the wing in June and July.

Not uncommon among its foodplant, but local, being recorded only from the Chilterns and downs of the south of England.

A. aurulentella Staint. Plate I, Fig. 6

7–9 mm. Head light ochreous, scape ochreous, antenna indistinctly ringed whitish and fuscous. Thorax whitish-ochreous, tegulae golden-ochreous. Forewing appearing almost unicolorous but with indistinct streaks; ground colour pale greyish ochreous with pale purple reflections, a golden streak from base below fold towards tornus, another between costa and fold more or less reaching termen, terminal cilia ochreous golden. Hindwing whitish, ochreous tinged.

Larva green, posteriorly reddish-tinged, head black, prothoracic and anal plates slightly darkened. The larva mines leaves of juniper (*Juniperus communis*) in April and May; its entry hole is covered with silk and it either uses the same hole or makes another for exit. Affected leaves remain on the tree and are whitish-yellow, containing hardly any frass. Pupa in a white network cocoon on the ground, remaining in this state for about seven weeks.

Adults on the wing in July and into August.

Local throughout Britain, but not recorded from Ireland.

A. trifasciata Staud. Plate I, Fig. 8

c. 9 mm. Head white, antenna ringed whitish and black, indistinct beneath. Thorax and tegulae shining golden. Forewing shining golden, white fasciae at one-fifth and two-fifths, a further oblique fascia at three-fifths, irregular spots at tornus and before apex tending to form a fourth fascia, white spots on costa at one half and at apex. Hindwing pale grey.

Larva not known: it is stated by Lhomme to feed on *Juniperus sabina*, *J. phoenicea* and *J. thurifera*.

The moth is on the wing on the continent from April to June.

One specimen has been recorded in Britain from Hampstead where it was taken by Mr R.A. Softly on or about 3.vi.1982. It is possible the species could become locally established on introduced *Juniperus* spp.

A. ivella (Haw.) (*andereggiella* Dup.) Plate I, Fig. 12

This species was originally described by Haworth as IV-ella, the IV being an attempt to portray the wing pattern (although Stainton comments that this is of 'doubtful latinity!'), it seems to have been misunderstood as the number 4 giving rise to the name *quadriella*.

10–12 mm. Head, thorax and tegulae white, scape ochreous, antenna ringed ochreous and fuscous. Forewing white, costa suffused ochreous towards base; median fascia broad and strong on dorsum before middle dark golden brown with darker edges, it curves towards termen reaching costa at $\frac{2}{3}$, it also branches in a curve towards base, but this does not reach costa. A further oblique fascia from costa at $\frac{2}{3}$ to tornus also a branch to the apex. Hindwing grey.

Larva pale reddish, head and prothoracic plate brown. It mines a shoot of apple (*Malus* spp.) or hazel (*Corylus*) until May.

Adults on the wing in July and August.

Local in England as far north as Durham.

A. brockeella (Hüb.) Plate I, Figs 13–15

10–12 mm. Head, thorax and tegulae white; scape ochreous, antenna ringed ochreous and fuscous. Forewing most simply described by taking as chief colour the dark shining bronze, basal area white, a white fascia at $\frac{1}{3}$, broader on dorsum, beyond this three white spots on costa and one on dorsum before tornus. Hindwing grey.

There is considerable variation which happens principally in two ways; firstly the pattern is modified in a variety of ways: in *ab. aurivittella* Haw. (Fig. 14) the bronze coloration is modified to form an irregular streak from base to apex, costa and dorsum remaining white. Such forms occur widely with the type but are seldom common. Secondly the white becomes suffused with bronze and in the most extreme form (Fig. 15) the pattern is scarcely discernible. In such specimens the head and thorax also become dark coloured. This variation is also infrequent and local, e.g. in Argyll and the Isles. Intermediate forms of all kinds occur between the type and both extremes described.

Larva pinkish-brown, head brown, prothoracic plate blackish-edged. In late summer it feeds on a bud of birch (*Betula* spp.) or alder (*Alnus*). Later the larva usually goes into a male catkin where it hibernates almost fully fed, in a partially spun hibernaculum. Tenanted catkins are often distorted or dried up; frass is ejected through a hole at the tip. Pupates in May on the ground or under bark.

Adults early June to mid July or later.

Widely distributed and often common throughout Britain.

A. goedartella (L.) Plate I, Figs 16–17

10–12 mm. Head and scape white, antenna ringed fuscous and white, thorax pale brassy, tegulae brassy. Forewing yellowish-white, pattern golden-brassy. A fascia from $\frac{1}{4}$ on dorsum to costa and along costa to base, median fascia Y-shaped, reaching costa at $\frac{1}{3}$ and $\frac{2}{3}$, an oblique fascia from tornus to before termen, sometimes touching median fascia, and also connected to termen leaving a small white spot on both costa and dorsum before termen. Hindwing rather dark grey.

There is considerable variation, in *f. literella* Haw. the fasciae in middle of wing do not reach costa; in *f. splendida* Reutti (Fig. 17) the white ground colour is suffused golden-brass like the pattern, the colour extending to the thorax. Other variation

includes the interruption of fasciae in a variety of ways. Unicolorous specimens are less easily distinguished from *brockella* but the golden coloration is not so deep.

Larva pinkish-ochreous, head shining dark brown, prothoracic plate brown indistinctly marked with black. In shoots or male catkins of birch (*Betula* spp.) or alder (*Alnus* spp.) until the spring; tenanted catkins are often distorted and have one or two holes in the side, one often covered with silk, frass is ejected from one of these holes in the side of the catkin. In late March or April the larvae spin down to pupate under bark where they can congregate, sometimes remaining many weeks before pupating although it is not clear whether or not they feed there. Occasionally pupation occurs on the ground. Pupa in a cocoon, 4–6 weeks.

Adults on the wing June–August.

Very common amongst birch throughout the British Isles.

A. pygmaeella (D. & S.) Plate I, Fig. 18

10–13 mm. Head and scape whitish-ochreous, face pale shining brown, antenna ringed dark fuscous and whitish. Thorax pale shining yellow, tegulae golden. Forewing pale shining brass, a gold streak from base to $\frac{1}{3}$ meeting a spot on dorsum at $\frac{1}{4}$; a transverse streak from dorsum beyond middle, curved towards termen reaching just over half-way across wing. A small gold dot on costa at $\frac{1}{2}$, an indistinct third dorsal spot near tornus, apical dot golden-fuscous. Hindwing rather dark grey.

Larva green, prothoracic and anal plates brownish-black. Overwinters until late April in a leaf-bud of willow or alder (*Salix* spp.); it then mines into the core of a young shoot. Pupa in the feeding place or on the ground.

Adults June–August.

Common throughout the British Isles.

A. sorbiella (Triets.) Plate I, Fig. 19

11–13 mm. Head and scape ochreous-white, antenna ringed ochreous-white and dark fuscous. Thorax and tegulae ochreous-white. Forewing white, a brown transverse marking from dorsum at $\frac{1}{4}$ to fold, thence towards base; median fascia becoming weaker towards costa, a number of irregular costal strigulae and some mottling in costal half of wing, intensified towards apex and extended to tornus. Hindwing grey.

Larva dull whitish-ochreous, head and prothoracic plate black. In an undeveloped shoot of rowan (*Sorbus aucuparia*) or whitebeam (*S. aria*).

Adults on the wing in June and July.

A local species, found more commonly in the north and west of England and Wales, also in Scotland and Ireland, and it has been recorded as far southeast as Kent.

A. curvella (L.) (*arcella* (F.) *cornella* auctt.) Plate I, Fig. 20

Examination of the Linnaean type of *curvella* shows it to be a senior synonym for this species (Agassiz, 1987).

10–12 mm. Head and scape white, antenna ringed white and fuscous. Thorax and tegulae white. Forewing white, transversely brown in basal half, oblique median fascia brown, further strigulated beyond and an ill-defined fascia from tornus to apex. Hindwing grey.

There is much variation in the boldness of the markings, the median fascia is sometimes interrupted or reduced to little more than a spot, at other times it is connected to the terminal blotch.

Larva yellowish-white, head brown, prothoracic and anal plates pale brownish. From eggs laid on the bark of a branch the larvae emerge and in the spring they eat out flowering shoots of apple (*Malus* spp.) causing the flowers to become brown and deformed. Pupa in a light cocoon on the ground, 3–4 weeks.

On the wing in June and July.

Fairly common throughout Britain; can be a pest in apple orchards.

A. retinella Zell. Plate I, Fig. 9

9–10 mm. Head, thorax and tegulae white, antenna ringed fuscous and white. Forewing white, irregularly strigulated brownish fuscous, an obscure streak from near base between costa and fold, median fascia replaced by an ill-defined central spot, a further diffuse spot before apex, brownish-fuscous; dorsal half of forewing whiter than costal half. Hindwing grey.

Larva yellowish-white, head brown. It feeds in April in shoots and buds of birch (*Betula* spp.) causing them to droop (continental authors also give *Salix* and *Quercus* spp.), also in catkins. Pupa in a cocoon on the trunk.

Adults in June and July.

Common throughout the British Isles.

A. glaucinella Zell. Plate I, Fig. 10

8–10 mm. Face and head pale yellowish-white, antenna obscurely ringed whitish and dark ochreous. Thorax shining yellowish-white, tegulae shining dark bronzy fuscous; forewing yellowish-white heavily suffused shining dark bronzy fuscous, median fascia darker than surrounding area, a whitish spot on dorsum before fascia, some whitish scales towards termen. Hindwing grey.

Larva whitish, head dark brown; in the bark of oak (*Quercus* spp.) or horse-chestnut (*Aesculus*). Its presence may be detected by the red frass exuded from crevices in the bark; usually mature old trees are affected. Pupa in a cocoon within the bark.

Adults are to be found in June, seldom seen on the wing, but can be found on the trunks of host trees, especially in the morning.

Local in Britain, probably overlooked because of its retiring habits.

A. spinosella (Staint.) (*mendica* Haw.) Plate I, Fig. 11

9–11 mm. Head and thorax white, antenna whitish most distinctly ringed fuscous on middle segments; Tegulae golden brown. Forewing purplish fuscous, purple tinged, more brownish gold towards base; a white dorsal streak from base which diffuses and disappears near tornus. It is interrupted by a median fascia slightly darker than ground colour. Costal margin irregularly strigulate whitish from just before the median fascia. Hindwing grey.

Larva pale greyish-green, head and prothoracic plate black, Hatches from the egg in March and bores into a flowering shoot of blackthorn (*Prunus spinosa*) which it eats out in about five weeks. Larvae can be beaten out. Pupation takes place in a light cocoon on the ground, the pupal state lasting about three weeks.

Moths on the wing from May until July.

Widespread in Britain, but scarcer northwards.

A. conjugella Zell. Plate I, Figs 22–24

10–14 mm. Head pale ochreous, scape ochreous, antenna ringed pale ochreous and

dark fuscous. Thorax anteriorly purplish fuscous, posteriorly pale ochreous, tegulae purplish fuscous. Forewing ochreous-white, a streak from base along fold, median fascia obtusely angled towards termen, a costal dot at $\frac{1}{2}$ and some suffusion in terminal area deep brown, purplish suffusion between fold and subcostal line before median fascia, further purplish suffusion beyond fascia. Hindwing grey.

f. aerariella Staint. (Fig. 23) has head ochreous-brown, antenna wholly dark fuscous; thorax, tegulae and forewing unicolorous deep brownish fuscous. Hindwing grey.

This form is found from Staffordshire and Derbyshire northwards.

f. maculosa Tengst. (Fig. 24) is marked as the typical form, but without any purplish suffusion. On the ground colour of clear pale ochreous are deep brown markings: a basal dash along fold, a spot on costa at $\frac{1}{2}$, a spot between them, median fascia, terminal fascia, terminal spot and two dots near tornus. Hindwing grey.

A local and uncommon form found mostly in Scotland and Ireland.

Larva dull whitish-yellow, pink when fully grown, head, prothoracic and anal plates pale brown. In unripe berries of rowan (*Sorbus aucuparia*) from June to August. The young larva hatches from the egg in just under two weeks and bores into the green fruit where it becomes fully fed in about six weeks, tenanted berries redden prematurely and are often spun together. The larva then descends to the ground on a silk thread and just beneath the surface spins a double-walled cocoon, the inner layer being dense and silky, the outer being an open network. Usually it hibernates as a pupa, but sometimes as a fully grown larva. On the continent it also attacks apples and other fruits causing extensive damage.

Adults on the wing from May to July.

Generally distributed throughout the British Isles, commoner northwards.

A. semifusca (Haw.) (*spiniella* Zell.) Plate I, Fig. 25

10–13 mm. Head and thorax white, antenna ringed white and dark fuscous, tegulae golden brown. Forewing brownish fuscous, faintly purplish tinged, some white costal strigulae and terminal suffusion. A white dorsal streak interrupted at $\frac{1}{2}$ by a square dark brown spot. Hindwing grey.

Larva greenish-grey, dorsal line faintly rosy, head dark brown. In May and June it feeds on a shoot of rowan (*Sorbus aucuparia*) or hawthorn (*Crataegus* spp.). It may be detected by the slight swelling caused and the impeded development of the shoot, also by a hole which may be partially filled with frass or spun up with the cast off calyx from a bud; affected shoots of rowan droop conspicuously. Continental authors also give bird cherry (*Prunus padus*) and blackthorn (*P. spinosa*) as foodplants. Larvae leave the feeding place to pupate on the bush or on the ground, where they remain pupae for three to four weeks.

Moths on the wing from late June into early September.

Widespread throughout Britain, but not met with as commonly as most others in the genus.

Formerly the hawthorn-feeding moths were referred to *semifusca* whilst those on rowan to *spiniella*, this latter name was placed in synonymy by Friese and there seems no good reason to dispute his decision.

A. pruniella (Clerck) (*ephippella* (F.)) Plate I, Fig. 26

10–12 mm. Head and thorax white, antenna ringed white and dark fuscous, tegulae golden brown. Forewing ochreous-white, a white dorsal streak interrupted by a

brown median fascia at $\frac{1}{2}$; a broad orange-brown streak from base along fold to $\frac{1}{3}$, median fascia angulated towards termen on fold reaching or nearly reaching costa above tornus, some brown irroration before it, terminal area much suffused brown; two brown lines in terminal cilia. Hindwing grey.

Larva yellowish-white, head brownish-black becoming paler with age. After hatching from the egg in March or April the young larva attacks flowering shoots of cherry (*Prunus cerasus*), later it bores into the heart of the shoots and developing fruits drawing them together in a light spinning. Pupates on the ground in a double cocoon, the outer layer being reinforced with grains of dirt; a pupa for six or seven weeks.

Adults on the wing in June and July.

Common and widespread throughout Britain.

A. bonnetella (L.) (*curvella* auctt.; *nitidella* (F.)) Plate I, Figs 27–28

9–11 mm. Head and thorax white, antenna ringed ochreous and dark fuscous, tegulae light brown; forewing creamy white somewhat suffused with brown especially towards termen. A white dorsal streak to $\frac{1}{2}$, a light brown streak below fold from base to $\frac{1}{3}$, median fascia curved towards termen, two dark lines in terminal cilia. Hindwing dark grey.

f. ossea (Haw.) (Fig. 28) has tegulae ochreous brown, forewing unicolorous creamy white; but there is often a trace of the normal markings comprising a white streak along dorsum except at $\frac{1}{2}$ where the base of the median fascia is pale ochreous. Two lines in terminal cilia fuscous. Hindwing grey.

Occurs widely with the type, with intermediate forms.

Larva greenish-yellow, head and prothoracic plate dark brown. It usually hatches in the autumn and hibernates in a spinning, then in the spring it attacks terminal shoots of hawthorn (*Crataegus* spp.), later mining within a twig or shoot. It descends to the ground to pupate in a coarse network cocoon, remaining a pupa for between two and three weeks.

Adults on the wing from June to August.

Widespread and very common throughout the British Isles.

A. albistria (Haw.) Plate, Figs 21, 30

9–11 mm. Head and thorax white, antenna ringed white and dark fuscous, tegulae ochreous brown. Forewing ochreous brown suffused purplish brown, especially in middle and in terminal area. A white tapered dorsal streak to $\frac{1}{3}$, an ochreous white area on dorsum towards tornus, two dark lines in terminal cilia. Hindwing grey. There is considerable variation in the depth of the ground colour of the forewing, some specimens being quite dark.

Larva pale green, a red band on each segment, head and prothoracic plate black. From eggs laid singly in cracks or depressions in the bark or under an old shoot the larvae hatch in about two months. These hibernate and mine in the spring in flowering shoots of blackthorn (*Prunus spinosa*). In about five to six weeks the larva leaves the feeding place to spin a light cocoon on the ground. The moths emerge five or six weeks later, but the actual pupal period may be only half that time.

Adults on the wing from late June into September, in one extended brood.

Very common and widespread throughout the British Isles.

A. semitestacella (Curtis) Plate I, Fig. 29

11–14 mm. Head and thorax whitish ochreous, antenna ringed pale ochreous and dark fuscous. Tegulae and forewing pale golden brown, a white dorsal streak to tornus; often constricted or interrupted beyond middle; two brown lines in terminal cilia. Hindwing grey.

Larva grey-whitish, head black, prothoracic plate brown. In shoots of beech (*Fagus sylvatica*) in May and June.

Adults in August and September. Larger than other species in the genus and appearing later in the year. It is normally only seen if one taps branches of the foodplant.

Occurs throughout the British Isles.

APPENDIX

Continental species which might be found in Britain

A. bergiella Ratz. A small unicolorous golden species whose larvae feed on Norway spruce (*Picea abies*).

A. fundella (F. v. R.). A small species not unlike *retinella* but lacking conspicuous dark markings on the forewing. The larva feeds on *Abies alba* and *A. nordmanniana*. Whilst these species are not commonly planted it would still be worth searching for in plantations of any *Abies* species.

A. thuiella Packard. A small white species, also not unlike a weakly marked *retinella*. A north American insect which has become established in Holland, the larva feeds on *Thuya* in the terminal leaves and shoots.

A. pulchella Zell. A species similar to *semifusca*, but having the forewing of a more purplish colour. The larva is thought to feed in the buds of hazel (*Corylus*) and rowan (*Sorbus aucuparia*).

THE BRITISH YPONOMEUTINAE

This paper completes the family Yponomeutidae in our current classification. The Plutellinae, Orthoteliinae and Acrolepiinae were treated in the paper by L. T. Ford in 1949 entitled Plutellidae, and the Argyresthiinae are covered in the preceding pages.

The classification at family level is not universally agreed. Many continental authors assign to the family Yponomeutidae the genera *Yponomeuta*, *Euhypnomyeta*, *Kessleria*, *Zelleria*, *Pseudoswammerdamia*, *Swammerdamia*, *Paraswammerdamia*, *Cedestis*, *Ocnerostoma* and one or two others of which there are no British representatives. The remaining genera: *Roeslerstammia*, *Atemelia*, *Prays* and *Scythropia* are thus separated from the family by these authors, although Leraut in his list of the French Lepidoptera concurs with Kloet & Hincks (2nd edition) and includes them with the Yponomeutinae. More recently Kyrki has shown that *Roeslerstammia* belongs to the Australian family Amphitheridae, which therefore becomes Roeslerstammidae; he tentatively places this family in the Tineoidea, but for the purposes of this paper the classification of Kloet & Hincks is followed.

In terms of their habits most allies of *Yponomeuta* are distinctive for their web-spinning larvae (hence the German name for the family: Gespinstmotten) and a tendency to be gregarious as larvae. *Cedestis* and *Ocnerostoma* are of course exceptions, for it is difficult to be gregarious inside a pine needle!

THE GENUS YPONOMEUTA

The adults are all white or grey with black spots, and the larvae are conspicuous for the webs in which they live gregariously. The biological races of the *padella* complex constitute a well known problem because they seem still to be in the process of speciation. Insects of this group occur at times at such density as to be regarded as an economic nuisance.

GENUS YPONOMEUTA LATREILLE

- | | | |
|----|---|-------------------|
| 1. | Forewing with black or greyish spot in fold | 2 |
| – | Forewing without a noticeable spot in fold | 3 |
| 2. | Forewing with conspicuous apical black spot | <i>plumbella</i> |
| – | Forewing without apical spot, and with grey suffusion in disc | <i>irrorella</i> |
| 3. | Head grey, forewing without dots in terminal area | <i>sedella</i> |
| – | Head white or greyish white, forewing with dots in terminal area | 4 |
| 4. | Forewing with 5 or 6 rows of small dots, more than 8 in lowest row .. | <i>evonymella</i> |
| – | Forewing with 3 or 4 rows of dots, less than 8 in lowest | 5 |
| 5. | Forewing white in dorsal half and on costa before termen, greyish suffusion in disc | <i>rorrella</i> |
| – | Forewing more evenly coloured grey, white or grey and white | 6 |

Beyond this point it is not possible to determine insects with certainty, see text on *padella* complex, what follows is a rough guide.

- | | | |
|----|---|-------------------|
| 6. | Forewing white, including terminal cilia, larvae on <i>Euonymus</i> | <i>cagnagella</i> |
| – | Forewing grey or whitish, terminal cilia more or less grey | 7 |
| 7. | Forewing whitish, larvae on apple | <i>malinellus</i> |
| – | Forewing grey, larvae on hawthorn, blackthorn, etc. | <i>padella</i> |

Y. evonymella (L.) Plate II, Fig. 1

Wingspan 19–25 mm. Head white, thorax white with two small spots, tegulae white with one spot each. Forewing white with 5–6 rows or partial rows of fine dots, 9–11 in the row nearest the dorsum, terminal area with a group of fine dots, black. Hindwing dark grey.

Larva dark greenish-grey with rows of black spots, the subdorsal black dots are each divided in two, in contrast with those of the *padella* complex; head black. Overwinters when young and in the spring causes a shoot to droop, feeding gregariously thereafter in a web on bird cherry (*Prunus padus*). In the south of England it must feed on other plants, probably *Prunus* spp. for the moths occur where there is no bird cherry except for planted trees in housing estates which are seldom attacked.

Pupa within a cocoon, still gregariously situated in the web.

Common and widespread, especially northwards where it often causes much defoliation of the foodplant.

THE PADELLA COMPLEX

The problems posed by this group have long been recognised, and have been the subject of much research. One of the earliest and best studies for a starting point was by Adkin, published in the Proceedings and Transactions of the South London Entomological & Natural History Society for 1928. It can be summarised as follows.

Y. cagnagella has white adults, the larvae feed on *Euonymus*.

Y. padella has grey adults, the larvae feed on blackthorn and related plants, those on hawthorn being generally a little paler.

Y. malinellus has whitish adults, the larvae feed on apple.

The situation is not quite as clear cut as that, as *padella* and *malinellus* are so variable as to overlap considerably, and Adkin thought that *padella* would sometimes feed on apple! He claimed to find slight but constant differences in the saccus of the male genitalia between *cagnagella* and *malinellus*, but *padella* varies across the whole range. Further studies were made by Thorpe at about the same time and published in the journal of the Linnaean Society in 1929 and 1930.

Then in 1960 G. Friese published a revision of the Yponomeutidae based largely on the genitalia, and in it he sunk all these species into one, and at the same time made *rorrella* a synonym in the same taxon.

More recently a group of Dutch entomologists have engaged on numerous studies using highly developed techniques, no less than 44 papers had been published by them by the end of 1982. There is not space here even to summarise this research, sufficient is it to quote from a paper by Gerrits-Heybroek *et. al.* (1978) '... the divergence (between *cagnagella* and the rest of the *padella* complex) may still be in a semispecies phase, in which interspecific crossings appear fully viable, or at least compatible. The host-races of *Y. padella* may be in a very early stage of speciation and in time, could become further differentiated into (sub) species.'

From this it can be seen that for the field worker Adkin's summary is still adequate; one cannot with certainty state whether the biological forms on different foodplants are distinct species or not, and therefore no caught specimen can be determined with complete accuracy. All have similar life histories, but the colour of the larva varies according to the foodplant.

Y. padella (L.) Plate II, Fig. 2

Wingspan 19–22 mm. Head white or in very dark specimens greyish white; thorax and tegulae white or greyish white, two dark spots on thorax and one near the front of each of the tegulae. Forewing grey, whitish, or white suffused with grey, chiefly in disc; three or four rows of black dots, 4–7 in lowest row; terminal cilia grey or greyish white. Hindwing grey. Specimens from larvae feeding on *Prunus* are often, but not always a little darker than those on hawthorn etc.

The eggs are rounded and flat, laid in batches on spines or stems of hawthorn, blackthorn, plum or cherry. The batches, which average about 40 eggs are covered with a protective secretion. They are laid in July or August, hatching in about three weeks. The young larvae remain under their protective shield through the autumn and winter until May when they burrow into the buds, causing some drooping of the shoots. As they grow they spin a dense web around the shoots in which they live gregariously, wriggling when disturbed and spinning a thread on which they will descend to the ground. Larvae are sometimes very abundant causing extensive defoliation. The fully grown larva is 15 mm long, dark leaden grey or greenish grey, darker above, with a row of conspicuous subdorsal spots on each side. These spots are not divided.

Pupation takes place in June, within a flimsy, grey, silken cocoon. Cocoons are often clustered together within the web.

Moths are on the wing late June to August. The species is common and widespread, especially in southern Britain.

Y. malinellus Zell. Plate II, Fig. 6

Wingspan 20–23 mm. Head, thorax and tegulae white with spots as in *padella*. Forewing whitish, sometimes suffused light grey in disc, terminal cilia greyish, pattern of spots as in *padella*. Hindwing grey.

Larva similar to that of *padella* but tends to be yellowish grey in colour. The cocoons are white and are arranged neatly in rows side by side, usually attached beneath a leaf or branch. In all other respects the life history resembles that of *padella* except that the foodplant is apple, both cultivated and wild.

Whilst this species has been noted as a pest of orchards, it is now less frequently met with, but is widespread in Britain, being commoner in the south.

Y. cagnagella (Hübner.) Plate II, Fig. 5

Wingspan 19–26 mm. Head, thorax and forewing white, including the terminal cilia, pattern of spots as in *padella*. Hindwing grey.

Larva pale yellowish grey, pattern of spots as in *padella*. The cocoons are white and arranged neatly in rows, usually situated near the bottom of the nest, among dead leaves or foliage close to the ground. In other respects the life history is the same as that of *padella* except that the foodplant is spindle (*Euonymus europaeus*) or evergreen euonymus (*E. japonica*).

Common and widespread throughout the British Isles, but scarcer northwards.

Y. rorrella (Hübner.) Plate II, Fig. 3

Wingspan 19–24 mm. Head white, thorax white with 5 black spots, sometimes light grey at front; tegulae white with one spot each. Forewing white, suffused grey in costal half except for a line along outer half of costa which is wider before apex,

terminal cilia grey. A row of 3–6 black dots along first half of costa, a subcostal row of 3–5 dots, a row of 6–8 dots along fold, a further subdorsal row of 4–7 dots, two variable subterminal rows of small dots. Hindwing grey.

Larva blackish grey to green, with black spots as in *padella*; head, prothoracic and anal plates shining dark brown. In May and June the larvae live gregariously in a web on *Salix alba*, occasionally *S. cinerea*. It is likely that the ova and small larvae are protected in the same way as *padella* but this has not been observed.

This moth is local and sporadic in appearance, recorded only from the south of England.

Y. irrorella (Hüb.) Plate II, Fig. 7

Wingspan 19–25 mm. Head white, thorax with up to 5 black dots, tegulae with one on each. Forewing white, dots arranged in a similar pattern to *padella*, a small greyish blotch on fold at $\frac{1}{3}$, a larger elongate grey blotch in disc. Hindwing grey.

Larva almost indistinguishable from *cagnagella*. Eggs are laid on a stem or leaf of spindle (*Euonymus europaeus*) in the summer and the life history proceeds as in *cagnagella* except that the larvae scatter in the last instar and pupate individually instead of gregariously; this is the best time to find it with hope of breeding this species. The pupa is in a loosely woven silk cocoon and is clearly visible, the yellow markings being very conspicuous.

Local and inclined to be scarce, being recorded only from north Kent and north Hants.

Y. plumbella (D. & S.) Plate II, Fig. 4

Wingspan 17–19 mm. Head white, thorax white and five black spots, tegulae white, each with one anterior spot, antennae dark grey. Forewing white, some light grey suffusion along costa, 4 or 5 incomplete rows of black dots, a conspicuous black spot in fold before $\frac{1}{2}$, a large black spot at apex. Hindwing grey.

Ova laid on spindle (*Euonymus europaeus*) in small batches.

Larva clear brownish, yellower at each end, spots black, arranged as in *padella*, prothoracic plate divided, dark brown. Young larvae remain under their protective membrane until the spring when they burrow into the shoots causing them to droop. Later they feed in a web, usually only a few larvae in each web. Pupation takes singly in a light spinning among the leaves.

Common in Britain, becoming scarcer northwards and not recorded from Scotland.

Y. sedella Treits. (*vigintipunctata* (Retz.)) Plate II, Fig. 8

Wingspan 15–18 mm. Head, thorax and forewing ground colour light grey. Five black spots on thorax, one on each tegula. Forewing with 4 rows of black dots, 3 or 4 along first half of costa, a subcostal row of 3–5 dots, 4–5 along fold, a subdorsal row of 5–6 dots, terminal area devoid of spots but one in apical cilia. Hindwing grey.

Larva grey with a paler dorsal line, spots black; head yellow, prothoracic plate divided, dark brown. The young larvae mine a leaf, making numerous small galleries each just wider than the larva, later on they feed communally in a web. Only recorded in Britain on orpine (*Sedum telephium*) and closely related cultivars, but found on the continent also on *Euonymus*. Since the moth is sometimes found more commonly than the *Sedum* it may also feed on *Euonymus* or another foodplant in Britain. Double-brooded, larvae in June and July giving moths in August, larvae in

September and October overwintering as pupae and giving moths in April and May.
Local in Britain from Lincolnshire southwards.

Euhyponomeuta stannella (Thunb.) Plate II, Fig. 9

Wingspan 16–20 mm. Head ochreous. Thorax and forewing bronze. Hindwing fuscous.

Larva dark brown with a shining black head; it lives in a web spun amongst moss around the stems of orpine (*Sedum telephium*) on which it feeds. Up to 6 larvae in a web, usually 2 or 3 and sometimes only 1.

Very local in Britain being recorded only from Dovedale, on both Derbyshire and Staffordshire sides. It has years of abundance followed by several years of scarcity or apparent absence.

GENUS KESSLERIA NOWICKI

1. Forewing with sharp dark lines in apical cilia, median fascia not reaching subcostal vein, adults on wing in June *saxifragae*
- Forewing without dark lines in apical cilia, median fascia reaching subcostal vein, adults September to May *fasciapennella*

K. fasciapennella (Staint.) Plate II, Fig. 10

Wingspan 15–18 mm. Head white, mixed light fuscous. Thorax fuscous mixed whitish. Forewing light greyish fuscous irrorated whitish; a curved fascia from dorsum at $\frac{1}{3}$ reaching subcostal vein and then on towards termen, a darker fuscous spot on costa before $\frac{1}{2}$, 3 or 4 rows of dark fuscous dots along veins; apical area darker with a distinct white costal spot before it and a whitish spot in cilia beneath. Hindwing grey, paler towards base.

Larva light reddish grey, dorsally reddish brown, head brown, prothoracic plate and thoracic legs yellowish brown, anal plate light grey with a central reddish brown spot. At first it mines a leaf of Grass of Parnassus (*Parnassia palustris*) but soon goes to the base of the foodplant where it makes a small whitish spinning between the bases of the leaf-stalks (Kyrki, 1985). Larva in June and July, giving moths in August which overwinter until the following spring. It requires both a habitat where the foodplant grows and where there is suitable dense shelter nearby in which the moths may overwinter.

Recorded in Britain only from the Pentland Hills near Edinburgh in the mid-nineteenth century. Possibly overlooked.

K. saxifragae (Staint.) Plate II, Fig. 13

Wingspan 11–15 mm. Head white, brownish centrally. Thorax pale fuscous, tegulae white mixed pale brown. Forewing white, suffused pale whitish brown, costal, subcostal and subdorsal rows of dark fuscous dots, sometimes obsolete; a curved brownish fascia from dorsum beyond $\frac{1}{4}$ obscurely angled towards apex and not reaching as far as the subcostal vein, 2 dark lines in apical cilia, strongest at apex.

Larva dull olive green with a faintly darker dorsal line, reddish brown markings on the sides of each segment, head and prothoracic plate black; tapered slightly to each end with short hairs, underside green. In a slight web, usually low down, among *Saxifraga aizoides*, *S. oppositifolia* or making blotch-mines in *S. hirsuta* or *S. spathularis*. Sometimes there are several larvae in a web and they make white

blotches on the leaves. Pupates in the web. Larvae in May and June giving moths in June and July.

Locally common on the mountains of Scotland where it is recorded from Sutherland, Aberdeen, Perth, Argyll, Mull of Kintyre and Rhum, also in Co. Kerry in south west Ireland.

Zelleria hepariella Staint. Plate II, Fig. 11

Wingspan 10–15 mm. Head whitish ochreous to ferruginous. Thorax reddish brown. Forewing reddish brown or ochreous brown, paler centrally for the length of the wing, cilia dark grey except at apex where they are concolorous with the wing. The apex of the forewing is curved dorsally so that when at rest the wings appear upturned at the end. Hindwing dark grey.

Larva pale green, dorsal line darker, head yellowish brown. In a thick silken web on ash (*Fraxinus excelsior*) in shoots or among spun leaf tips in June. Pupa in July in a dense white cocoon on a leaf. Adults overwinter from August to April in dense cover such as yew or juniper, from which the moths can sometimes be beaten.

Widespread throughout the British Isles, but local and usually uncommon.

THE SWAMMERDAMIA GROUP

The Swammerdamia group of species are treated as one unit, as they were considered to comprise a single genus until Friese (1960) separated the genera *Pseudoswammerdamia* and *Paraswammerdamia* according to differences in the genitalia.

Several species are very similar to each other and difficult to separate. This has caused some confusion in the nomenclature. This is particularly so with *caesiella* (Hübner, 1796), for he then seems to have applied the same name in 1813 to another species which we now call *albicapitella*. Recent papers by Germans such as Hanneman (1977) still call the former species *heroldella*, by which name we used to know it (e.g. Meyrick (1928)), and they use *caesiella* for the blackthorn feeding *albicapitella*. Amusingly Stainton (1870) states "I think one matter which has tended to cause confusion in this genus is that German entomologists seem to have applied the name *caesiella* to the Birch-feeder, and to have constituted the hawthorn-feeder into a new species, *oxyacanthella* whereas English entomologists, applying the name *caesiella* to the hawthorn-feeder, have given a new name, *griseocapitella* to the birch-feeder." Thus the position a century later is almost reversed, although Stainton was confusing *lutarea* the hawthorn-feeder with *albicapitella* the blackthorn-feeder, unless he knew not the latter.

The adults of the genus are characterised by the rough head, short proboscis and antennae about $\frac{3}{4}$ length of the wing. The hindwings have a characteristic 'window' without scales near the base between veins 1c and 2. The larvae live usually singly, but sometimes two or three together in a slight web, often across the top of a leaf which is a little bowed, and gnaw away the top surface of the leaf. In their younger stages they mostly mine the leaves of the foodplant. They are characteristically tapered at each end.

GENUS SWAMMERDAMIA (SENSU LATO)

1. Forewing with distinct copper apex *combinella*
- Forewing with apex not copper coloured 2

2. Forewing with median fascia clearly interrupted on fold *albicapitella*
- Forewing with median fascia entire or obscure 3
3. Ground colour of forewing white, a small mountain species *passerella*
- Ground colour of forewing predominantly some shade of grey or fuscous 4
4. Terminal cilia of forewing coppery tinged, wingspan less than 12 mm . . . *pyrella*
- Terminal cilia of forewing not coppery tinged 5
5. Tegulae evenly coloured, pale ochreous grey, large species wingspan greater than 14mm *compunctella*
- Tegulae contrastingly scaled fuscous and white, wingspan 14mm. or less 6
6. Distinct white costal spot before apex, male genitalia with ventral edge of valve gently curved, larva on birch *caesiella*
- Three or four small white clusters of scales near costa before apex, male genitalia with a spined tip to the valve on its ventral edge, larva on hawthorn *lutarea*

Pseudoswammerdamia combinella (Hübner) Plate II, fig. 12

Wingspan 13–16 mm. Head white with a few fuscous scales, scape whitish, antennae grey, faintly ringed. Thorax white, speckled fuscous, posteriorly purplish fuscous; tegulae white, speckled fuscous. Forewing white, suffused light grey; a sequence of dark fuscous dots along first half of subcosta, 4 or 5 indistinct longitudinal broken lines of fuscous scales. Basal area suffused ferruginous, a distinct copper spot in the apex, surrounded by dark purplish fuscous, preceded by a white spot on the costa, a second dark line in the terminal cilia. Hindwing grey.

Larva dull yellowish, dorsal line yellowish green, a subdorsal line of dull red dots. At first making a white blotch in a leaf of blackthorn (*Prunus spinosa*) from which frass is ejected; later in a thick web, often several larvae together in a web. July to September. Pupa under the web in a white cocoon.

Adult May to June, widely distributed throughout the British Isles as far as Ross-shire. Whilst it can be common over much of its range it is often found at low density.

Swammerdamia caesiella (Hübner) Plate II, Fig. 15

Wingspan 9–13 mm. Head whitish, often heavily suffused ochreous or brown, face white. Antennae annulated fuscous and white or ochreous. Thorax and tegulae slaty grey, irrorated whitish. Forewing grey, paler in dorsal half; a white subapical spot on costa, 3 or 4 indistinct longitudinal rows of blackish scales. An obscure darker grey fascia from the middle of the dorsum curving towards the termen and hardly reaching the costa; terminal area suffused purplish grey. Hindwing grey. Male genitalia (by external examination) lacking any cusp arising from the edge of the valva.

Larva green, yellowish green on each segment subdorsally and along the sides, dorsal line darker green. Head brown. It feeds on birch (*Betula* spp.), gnawing the upperside of a leaf and living under a slight web, in July and again in September or later. The pupa is in a dense white cocoon; adults on the wing in May–June and August.

Widespread and usually common where birch occurs throughout the British Isles.

S. passerella (Zett.) Plate II, Fig. 16

Wingspan 8½–11 mm. Head white, sometimes greyish fuscous, especially in the centre; thorax and tegulae white, with a few grey scales. Forewing with apex

rounded; white suffused with grey, an oblique dark grey fascia in the middle of the wing, base, costa and terminal area greyish, terminal cilia dark grey. A distinct subapical white spot on the costa, sometimes extending across the wing. Females tending to be whiter than males. Hindwing light grey.

Larva reddish brown with a slightly darker, thin dorsal line and broader subdorsal lines; along the sides and beneath it is whitish. Head, prothoracic plate and a small anal plate black. It feeds from July to September on leaves of *Betula nana*, at first mining the leaves, then in a light web gnawing the surface of the leaves, often two or three larvae per web. Pupa in a dense white cocoon in which it overwinters.

Adults in June (although the moth has never been taken in the wild in Britain).

Recorded in Britain only from Inverness and Aberdeenshire where it is found on mountains between 1000 ft and 2000 ft where the foodplant grows. It is likely to occur in other parts of the Scottish Highlands where the foodplant grows.

S. pyrella (Vill.) Plate II, Fig. 19

Wingspan 10–13 mm. Head white, sometimes ochreous tinged. Scape white, antennae greyish fuscous, faintly ringed. Thorax and tegulae shining grey, irrorated coppery fuscous. Forewing light grey irrorated coppery fuscous, a diffuse and indistinct darker oblique fascia from the dorsum before the middle almost to the costa, a white spot on the costa before the apex, apical cilia deep copper. Hindwing pale grey.

Larva yellowish, with a very fine red dorsal line and stronger deep reddish subdorsal lines. Head reddish brown. It feeds on apple (*Malus*), pear (*Pyrus*) and hawthorn (*Crataegus*) in July and September in a light web. Pupa in a dense white cocoon on the ground or in a protected part of the foodplant.

Adult on the wing in May and August.

Common and widespread in Britain as far north as Perthshire.

S. compunctella Herr.-Schäff. Plate II, Fig. 14

Wingspan 14–15 mm. Head white, sometimes tinged ochreous. Scape pale ochreous or fuscous, antennae grey, faintly ringed; thorax whitish ochreous, tegulae irrorated pale fuscous. Forewing grey, irrorated dark grey and white, median fascia almost indiscernible; a conspicuous white subapical spot on the costa. Dorsal half of the forewing often slightly paler than costal half. Hindwing grey. In the male genitalia the valva is narrower and more triangular than other species with which it might be confused.

Larva rich deep red to dark brown, dorsum paler or whitish with a dark central line. The sides are white, sometimes interrupted by a reddish patch on each segment. The body is dark brown beneath, the thoracic legs dark brown or black. Head and prothoracic plate blackish, divided by a pale central line. The larva begins life in the late summer and then overwinters in a dense white cocoon while still small. In the spring it makes a loose web among the leaves of rowan (*Sorbus aucuparia*), preferring seedlings growing in open woodland. Webs are often at knee-height with two or three larvae each. The pupa is in a semi-opaque white cocoon which is slung in a light spinning on or near the ground.

Adults are on the wing in June and July.

A local and little known species which seems to be commoner in the north. It has been recorded from Hampshire, East Sussex, Surrey, Staffordshire, Herefordshire, Gloucestershire, West Lothian, Perthshire, Aberdeenshire and West Ross.

Paraswammerdamia albicapitella (Scharf.) (*spiniella* (Hübner)) Plate II, Fig. 17

Wingspan 10–13 mm. Head white, scape whitish, antennae pale greyish fuscous. Thorax white, tegulae white with some fuscous scales anteriorly. Forewing white, irrorated grey, especially near the base and in the costal half of the wing; often subcostal and plical rows of dark fuscous dots; an interrupted ill-defined dark fascia of which the spot on the dorsum before half way is most conspicuous. A white subapical spot on the costa, preceded by a dark diffuse spot, apical cilia dark fuscous slightly coppery tinged. Hindwing light grey.

Larva dark reddish brown, dorsum paler, sides yellowish white; head honey coloured, prothoracic plate dark brown. It first mines a leaf of blackthorn in September, then spins a small white hibernaculum in the axil of a leaf. In the spring it feeds up in a web, sometimes several together, and usually low down, deep inside the bush. It is a pupa in June and the moth is out in July.

It is common and widespread, less so in Scotland.

P. lutarea (Haw.) Plate II, Fig. 18

Wingspan 11–14mm. Head white to ochreous, scape whitish fuscous, antennae greyish fuscous, faintly ringed. Thorax and tegulae mixed white and fuscous. Forewing grey, finely irrorated white and fuscous, a very small subapical spot on the costa, median fascia only a little darker than ground colour, extending from dorsum to costa. Hindwing greyish fuscous.

Larva deep brown, white subdorsal lines with an orange spot on each segment, sides white with orange spots above posteriorly. Head, prothoracic and anal plates golden brown. On hawthorn (*Crataegus*) or rowan (*Sorbus aucuparia*), mining the leaves in September, then overwintering under a small white spinning attached to a twig; in the spring in a light web, often two or three together in early instars. The larva is fully grown at the end of May. Pupa in a dense white cocoon on a twig amongst the leaves. Adults on the wing in July.

Widely distributed throughout the British Isles, as far north as the Caledonian Canal; often common.

The male genitalia have a spined cusp pointing down from the edge of the valve which can be seen without dissection.

GENUS CEDESTIS ZELLER

1. Forewing with a narrow angled fasciae *subfasciella*
- Forewing with two straight fasciae, or a broad band *gysseleniella*

Cedestis gysseleniella Zell. Plate II, Figs. 21, 22

Wingspan 11–13 mm. Head and scape white mixed fuscous, antennae ringed white and fuscous. Thorax and tegulae white irrorated dark brown or golden. Forewing white with the tip of each scale edged dark brown, a straight golden fascia between $\frac{1}{8}$ and $\frac{1}{4}$, another before middle, some golden suffusion at $\frac{3}{4}$ and in the terminal area. In another form (Fig. 22) the golden suffusion is greatly extended, the first fascia is broadened and the second extends from $\frac{1}{4}$ to $\frac{3}{4}$, except on the costa. Hindwing pale grey with a hyaline patch as in the *Swammerdamia* group.

The egg is laid near the base of a needle of scots pine (*Pinus sylvestris*).

Larva greenish, with small black dots, head brown. It feeds within the needle mining towards the tip, then if necessary feeds externally in a very loose web. Larva in

April and May. The pupa is in a dense white cocoon on the ground.

Moths June–July.

Widespread in England and Scotland, not recorded from Wales or Ireland but possibly overlooked.

C. subfasciella (Steph.) Plate II, Fig. 20

Wingspan 9–11 mm. Head and scape white mixed dark fuscous, antennae ringed dark fuscous and white, thorax and tegulae white irrorated golden brown. Forewing white, with dark-tipped scales and suffused golden brown, basal area whitish on dorsum, more irrorated fuscous towards the costa, a distinct angulate fascia before halfway, preceded by much golden brown suffusion; beyond the fascia clear white, then suffused golden brown and fuscous towards the termen, a white spot on the tornus and on the costa opposite, terminal cilia white with three fuscous lines and a scattering of black scales. Hindwing light grey, with hyaline patch.

The egg is laid near the tip of a needle of pine (*Pinus* spp.).

The larva is shining green or pale greenish brown, a faintly darker dorsal line, head brown, prothoracic and anal plates black, forelegs inclined to black. It mines within a leaf from tip to base, then when full grown it descends to the ground on a thread of silk and pupates in a white cocoon on the ground. Larvae December to April.

Adults March to July.

Widely distributed throughout Britain, seemingly less common in the north and west.

GENUS OCNEROSTOMA ZELLER

1. Antennae wholly grey *friesei*
 – Antennae white, or ringed white *piniariella*

Ocnerostoma piniariella Zell. Plate II, Fig. 25

Male. Wingspan 8–10 mm. Face whitish, head with greyish fuscous hairs sometimes mixed white, antennae whitish grey with indistinct light and dark rings. Forewing uniform pale grey, sometimes with a few whitish scales in the middle and in the dorsal cilia towards the termen. Male genitalia (Fig. i) with the aedeagus having a sheath which extends for only $\frac{1}{3}$ of its length.

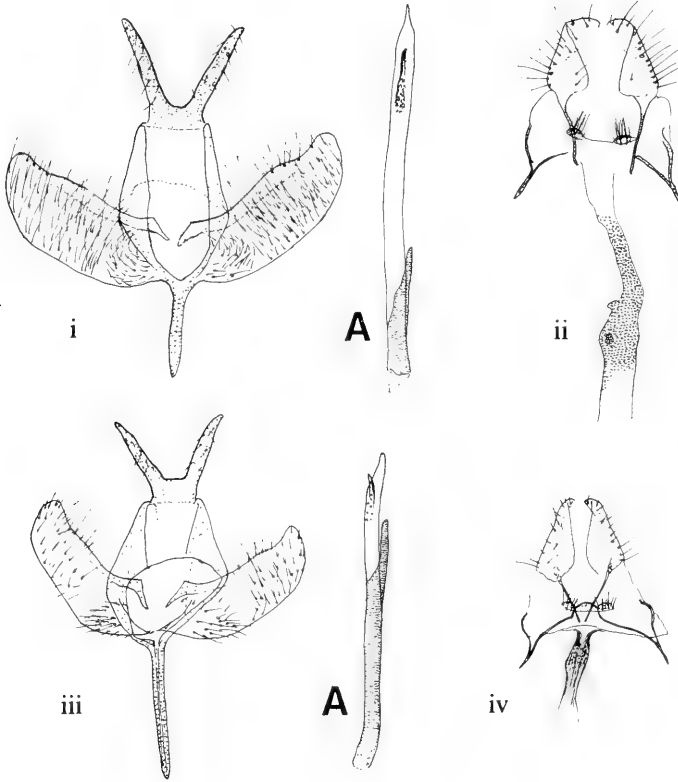
Female (Fig. 24). Wingspan 7–9 mm. Face white, head with white hairs, sometimes ochreous tinged and greyer at the sides; antennae white, sometimes ringed greyish. Forewing pale grey with white scales scattered all over, especially at the apex and in the middle; hindwing grey. Female genitalia (Fig. ii) with ductus bursa markedly scobinate.

The egg is laid at the tip of a needle of scots pine (*Pinus sylvestris*).

The larva is at first chestnut brown, in later instars appearing yellowish in the mine, head black, prothoracic and anal plates black. It mines the needle towards the base. When fully grown it pupates in a slender white cocoon slung between three or four needles drawn together. Larvae in April or May.

Single brooded, flying in June.

The distribution is not well known owing to confusion with the next species, from which it was distinguished in 1960. Apparently widespread and sometimes common throughout the British Isles, but under-recorded and often overlooked.



Figs i-iv. Genitalia of *Ocnerostoma* spp. A = aedeagus. *O. piniariella*: i ♂, ii ♀. *O. friesei*: iii ♂, iv ♀.

O. friesei Svensson Plate II, Figs. 23, 24

Male (Fig. 23). Wingspan 8–10 mm. The whole moth is grey or pale grey, antennae dark grey except sometimes at base, face dark grey to pale grey. Male genitalia (Fig. iii) with aedeagus having a sheath extending for $\frac{3}{4}$ of its length.

Female (Fig. 22). Wingspan 7–9 mm. Face whitish, head white with some fuscous hairs, antennae dark grey. Forewing almost entirely white except tornal cilia pale grey. Hindwing grey. Female genitalia with (Fig. iv) ductus of weak tissue, not scobinate, also behind the ostium is a pad connected to the apophyses anteriores.

Early stages not as yet distinguished from those of *piniariella* q.v. At least two generations per year, larvae may sometimes be found in December and January until April, giving adults March to May, larvae again in June and July giving adults in August. A third generation has been noted; larvae in September yielding adults in November.

Distribution incompletely known, a scattering of widespread confirmed records from the British Isles: it is often common in plantations.

GENUS ROESLERSTAMMIA ZELLER (ROESLERSTAMMIIDAE)

1. Hindwing yellow *pronubella*
 – Hindwing bronzy fuscous *erxlebella*

Roeslerstammia pronubella (D. & S.) Plate II, Fig. 30

Wingspan 11–13 mm. Head dark fuscous, ochreous centrally, antennae entirely dark fuscous; forewing shining bronzy fuscous with a purplish tinge. Hindwing pale straw, terminal area and cilia dark fuscous.

Early stages unknown. Only two specimens recorded in Britain, one in Sutherland in May 1854, another at Salcombe, Devon in June 1873. Possibly imported: the species is scarce in Europe.

R. erxlebella (Fabr.) Plate II, Fig. 27

Wingspan 12–15 mm (on the Continent given as 15–18 mm). Head deep ochreous above, face pale ochreous, a transverse black band between antennae. Scape and antennae deep purplish black with a broad white band before the tip. Thorax, tegulae and forewing shining coppery bronze. Hindwing dark bronzy fuscous.

The egg is laid at the tip of a leaf of lime (*Tilia*) or birch (*Betula*).

Larva green, somewhat darker dorsally, head brown. For the first two instars the larva mines in a gallery near the tip of the leaf. Later it feeds externally in a slight web beneath a leaf. It pupates in a white silken cocoon under the turned-down edge of a leaf. The pupa protrudes before emerging.

Larvae feed in September and October, pupae overwinter and the moth is on the wing in May and June. The next generation of larvae in July give moths in August and September.

Widely distributed, but local in Britain, not recorded from Ireland.

Atemelia torquatella (Zell.) Plate II, Fig. 26

Wingspan 8–11 mm. Head, antennae and thorax dark fuscous. Forewing dark fuscous, a white spot on the fold at $\frac{1}{3}$, a white tornal spot and a white subapical spot on the costa. Hindwing fuscous.

Larva dull reddish brown, marbled whitish, head pale brown. It feeds in a blotch mine in birch (*Betula*) or elm (*Ulmus*). The larva can sometimes be found in a web beneath the leaf, or just half within the mine; it overwinters fully fed within the mine pupating in the early spring. Pupa in a light cocoon amongst litter on the ground. Larvae from August, moths in June and July. Seedling trees are preferred.

Found locally from Durham and Lancashire northwards through Scotland.

Prays fraxinella (Bjerk.) Plate II, Figs. 30, 31

Wingspan 14–17 mm. Head white, antennae dark grey. Thorax whitish, tegulae whitish anteriorly grey. Forewing white, costa with a dark fuscous triangular patch from near base to $\frac{3}{4}$ reaching down just below the fold, sometimes some dark fuscous irroration from tornus to apex. Hindwing grey. f. *rustica* Haw. (Fig. 29) has the head dull ochreous, thorax and forewing plain dark fuscous. Intermediate forms occur with white ground colour varying from dirty white to fuscous.

The late J. Kyrki (*pers. comm.*) intended to publish a paper describing small unicolorous specimens (Fig. 32) which appear after other *fraxinella* as a distinct

species. He said the differences were only biological, the genitalia being very similar. Specimens of this 'form' are found in Britain in September or later.

The fully grown larva is greenish, marbled reddish brown dorsally, yellowish green along the sides, head pale brown, prothoracic plate with two black marks, anal plate black. The juvenile larva is pale yellowish with black head and anal plate.

At first, in the autumn the larva mines a leaf of ash (*Fraxinus excelsior* L.), then mining the bark where it overwinters, in the spring it mines a shoot or feeds externally in a slight web, causing the leaves to droop. It pupates in an open network cocoon either in the shoot or in some protected part of the tree.

Adults are found in June and July.

A common species throughout the British Isles.

Scythropia crataegella (L.) Plate II, Fig. 29

Wingspan 11–15 mm. Head white mixed dark fuscous, antennae mixed fuscous and whitish, thorax and tegulae white irrorated dark fuscous. Forewing white, dark fuscous fasciae at $\frac{1}{3}$ and $\frac{2}{3}$, a sequence of dark fuscous scales along the costa in the terminal area, some fuscous irroration between fasciae. Hindwing grey.

Larva when fully fed mottled reddish brown and greyish fuscous, dorsal stripe somewhat paler, and especially ochreous on first few segments. Head black with some whitish and brown lines, anal claspers deep reddish brown.

The larva feeds on hawthorn (*Crataegus*), blackthorn (*Prunus spinosa*) or *Cotoneaster* spp. from September mining a leaf, often several larvae per leaf, then it feeds externally in a web, mining again to spin a hibernaculum. After hibernation the larvae continue to feed gregariously in a web. Pupation takes place in the web and the pupa is of attractive shape and colouration, to be found in June and July.

The moths on the wing in July.

Common in the south of England, extending north to the Mersey and Humber.

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REFERENCES (Argyresthiinae and Yponomeutinae)

- Adkin, R., 1929. Notes on the Genus *Hyponomeuta*, with special reference *H. cognatellus* Hb., *H. padellus* L. and *H. malinellus* Z. *Proc. S. Lond. ent. nat. Hist. Soc.* **1928**: 48–54.
- Agassiz, D., 1981. *Swammerdamia passerella* (Zetterstedt) (Lepidoptera: Yponomeutidae), a valid species resident in Britain. *Entomologist's Gaz.* **32**: 217–224.
- Agassiz, D., 1984. Microlepidoptera in Wester Ross. *Entomologist's Rec. J. Var.* **96**: 12–13.
- Beirne, B.P., 1943. The Biology and Control of the small Ermine Moths (*Hyponomeuta* spp.) in Ireland. *Econ. Proc. R. Dublin. Soc.* **3**: 191–220.
- Emmet, A.M., 1976. The early stages of two species on Yponomeutidae. *Entomologist's Rec. J. Var.* **88**: 318.
- Ford, L.T., 1949. Plutellidae. *Proc. S. Lond. ent. nat. Hist. Soc.* **1949–50**: 85–93; reprinted in *Illustrated Papers on British Microlepidoptera* [ed. D.J.L. Agassiz], 1978: 87–95.
- Friese, G., 1960. Revision der Paläarktischen Yponomeutidae unter besonderer Berücksichtigung der Genitalien. *Beitr. Ent.* **10**: 1–131.
- Friese, G., 1969. Beiträge zur Insekten-Fauna der DDR: Lepidoptera–Argyresthiidae. *Beitr. Ent.* **19**: 693–752.
- Gerrits-Heybroek, E.M., 1978. Host plant preference of five species of small ermine moths (Lepidoptera: Yponomeutidae). *Ent. exp. appl.* **24**: 160–168.

- Hannemann, H.-J. 1977. Kleinschmetterlinge oder Microlepidoptera III. Federmotten (Pterophoridae) Gespinstmotten (Yponomeutidae) Eche Motten (Tineidae). *Die Tierwelt Deutschlands* 63. Teil. pp. 1-275.
- Kloet, G.S. & Hincks, W.D., 1972. A check list of British Insects, 2nd edn, Part 2. Lepidoptera.
- Kyrki, J., 1983. *Roeslerstammia* Zeller assigned to Amphitheridae, with notes on the nomenclature and systematics of the family (Lepidoptera). *Ent. Scand.* 14: 321-329.
- Kyrki, J., 1984. The Yponomeutoidea: a reassessment of the superfamily and its suprageneric groups (Lepidoptera). *Ent. Scand.* 15: 71-84.
- Kyrki, J., 1985. Description of the life history and immature stages of *Kessleria fasciapennella* and remarks on related species (Lepidoptera: Yponomeutidae s.str.). *Noulae Ent.* 65: 19-24.
- Leraut, P., 1980. Liste Systématique et Synonymique de Lépidoptères de France, Belgique et Corse. Supplément à *Alexanor et Bull. Soc. ent. Fr.*, 334 pp. Paris.
- Meyrick, E., 1928. A revised handbook of British Lepidoptera. London.
- Pierce, F.N. & Metcalfe, J.W., 1935. The genitalia of the tineid families of the Lepidoptera of the British Isles. Oundle.
- Schnack, K. (ed.), 1985. Catalogue of the Lepidoptera of Denmark. *Ent. Meddr.* 52 (2-3): 1-163.
- Stainton, H.T., 1849. A monograph on the European species of the Genus *Argyresthia*. *Zool.* 1849 Suppl. i-xxiv, Pl.4.
- Stainton, H.T., 1870. *The Natural History of the Tineina* 11: 1-125
- Thorpe, W.H., 1929. Biological races in *Hyponomeuta padella* L. *J. Linn. Soc. Zool.* 36: 621-634.
- Thorpe, W.H., 1930. Further observations of biological races in *Hyponomeuta padella* L. *J. Linn. Soc. Zool.* 37: 489-492.
- Werner, K., 1956. Die Larvalsystematik einiger Kleinschmetterlingsfamilien (Hyponomeutidae, Orthoteliidae, Acrolepiidae, Tineidae, Incurvariidae und Adelidae). *Abhandlungen zur Larvalsystematik der Insekten*, Nr. 2. 145 pp. Berlin.

1. *Y. evonymella*2. *Y. padella*3. *Y. rorella*4. *Y. plumbella*5. *Y. cagnagella*6. *Y. malinellus*7. *Y. irrorella*8. *Y. sedella*9. *E. stannella*10. *K. fasciapennella*11. *Z. hepariella*12. *P. combinella*13. *K. saxifragae*14. *S. compunctella*15. *S. caesiella*16. *S. passerella*17. *P. albicapitella*18. *P. lutarea*19. *S. pyrella*20. *C. subfasciella*21. *C. gyssemiella*22. *C. gyssemiella*23. *O. friesei* ♂24. *O. friesei* ♀25. *O. piniariella*26. *A. torquatella*27. *R. erxlebelli*28. *P. fraxinella*29. *S. crataegella*30. *R. pronubella*31. *P. fraxinella*32. *P. fraxinella* ?



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A PRELIMINARY SURVEY OF THE SCUTTLE FLIES OF HAYLEY WOOD, WITH DESCRIPTIONS OF THREE NEW SPECIES

R.H.L. DISNEY

*Field Studies Council Research Fellow, Department of Zoology, University of Cambridge,
Cambridge CB2 3EJ*

Dennis Unwin passed to me the scuttle flies (Diptera, Phoridae) collected in a Malaise trap he operated in Hayley Wood, Cambridgeshire (Grid ref. 52/2953) during 1980 and 1981. A total of 81 species were present in these collections. This amounts to about 25% of the British list. Eight species have already been reported as additions to the List (Disney, 1983, 1984, 1985a, 1986). The present paper describes three new species from Hayley Wood, tabulates all species recorded with their months of capture, and comments on this preliminary list of scuttle flies for the wood.

Megaselia hayleyensis sp. nov.

Megaselia septentrionalis auctt. nec (Schmitz, 1919), misident.

Only male known.

Head. Frons broader than high, brown and with 30–70 hairs. Upper supra-antennal bristles closer together than pre-ocellars and a little longer and more robust than lower pair. Antero-laterals at about same level as upper supra-antennals. Antials a little lower and somewhat, to clearly, closer to former than to latter. Antennae brown, tending to pale. Palps yellow with 6–8 bristles which are about as strong as lower supra-antennals. Proboscis with yellowish-brown labrum and simple labella bearing few short, colourless spines below.

Thorax. Brown. Notopleuron with only two bristles and without a notopleural cleft. Scutellum with a posterior pair of bristles and an anterior pair of hairs, which are at most as strong as those on scutum. Mesopleuron bare.

Abdomen. Tergites brown with short hairs, except for longer ones at posterior margin of tergite 6. Venter yellowish grey, with hairs on segments 3–6. Hypopygium as Fig. 1, being brown with dusky yellow anal tube.

Wing. Length 1.2–1.6 mm. Costal index 0.460–0.485. Costal ratios 2.41–2.88: 1.48–1.84: 1. Costal cilia 0.10–0.13 mm. Axillary ridge with 2 or 3 bristles. A fine hair at base of vein 3. Membrane distinctly grey tinged. All veins brownish. Vein Sc fades away before reaching R1. Haltere with brownish stem and yellowish knob.

Legs. Dusky yellow apart from brown apex of hind femur. Hairs below basal half of latter longer and stronger than those of antero-ventral row in distal half. Postero-dorsals of hind tibia differentiated but not strongly developed.

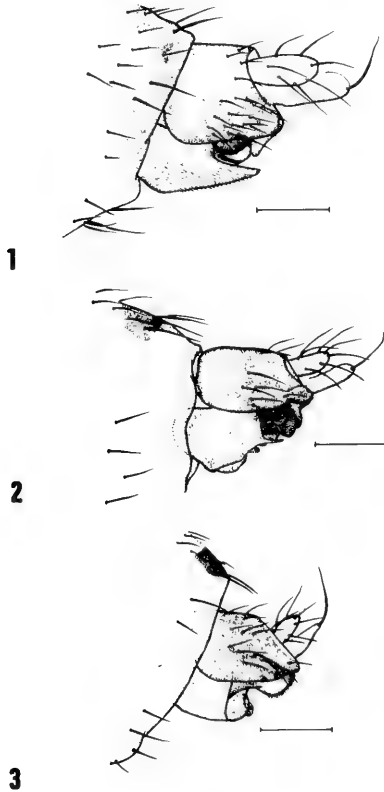
Material examined. Holotype male, Hayley Wood, Cambs., England, 11/18.viii.1980, coll. D.M. Unwin deposited in University Museum of Zoology, Cambridge.

Paratypes. Two males same data as holotype. One male from Monks Wood, Abbots Ripton, Cambs., 23/30.vii.1981, coll. R.S. George. All deposited in Zoology Museum, Cambridge. One male from Delamere Forest, Cheshire, 17.vi.1959, coll. C.N. Colyer and labelled '*M. septentrionalis*'. In British Museum (Natural History).

Affinities. In the keys of Lundbeck (1922) this species will run to couplet 52 on page 228, to *M. pulicaria* (Fallén). However it is immediately distinguished from all members of the *M. pulicaria* complex by the fading out of vein Sc before reaching R1. The largely yellowish legs, weak pair of hairs in front of the bristles on the scutellum, the two notopleurals, lack of notopleural cleft and the simple labella with few spines

below rule out most other species, including *M. septentrionalis* (Schmitz). I have previously reported confusion of *M. badia* Schmitz with the latter species (Disney, 1985b), and removed *M. septentrionalis* from the British list (none of the specimens from England, in the British Museum being this species). Subsequently (Disney, 1986) I have reported the true *M. septentrionalis* from Scotland. To add to the possible confusion a further member of this complex, *M. densior* Schmitz, was added to the British list (Disney, 1985b). It had been persistently misidentified as *M. badia* or *M. nigrescens* (Wood). *M. densior* sometimes has the anterior scutellars reduced. Such specimens differ from *M. hayleyensis* by having longer, down-curved, hairs on the posterior process of the left side of the hypandrium, and the posterior third of the lower margin of the left side of the epandrium emarginate to make it concave.

The next species also keys out at the same couplet in Lundbeck's key.



Figs 1-3. Male hypopygia viewed from left side. 1. *Megalotia hayleyensis* sp. nov. 2. *M. oligoseta* sp. nov. 3. *M. unwini* sp. nov. (Scale bars = 0.1 mm).

***Megaselia oligoseta* sp. nov.**

Megaselia hilaris Parmenter, 1966 nec Schmitz 1927, misident.

Only the male is known.

Head. Frons broader than high, brown and with 80–110 hairs. Upper supra-antennal bristles closer together than pre-ocellars and clearly longer and stronger than lower pair. Antero-laterals distinctly a little higher on the frons than antials, which are a little closer to former than to upper supra-antennals. Antennae brown. Palps yellow with 5–7 well developed bristles. Proboscis with pale brown labrum, and labella somewhat enlarged and with numerous short, almost colourless, spines below.

Thorax. Brown. Notopleuron with three bristles. Scutellum with an anterior pair of minute hairs and a posterior pair of strong bristles. Mesopleuron bare.

Abdomen. Tergites dark brown; the hairs short, except at posterior margin of tergite 6. Venter dusky with short hairs on segments 3–6. Hypopygium as Fig. 2, being brown with a dirty yellow anal tube and pale posterior process from the left side of the hypandrium (but which is in a more nearly median position than usual).

Wing. Length 1.25–1.55 mm. Costal index 0.437–0.462. Costal ratios 3.07–4.10: 1.14–1.43: 1. Costal cilia 0.10–0.12 mm. Axillary ridge with 2 bristles. A minute hair at base of vein 3. Membrane tinged greyish. Veins pale brown. Vein Sc ends before reaching R1. Haltere with dark stem and yellowish knob.

Legs. Brown, but palish brown in part. Hairs below basal half of hind femur longer than those of antero-ventral row of apical half. Posterodorsals of hind tibia only weakly differentiated from rest of hairs.

Material examined. Holotype male, Hayley Wood, Cambs., England, 18/26.ix.1980, Coll. D.M. Unwin deposited in University Museum of Zoology, Cambridge.

Paratypes. One male same data as holotype except dated 25.viii/4.ix.1980; one male from Tremadoc NNR, (Merioneth, Wales (Grid ref. 23/5640), deciduous woodland, 16.vii.1976, coll A.G. Irwin, and one male from Larkrigg Spring, Cumbria (Grid ref. 34/513879), coppice woodland, 1.vi.1982, coll. C.M. Drake, both in Zoology Museum, Cambridge. One male in British Museum (Natural History) (ref. ex. coll. C.N. Colyer B.M. 1970-489) from Coulsdon, Surrey, 14.vi.1965: coll. L. Parmenter (ref 65791); published Parmenter (1966) as '*M. hilaris*'.

Affinities. In the keys of Lundbeck (1922) this species also runs to couplet 52 page 228, to *M. pulicaria*. Like *M. hayleyensis* however, the vein Sc does not reach R1. It differs from this species in having three notopleural bristles, not two, and in having spinose labella. It shares this combination with *M. hilaris* Schmitz and *M. clemonsi* Disney, the male hypopygia of which have recently been illustrated (Disney, 1984, Figs 1 and 2). *M. hilaris* is immediately distinguished by the lack of hairs on the dorsal half of the epandrium. In *M. clemonsi* the posterior process of the left side of the hypandrium is a broad plate, contrasting with the small tapered process of *M. oligoseta*. Furthermore the latter species has less densely spinose labella and fewer hairs on the epandrium (hence the name *oligoseta*). Specimens of *M. oligoseta* with a costal index 0.44 will run to couplet 39 page 231 in Lundbeck's key, to *M. exigua* (a synonym of *M. bovista* (Gimmerthal)). This species, however, lacks the fields of numerous spines below the labella, has very dark brown legs, and brown palps.

Megaselia unwini sp. nov.

Only male known.

Head. Frons a little broader than high, brown and with 125–145 hairs. Upper supra-antennal bristles closer together than pre-ocellars and a little longer and a little more robust than lower pair. Antials lower on frons than antero-laterals and midway between latter and upper supra-antennals, or a little closer to the latter. Antennae brown. Palps yellowish with about 7 strong bristles, the terminal 4–5 being as long and strong as supra-antennals. Proboscis with pale labrum and simple labella with only a few scattered spines below.

Thorax. Brown. Notopleuron with three bristles, Scutellum with an anterior pair of short, fine hairs and a posterior pair of bristles. Mesopleuron bare.

Abdomen. Tergites brown with short hairs, even those at posterior margin of tergite 6 being only a little stronger. Venter brownish grey with hairs present on segments 3–6, but these hairs are short and fine, and only a little stronger on segment 6. Hypopygium as Fig. 3, being brownish with a pale brownish anal tube. While the left side of the hypandrium is more strongly developed than right side, it does not appear as a distinct posteriorly-directed lobe when viewed from left side.

Wing. Length 1.26 mm. Costal index 0.453. Costal ratios 3.05: 1.32:1. Costal cilia 0.09–0.10 mm. Axillary ridge with 2 bristles. A minute hair at base of vein 3. Wing membrane greyish. Veins grey. Vein Sc ends before reaching R1. Haltere with dark stem and pale knob.

Legs. Mainly brown, but fore legs in part yellowish. Fore tarsus with metatarsus somewhat stout (it being only 3.5 times as long as broad and about 0.7 of maximum breadth of tibia). Hairs below basal half of hind femur short, being subequal to those of antero-ventral row of distal half. Postero-dorsals of hind tibia only weakly differentiated.

Material examined. Holotype male, Hayley Wood, Cambs., England, 11/18.viii.1980, coll. D.M. Unwin, Deposited in University Museum of Zoology, Cambridge.

Affinities. In the keys of Lundbeck (1922) this species runs to couplet 21 on page 226, to *M. anisodactyla* (a synonym of *M. cinereifrons* (Strobl)). In *M. cinereifrons*, however, the antial bristles stand close to, and nearly directly below, the antero-laterals; the anal tube is longer relative to the length of the dorsal face of the epandrium; the left side of the hypandrium is extended posteriorly as a distinct lobe; the hairs below the basal half of the hind femur are clearly longer than those of the antero-ventral row of the apical half; and the bristles of the palps are much shorter.

RESULTS OF SURVEY

Table 1 presents the results of the survey. There are certain conspicuous omissions from this list. For example the dearth of *Metopina* species, *Phalacrotophora*, and *Phora*, as well as the single species of *Triphleba*. This probably reflects the restriction to a single method of collecting (see Disney *et al.*, 1982). In addition a number of species only occur in the winter months. Indeed it is surprising that such selective collecting, in terms of method and seasonal coverage, should produce a quarter of the British list of scuttle flies. This suggests that Hayley Wood is unusually rich entomologically. This is reflected in the number of rare species, including those new to Britain and new to science.

The seasonal data are plotted in Fig. 4 (H—H) and compared with a survey of upland moorland habitats in northern England, using pitfall traps (Disney *et al.*, 1981; Fig. 4 uh—uh) and a survey of Phoridae emerging from English lowland pasture

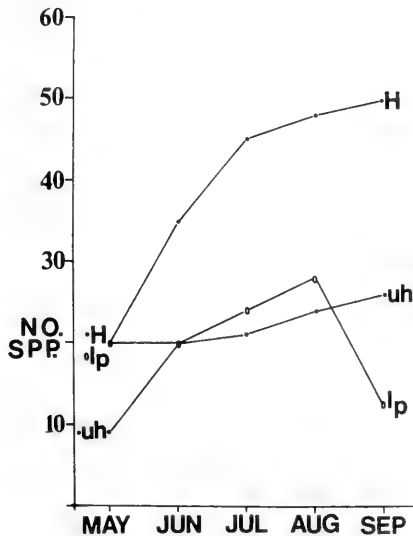


Fig. 4. Phenology plots for number of species in Hayley Wood survey (H—H), lowland pastures survey (1p—1p) and upland habitats survey (uh—uh).

soils (Disney *et al.*, 1981; Fig. 4 1p—1p). The actual numbers of species cannot be directly compared because of the differences in the methods employed. However the shapes of the curves can be compared in broad terms at least. The much steeper rise in number of species at Hayley Wood as the summer progresses contrasts with the upland habitats survey. The scuttle flies emerging from lowland pastures, however, showed a peak in August and a significant drop in species richness in September. Only future surveys will establish if these differences are characteristic of the different habitat types.

The late summer peak in species richness at Hayley Wood perhaps reflects a seasonal change in suitable ecological resources available to scuttle flies. We are still very ignorant of scuttle fly biology. For only a quarter of the species listed in Table 1 is there hard evidence on larval biology. Four of these are breeders in small carrion, such as dead snails or insects (*M. brevicostalis*, *M. giraudii*, *M. ruficornis* and *S. bergenstammi*); whilst nine species breed in fungi (*M. flava*, *M. flavicans*, *M. frameata*, *M. hirtiventris*, *M. latior*, *M. lutea*, *M. nigra*, *M. spinicincta* and *M. sylvatica*); and six species are known to be specialised predators or parasitoids:— *M. aequalis* and *M. ciliata* larvae feed on slug eggs; *M. melancocephala* and *M. pulicaria* on spider eggs; *M. fuscineris* parasitises *Vitreaea* snails and *M. obscuripennis* parasitises *Trichosia* (Sciariid midge) larvae. The fungus breeding species tend to be more in evidence later in the summer, suggesting the increase in fungi at this time of year may be one factor responsible for the increase in the species richness of the scuttle fly fauna.

Hayley Wood clearly invites more detailed investigation by entomologists. The provisional survey of the scuttle flies suggests an unusually rich fauna.

REFERENCES

- Disney, R.H.L., 1983. Four species of *Megaselia* (Diptera: Phoridae) new to Britain from Hayley Wood, Cambridgeshire. *Entomologists' Rec. J. Var.* **95**: 181-182.
- Disney, R.H.L., 1984. Six species of *Megaselia* (Diptera, Phoridae) from northern England new to Britain, and including two new to science. *Naturalist, Hull* **109**: 11-18.
- Disney, R.H.L., 1985a. Records of scuttle flies (Diptera: Phoridae) from Flatford Mill, including two species new to Britain. *Trans. Suffolk Nat. Soc.* **21**: 13-17.
- Disney, R.H.L., 1985b. Additions and amendments to the list of British *Megaselia* (Dipt., Phoridae). *Entomologist's mon. Mag.* **121**: 243-248.
- Disney, R.H.L., 1986. Two new species of scuttle fly (Diptera, Phoridae) from Malham Tarn, North Yorkshire. *Naturalist, Hull* **111**: 113-121.
- Disney, R.H.L., Coulson, J.C. & Butterfield, J., 1981. A survey of the scuttle flies (Diptera: Phoridae) of upland habitats in northern England. *Naturalist, Hull*, **106**: 53-66.
- Disney, R.H.L., Henderson, I.F., Perry, J.N. & Clements, R.O., 1981. Phoridae (Diptera) from English pasture soils. *Pedobiologia*, **22**: 366-378.
- Disney, R.H.L., Erzinçlioglu, Y.Z., Henshaw, D.J. de C., Howse, D., Unwin, D.M., Withers, P. & Woods, A., 1982. Collecting methods and the adequacy of attempted fauna surveys, with reference to the Diptera. *Fld. Stud.* **5**(4): 607-621.
- Lundbeck, W., 1922. *Diptera Danica part VI Pipunculidae, Phoridae*. London: Wesley.
- Parmenter, L., 1966. *Megaselia (Megaselia) largifrontalis* Schmitz (Dipt., Phoridae) new to the British list and some other Phoridae taken in April to July 1965. *Entomologist* 257-260.

Table 1. Scuttle Flies (Phoridae) recorded from Hayley Wood during 1980 and 1981.

Species	May	June	July	August	Sept
<i>Anevrina thoracia</i> (Meigen)	+	+		+	+
<i>Beckerina umbrimargo</i> (Becker)			+		
<i>Conicera floricola</i> Schmitz			+	+	+
<i>Diplonevra florea</i> (Fabricius)		+		+	
<i>D. nitidula</i> (Meigen)	+	+	+	+	+
<i>D. pilosella</i> Schmitz	+	+	+	+	+
<i>Gymnophora arcuata</i> (Meigen)		+	+	+	
<i>G. quartomollis</i> Schmitz			+		
<i>Megaselia aculeata</i> (Schmitz)		+			+
<i>M. aequalis</i> (Wood)	+	+	+	+	+
<i>M. altifrons</i> (Wood)			+		
<i>M. badia</i> Schmitz		+	+	+	+
<i>M. basispinata</i> (Lundbeck)			+	+	
<i>M. brevicostalis</i> (Wood)				+	+
<i>M. ciliata</i> (Zetterstedt)	+	+	+	+	+
<i>M. cinerea</i> Schmitz		+	+	+	+
<i>M. clemonsi</i> Disney			+	+	+
<i>M. collini</i> (Wood)			+	+	+
<i>M. correlata</i> (Schmitz)			+		
<i>M. crassipes</i> (Wood)				+	

Table 1 continued.

Species	May	June	July	August	Sept
<i>M. dubitalis</i> (Wood)		+			
<i>M. emarginata</i> (Wood)		+	+	+	
<i>M. flava</i> (Fallen)				+	+
<i>M. flavicans</i> Schmitz		+		+	+
<i>M. frameata</i> Schmitz				+	+
<i>M. frontalis</i> (Wood)		+			+
<i>M. fungivora</i> (Wood)	+	+	+	+	+
<i>M. fusciclava</i> Schmitz			+		
<i>M. fuscinervis</i> (Wood)			+		
<i>M. fuscipalpis</i> (Lundbeck)	+				
<i>M. giraudii</i> (Egger)		+	+	+	+
<i>M. hayleyensis</i> Disney				+	
<i>M. hibernans</i> Schmitz					+
<i>M. hilaris</i> Schmitz				+	+
<i>M. hirticaudata</i> (Wood)			+		
<i>M. hirticrus</i> (Schmitz)				+	+
<i>M. hirtiventris</i> (Wood)	+	+	+	+	+
<i>M. hortensis</i> (Wood)			+		
<i>M. ignobilis</i> (Schmitz)			+		
<i>M. infraposita</i> (Wood)			+		
<i>M. insons</i> (Lundbeck)	+	+	+	+	
<i>M. intercostata</i> (Lundbeck)		+			
<i>M. involuta</i> (Wood)			+		
<i>M. latior</i> Schmitz					+
<i>M. latipalpis</i> (Schmitz)	+	+			
<i>M. lutea</i> (Meigen)			+	+	+
<i>M. melanocephala</i> (von Roser)			+		
<i>M. minor</i> (Zetterstedt)					+
<i>M. nigra</i> (Meigen)					+
<i>M. nigriceps</i> (Loew)			+	+	+
<i>M. obscuripennis</i> (Wood)		+	+	+	+
<i>M. oligoseta</i> Disney				+	+
<i>M. pectoralis</i> (Wood)	+	+		+	+
<i>M. pleuralis</i> (Wood)	+	+	+		+
<i>M. propinqua</i> (Wood)		+			
<i>M. protarsalis</i> Schmitz	+	+			

Table 1 continued

Species	May	June	July	August	Sept
<i>M. pulicaria</i> (Fallen)	+	+	+	+	+
<i>M. pumila</i> (Meigen)	+	+	+	+	+
<i>M. pusilla</i> (Meigen)		+	+	+	+
<i>M. pygmaea</i> (Zetterstedt)			+	+	+
<i>M. rubella</i> (Schmitz)			+		
<i>M. rubescens</i> (Wood)	+	+	+	+	+
<i>M. ruficornis</i> (Meigen)	+	+	+	+	+
<i>M. simplex</i> (Wood)					+
<i>M. simulans</i> (Wood)			+		+
<i>M. sinuata</i> Schmitz				+	+
<i>M. sordida</i> (Zetterstedt)					+
<i>M. spinicincta</i> (Wood)	+	+	+	+	+
<i>M. stichata</i> (Lundbeck)			+	+	
<i>M. styloprocta</i> Schmitz	+	+			
<i>M. subconvexa</i> (Lundbeck)	+	+		+	+
<i>M. subfuscipes</i> (Schmitz)		+			
<i>M. subtumida</i> (Wood)				+	+
<i>M. superciliata</i> (Wood)				+	+
<i>M. surdifrons</i> (Wood)		+		+	+
<i>M. sylvatica</i> (Wood)			+	+	+
<i>M. tarsalis</i> (Wood)				+	+
<i>M. uliginosa</i> (Wood)					+
<i>M. unwini</i> Disney				+	
<i>Spiniphora bergenstammi</i> (Mik)			+		
<i>Triphleba nudipalpis</i> (Becker)			+	+	+
Totals (81 species overall)	20	35	45	48	50

Unusual abundance of *Trox scaber* L. — Having always considered *Trox scaber* L. to be a very local beetle, I was pleased and surprised to find it in some numbers recently. During the period 25–31.v.86, between 1 and 17 specimens per night were attracted to an MV light in my Peckham garden. A large Black Poplar close by presumably houses an owl's nest (or similar) from which the beetles were emerging. — Richard A. Jones, Garden Flat, 131 Chadwick Road, London SE15 4PY.

BUTTERFLY SEARCH AND RESEARCH IN THE NORTHERN ANDES

(Transcript of the talk given to the British Entomological & Natural History Society,
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M.J. ADAMS

Coombe Cottage, Blandford Road, Shillingstone, Dorset DT11 0SF

When I made my first butterfly-collecting trip to South America, I'd already had 11 years' collecting experience — but all the same I was a very recent, very green graduate.

On the first excursion, and the one the following year, to a tiny mountain range on the north coast of Colombia, the aim was to collect from all families and at all altitudes. Very successful they were too, bringing back over 600 species to the British Museum of Natural History. Yet, early on, my heart went out to a group of high-altitude Browns that reminded me of the alpine *Erebia* spp. and my efforts during four further trips to the northern Andes concentrated on this satyrid tribe, the Pronophilini. Working on the systematics, biogeography and evolution of its species has been like doing a jigsaw puzzle: at first I was collecting pieces without having invented the puzzle; later, when the puzzle took form in my mind, the pieces slotted together beautifully, but several missing ones still had to be searched for. Enough of metaphors; let's get to South America!



Fig. 1. Map of the Andes of Colombia (and Venezuela). ■ = Land over 2000 m.

From the north Colombian town of Barranquilla, on a good day, the Santa Marta mountain massif can be seen. Its slopes rise out of the Caribbean up to the highest point between Canada and Ecuador (5775 m) in just 30 miles. Tropical rain-forest gives way to cloud-forest and, above that, grassy moors are overlooked by permanent snow and glaciers. The whole range is the size of Yorkshire.

I could talk all evening about the attempts my friend and colleague George Bernard and I made to get high up into the Santa Marta mountains; but I'll mention just one of them, beginning in the hot and dusty village of Atánquez in its southern foothills with the purchase – for £10 – of a donkey, something we never did again! On the first day of the ascent, we were already lugging the rucksacks ourselves and tugging at the reluctant beast. Indigenous mountain Indians pored over a letter from the British Museum of Natural History (upside-down!) and accepted it as a permit to travel in their territory, but warned us of the lengthy and dangerous journey ahead. Very soon, however, we were safely encamped at 2300 m at an idyllic site in primaevaeal cloud-forest, replete with huge sprays of orchid flowers, tree-frogs . . . and butterflies, including the first members we'd seen of the Pronophilini: many are dark brown and drab, with undersides disguised as dead leaves, but *Lymanopoda nevada* is largely white – and an important piece in the jigsaw-to-be (see Fig. 5).

Hardly surprisingly in a mountain range so high and yet so isolated, endemism is rife. On our return, we found that 12 of our 22 pronophiline species are unique to the Santa Marta massif.

To the south-east, appearing to hover over the haze of the deep valley between, is the northernmost 'finger' of the main Andes. On our third trip to South America, with the help of a sturdy mule, we were at last able to reach its cloud-forests on our ascent to an isolated farmhouse on the border with Venezuela. No fewer than 12 of the 35 pronophiline species in this Valledupar range turned out to be totally new, but several were clearly closely related to the ones we knew from Santa Marta. In each case, the 'cousin' species occupied the same – often very limited – altitude ranges and behaved in similar ways. Some were very close in appearance to each other, while the relationship between others (like the blue *Lymanopoda caeruleata* and the brown *L. caucana* – Fig. 2) could only be recognized from 'insignificant' characters like white dots on the forewings and 'invisible' characters such as male genital structure; and 19th-century taxonomists had – or would have – classified them in different sections of their genus, so much did they differ in their more obvious morphological patterns.

Venezuela also has its own Andean cordillera, the Mérida range. Not liking the country much – and having spent three days in jail for 'lack of respect' to an official – I won't say much about the time we spent there, save that it too has an area of cloud-forest and *Espeletia*-studded moors above the tree-line, and 35 pronophiline species, many again different from those in the nearby Santa Marta and Valledupar mountains. *Penrosada franciscae* illustrates a common form of disruptive underside pattern, its straight yellow band dividing its hindwing into two parts, neither recognizable to a predator as butterfly-shaped.

Normally 'whistle-stop' collectors who can reckon to find all the resident species during three days in each place and are then keen to move on, George and I did find time in the Mérida range to search for pronophiline early stages. Most of the forest species of the tribe are associated with climbing bamboos of the genus *Chusquea*, and on two species we found a dozen different larvae. All are wonderfully camouflaged by day, green ones resting at the tips of the 'chusque' leaves, brown ones near the nodes on the leaf-sheaths: we could only find them by searching by torchlight at night. Pupae also came in different shapes and colours – but unfortunately the whole lot turned to 'pulp' when we took our collection on a long hot journey.

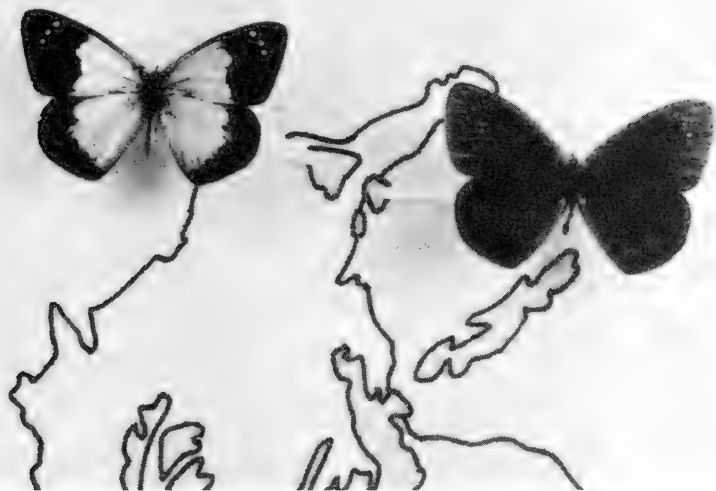


Fig. 2. *Lymanopoda caeruleata* (left) and *L. caucana* (right).



Fig. 3. *Pedaliodes leucocheilus* (top left), *P. suspiro* (bottom left), *P. pileta* (top right), *P. japhleta* (middle right) and *P. poesia* (bottom right).



Fig. 4. *Altopedaloides albonotata* (top; underside) and *A. albarregas* (bottom; underside).

The Venezuelan Andes allowed us to fit more pieces into the biogeographical jigsaw as we found species (and subspecies) closely related to those in the Santa Marta and Valledupar ranges (e.g. the *Pedaliodes poesia* group in Fig. 3.). But – as we'd suspected in the Valledupar forests – the jigsaw has more than a 'horizontal dimension': it has a vertical component too. When we found an *Altopedaliodes* species zipping between flowering trees just below the tree-line, we thought it looked distinct from the ground-loving moorland species, *A. albonotata*: indeed it was, and a new species, which we named *albarregas* (Fig.4). The two occupied adjacent bands of altitude on the same mountain slope. The difference in the habitats they lived in didn't seem to be necessary for this side-by-side existence up the altitude gradient, however, because within the cloud-forests, other pairs and trios of closely-allied species displayed this parapatric distribution without their being any habitat changes at the elevations where they met. There is plenty of scope for ecological research into the mechanisms which keep these species in such tightly-defined altitude bands, if – as seems likely – their larval food-plants have much broader distributions up the mountainsides. It is significant that morphologically – especially on the uppersides which are only visible in flight – they are often surprisingly distinct, keeping only their 'insignificant' characters in common: maybe the differences act as courtship or territorial signals designed to exclude neighbouring species?

As far as the origin of this vertical zonation is concerned, I have proposed a theory which depends on the effects of the Pleistocene Ice Ages on the Andes, as gleaned by pollen analysis in Colombia: spread of an ancestral species was permitted between

isolated mountain ranges when temperatures dropped and cloud-forests descended; the subsequent warm period separated the mountain populations from each other, as they rose up the mountainsides, and allowed speciation. In the next glacial period, 'cousin' species could have spread into each other's mountains and competition forced them to partition the available habitat into mutually-exclusive bands of altitude. The species moving into the uppermost bands would then have stood less chance of re-spreading in future glacials and might have diverged in isolation for ever more. Certainly, the degree of endemism at the species and genus levels in the northern Andes is highest among those confined to the highest elevations. When this theory was formulated, the boundaries of the jigsaw puzzle were finally fixed.

In my latest three trips to the Andes, I have worked all three of the main cordilleras of Colombia, extending the jigsaw to include a total of six main 'mountain islands'. Although the weather is wetter in central and southern Colombia, and I spent days in the tent waiting for drizzle to stop and clouds to evaporate, the pronophiline fauna is much richer (92 species in the Eastern Cordillera, for example) and new jigsaw pieces 'flooded in'. Of the 160 species in the six ranges, almost half have allopatric sister-species in two or more of them, and more than half belong to series of parapatric species replacing each other up the mountainsides. Perhaps the genus *Lymanopoda* furnishes the best examples (Fig. 5), with four parapatric species in each of the Eastern and Central Cordilleras, two of them in the Eastern Cordillera having allopatric cousins on the opposite slopes of the *same* range, and the uppermost species also having close relatives in the Santa Marta and Valledupar mountains – all



Fig. 5. *Lymanopoda huilana*, *L. melia*, *L. excisa* and *L. pieridina* (left, top to bottom), *L. nevada* (middle top), *L. schmidii* (centre), *L. paramera*, *L. viventieri*, *L. lactea*, *L. ionius* and *L. samius* (right, top to bottom).

12 being different. The only one that the illustration leaves out is my most coveted missing jigsaw piece, *L. mirabilis*: it is known only from two inadequately-labelled males caught in the last century and is surely to be found above the tree-line on the western slope of the Eastern Cordillera – where the jigsaw dictates that it must live, but where the weather didn't clear up for me to prove it.

BIBLIOGRAPHY

- Adams, M.J. 1977. Trapped in a Colombian Sierra. *Geog. Mag.* **49**: 250–254.
 Adams, M.J. 1983. Andean Brown Butterflies. In *The I.U.C.N. Invertebrate Red Data Book*: 473–476. Gland, Switzerland.
 Adams, M.J. 1985. Speciation in the Pronophilina Butterflies (Satyridae) of the Northern Andes. *J. Res. Lepidoptera*, 1985, supplement **No. 1**: 33–49.
 Adams, M.J. & Bernard, G.I. 1977. Pronophilina butterflies (Satyridae) of the Sierra Nevada de Santa Marta, Colombia. *Syst. Entomol.* **2**: 263–281.
 Adams, M.J. & Bernard, G.I. 1979. Pronophilina butterflies (Satyridae) of the Serrania de Valledupar, Colombia–Venezuela border. *Syst. Entomol.* **4**: 95–118.
 Adams, M.J. & Bernard, G.I. 1981. Pronophilina butterflies (Satyridae) of the Cordillera de Mérida, Venezuela. *Zool. J. Linn. Soc.* **4**: 343–372.
 Adams, M.J. 1986. Pronophilina butterflies (Satyridae) of the three Andean Cordilleras of Colombia. *Zool. J. Linn. Soc.* **87**: 235–320.

BOOK REVIEW

A Selborne Year. The Naturalist's Journal for 1784. Gilbert White. Edited by Edward Dadswell and illustrated by Nichola Armstrong. Webb & Bower & Michael Joseph, 1986, 126 pages, £10.95.

The Reverend Gilbert White, the famous eighteenth century naturalist and author of the *The Natural History of Selborne*, kept regular diaries, firstly his Garden Kalendar started in 1751 and from 1768 until his death, the Naturalist's Journal. Original manuscripts of both of these are in the The British Library in London. *A Selborne Year* takes the entries in the Naturalist's Journal for 1784 and presents them with specially commissioned colourful illustrations based on the subject matter of the journals. The illustrations will be of particular interest to those who know Selborne. There is also an introduction by the Editor providing basic information on White and introducing White's text.

Gilbert White covers a broad range of material in the journals including subjects not developed in his book. He makes regular weather records, gardening notes, reports on the agricultural crops of the area, the wild plants, animals, village people, visitors to The Wakes, the state of the roads to Selborne, his tortoise Timothy and special events like the passage of the air balloon over Selborne that year. Gilbert White as a true countryman is very perceptive of the seasonal changes in his environment and a keen and able observer of its natural history. The text of the Naturalist's Journal used here is a slightly shortened version. White expanded on the journal entries in writing the letters to Thomas Pennant and Daines Barrington that were to be published as *The Natural History of Selborne*. Much historical research has gone into the illustrations (although there are a few small errors) and they convey the spirit of White's eighteenth century Selborne which was remote and isolated. *A Selborne Year* is a colourful and attractive book which will be appreciated by Selbornians and general naturalists alike.

1986 ANNUAL EXHIBITION
Chelsea Old Town Hall — 1 November 1986

The following account has been compiled by R. Tubbs (British Butterflies), D. and P. Sterling (British Macrolepidoptera), J.M. Chalmers-Hunt (British Microlepidoptera), P. Chandler (Diptera), R.A. Jones (Coleoptera and Hemiptera), A.J. Halstead (other groups) and E.S. Bradford (illustrations).

BRITISH BUTTERFLIES

This exhibition showed further research by breeders in their attempt to unravel the genetic or environmental basis of the many butterfly aberrations. But this time melanic forms seemed to be a constantly recurring theme. There were three wild caught melanic *Polygonia c-album* L. (one by A.M. Jones and two by R.C. Revels) a wild caught *Argynnis paphia* L. ab. *confluens* Spieler (D. Stokes) and others. Were these the result of some very cold night in the pupal period? The effect on the imago of extremes of temperature in the pupal stage was dramatically illustrated by K.E.J. Bailey's exhibit. This was an overwhelming exhibit. So that other workers in this field can compare their results, this exhibit is here reported in considerable detail.

BAILEY, K.E.J. — For some years, Mr Bailey has been carrying out important research into the effects of high and low temperature on young pupae and this very impressive exhibit showed the results of some of this work. The exhibit included the following:-

(1) *Boloria euphrosyne* L. (a) ab. *confluens* male. Glos. June 1985. It paired with two home-bred females. No variations appeared in the F1 generation. (b) Ab. *pitonii* May 1985 (high temp.). (c) Ab. *confluens* May 1985 (low temperature for long period). (d) Two specimens showing albinistic tendency. Bred from larvae fed on *Viola* sprayed with dimethyltyrosine solution (this compound blocks the formation of melanin during pigment formation), June 1984.

(2) *Euphydryas aurinia* Rott., specimen approaching ab. *melanolinea*. June 1985. (low temperature for long period).

(3) *Argynnis paphia* L. (a) Morphocline showing male gradation from near type to extreme ab. *ocellata*, July 1985, (low temperature). (b) Morphocline showing gradation from near type fm. *valezina* to extreme ab. *ocellata* on *valezina* form, July 1985, (low temperature). *Valezina* appears to be more unstable than the type form and tends to produce more extreme aberrations under low temperatures. There was an additional range of extreme forms of fm. *valezina* up to ab. *nigricans*, all in a second brood emerging in January 1986 (low temperature). No mean achievement to get *A. paphia* emerging in mid winter.

(4) *Vanessa atalanta* L. August 1984 ab. *klemensiewiczzi* Schille. (high temperature). This aberration has the white spots, blue markings and the red band blurred and suffused. In the 1981 Annual Exhibition this aberration was exhibited, having been produced by low temperatures. Two other aberrations were also in the present exhibit including ab. *merrifieldi* bred in June 1983, which had been produced by low temperature over a long period.

(5) *Aglais urticae* L. extreme ab. *conjuncta* July 1984 (high temperature).

(6) *Nymphalis polychloros* L. extreme ab. *testudo*, July 1985 (high temperature). This specimen was so dark that it bore almost no resemblance to the type form.

(7) *Vanessa cardui* L. various suffused and darkened forms approaching ab. *elymi* Rambur bred in October 1985 (low temperature for long period).

(8) *Polygonia c-album* L. A large number of living bred specimens were shown. These had been bred from a pairing in September and reared under a photoperiod of 17 hours of light to 7 hours of darkness per day to yield mainly fm. *hutchinsoni* Robson. The specimens were suffused with black up to ab. *reichstettensis* Fettig, which was the result of low temperature during early pupal life. Both the parents had also been ab. *reichstettensis* induced by low temperature on the pupae. This treatment does not affect fertility. This aberration can be due to either high or low temperature exposure.

(9) *Apatura iris* L. morphocline showing gradation from ab. *iolata* Cabeau to near ab. *lugenda* Cabeau July 1985 (high temperature). In this aberration the white marking is almost totally absent.

(10) *Ladoga camilla* L. morphocline of 19 specimens showing underside gradation from type to ab. *nigrina* Weymer July 1985 and a similar series set upperside, second brood October 1985 (low temperature), also extreme examples of ab. *nigrina* October 1985 (low temperature).

BARRINGTON, R.D.G. — An outstanding exhibit of specimens all taken in 1986.

(1) *Maniola jurtina* L. A series taken in two nearby meadowland localities in north Dorset, including a bilateral gynandromorph, two female ab. *fracta* Zweigelt, ab. *antiaurorancea* Leeds, a male ab. *anticastanea* Leeds, a male ab. *postmultifidus* Lipscomb and ab. *crassipuncta* Leeds and a series of eight females showing a range of variation in the colouring of the normally fulvous forewing band, through orange and yellow bands to a specimen with white bands. From the south Wilts downs, there was an extreme male ab. *atrescens* Leeds with almost uniformly black hind wings. From Co. Kerry, Eire, an immense female with huge eye spots — an exaggerated form of the local race of *jurtina* in Eire (subspecies *iernes* Graves) which tends to be of increased size with bold black eye spots.

(2) *Argynnis paphia* L. An extreme mixed gynandromorph from north Dorset — left side type male, right hind wing fm. *valezina* with specks of type male in it and right forewing a mixture of type male and fm. *valezina*. An extreme male ab. *confluens* Spuler taken by Eve Barrett, north Dorset July 1986 and exhibited on her behalf. A male with no spot on the right hand side.

(3) *Hipparchia semele* L. ab. *holanops* Brouwer. Mr Barrington also exhibited some very attractive and superbly executed watercolour paintings which he has made of British butterflies; some showed these in their natural habitats and some illustrated aberrations taken by the exhibitor.

CRONIN, A.R. — a case of Lepidoptera (some from the Philippines) which included a few aberrations caused by unusual temperature conditions and some minor variations caused by different food plants, but little detailed information was contributed.

DENNIS, R.C. — *Maniola jurtina* L. A most interesting exhibit of six aberrations all taken on six visits between 13th and 24th July 1985 from the verge-side of a small country lane near Lewes in East Sussex. The site was 12 feet wide by 200 feet in length and consisted of rough grass waist high with many wild flowers which had not been cut for two seasons. The exhibit included a most striking female with pale fulvous bands in the hind wings with 2 or 3 black radial lines in each cell and also two ab. *cinerea* Cosmovici (one male and one female). The latter is a very uncommon aberration in which the normal dark ground colour is replaced with cinnamon colour. As this aberration is likely to be a simple recessive and as *M. jurtina* is easy to breed, it seems a great pity that the exhibitor did not try to obtain eggs from the female.

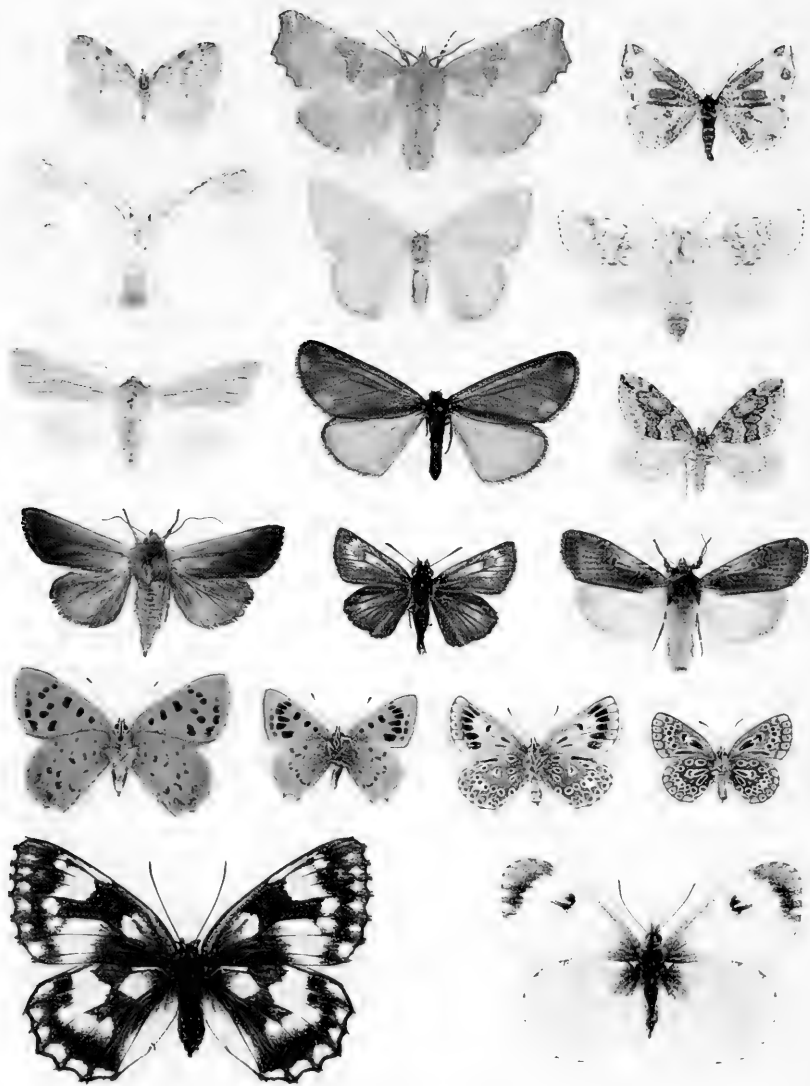


Plate III. ANNUAL EXHIBITION 1985

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17		18

- 1: *Thumatha senex*, Stodmarsh, 30.vi.85, B. Skinner. 2: *Scoliopteryx libatrix*, Playden, 3.viii.76, M.W.F. Tweedie. 3: *Pseudopanthera macularia*, Ballyvaughan, Co. Clare, 9.vi.77, B.R. Baker. 4: *Euproctis similis*, Orlestone Wood, 24.viii.80, B.K. West. 5: *Comibaena bajularia*, Headley, 25.vi.76, P.A. Martin. 6: *Agrotis ripae*, Cornwall, Bartlett coll., Bristol Museum. 7: *Mythimna pallens*, Hamstreet, 19.ix.85, B. Skinner. 8: *Tyria jacobaeae*, Ashton Wold, 1985, M. Rothschild. 9: *Thera juniperata*, Wroughton, 16.x.85, D. Brotheridge. 10: *Mythimna litoralis*, Hartlepool, 1903, Bartlett coll., Bristol Museum. 11: *Thymelicus acteon*, Wool, 6.viii.85, J.T. Scanes. 12: *Xestia c-nigrum*, Ninfield, 5.x.85, M. Parsons. 13: *Lycaena phlaeas*, Portland, 3.x.84, A.S. Harmer. 14: *L. phlaeas*, Surrey, ix.85, A.M. Jones. 15: *Polyommatus icarus*, ix.85, L.D. Young. 16: *P. icarus*, 29.ix.85, L.D. Young. 17: *Melanargia galathea*, North Dorset, vii.85, R.D.G. Barrington. 18: *Anthocharis cardamines*, Leicester, 30.v.85, A.P. Middleton.

FENN, J.L. — *Thymelicus lineola* Ochs. An extremely dark specimen from Barton Mills, Suffolk, taken 17.viii.85.

HARMER, A.S. — a number of aberrations including *Thecla betulae* L. with extra orange scaling, *Plebejus argus* L. ab. *unielongata* Wykes, *Lysandra coridon* Poda — two males and one female of an F2 generation bred from a wild caught ab. *fowleri* South illustrating the frequent slight suppression of the effect of this recessive gene in the female sex, *Celastrina argiolus* L. with nice colour forms from a spring brood — ab. *clara* Tutt and ab. *pallida* Tutt and other minor aberrations of various species.

JONES, A.M. — various aberrations including a melanic *Polygonia c-album* L. ab. *reichstettensis* Fettig captured wild on 19.vii.86, *Boloria selene* L. two F3 generation females with extensive black markings, *Maniola jurtina* L. a female ab. *anommata* Verity, a male ab. *atrescens* Leeds and a nice female ab. *fracta* Zweigelt. (The exhibitor has eggs from several other females of this aberration and we look forward to seeing F1 and F2 generations in the future.)

NASH, S. — insects taken on the Isles of Scilly. The butterflies included the immigrant *Colias croceus* Geoffroy, and the indigenous *Pararge aegeria* ssp. *insula* How and *Maniola jurtina* ssp. *cassiteridum* Graves. This local form is boldly marked and richly coloured and very common on the islands. It is quite different from the form found on the English mainland. I found there was a slight difference between the forms on the different islands.

REVELS, R.C. — This interesting exhibit included two differing melanic forms of *Polygonia c-album* L. taken in 1986 — one a very extreme ab. *reichstettensis* Fettig with almost total black suffusion taken 20.vii.86 in Cambridgeshire and the other ab. *obscura* Closs taken 8.viii.86 in Hampshire. This had much less black suffusion.

RUSSWURM, A.D.A. and MIDDLETON, H.G.M. — *Lysandra coridon* Poda one male and one female ab. *confluens* Tutt from Portland August 1985 and 1986, a female *Pieris rapae* L. ab. *fasciata* Tutt with the twin black spots on the forewings joined by a dusting of black scales captured Brockenhurst 8.ix.86, and a female *Maniola jurtina* L. ab. *antialba* Leeds, Portland, 6.viii.86.

SALMON, Dr M. A. — exhibited a specimen of the American *Vanessa virginiensis* Drury. He had found this specimen in the J. B. Purefoy Collection, which he had recently acquired. The data label stated 'Witherslack 24 September 1921'. J.B. Purefoy had obtained this butterfly from L. Hugh Newman in September 1956. This species is widely distributed in North America and also occurs in the Canary Islands whence it is possible the British caught specimens have originated. The first recorded capture in Britain was in 1828 and between 15 and 20 have been recorded since then. One was taken by our member Mr S.A. Knill-Jones in the Isle of Wight in 1956.

STACEY, I.F. — *Anthocharis cardamines* L. Two males and one female all showing an increase in the black markings which have been described as ab. *crassipuncta*, ab. *costaenigrata* and ab. *nigrocellularis*, all bred from a female taken in 1985 which was also heavily marked. The exhibitor obtained an F2 pairing but mortality was very high and only three good pupae resulted. An increase in the extent of black markings in the Pieridae appears to be genetically multifactorial. *Euphydryas aurinia* Rott. specimens from two stocks bred for the second year running in high temperature conditions, resulting in some uneven colouration. *Strymonidia pruni* L., *Boloria euphrosyne* L and *Pieris brassicae* L. — two years breeding of each species showing minor variation. *Nymphalis polychloros* L. three males with variation in the extent of

black scaling resulting from the freshly formed pupae being kept in a low temperature. *Apatura iris* L. a male with reduced white forewing markings reared from an egg found Northants. 1985.

STOKES, D. — in addition to bred specimens of the Continental *Aporia crataegi* L. and *Lycaena dispar* ssp. *batavus*, the exhibitor showed a short series of male *Aphantopus hyperantus* ab. *arete* Müller bred 1986 from a female ab. *arete* captured in cop. with a heterozygous typical male in Wiltshire 1985. This aberration is caused by a simple recessive gene. *Argynnis paphia* L. a male ab. *confluens* Spuler taken in Wiltshire 1986. *Boloria euphrosyne* L. two aberrations — a male with darkened hind wings and a female with paler ground colour than normal, both taken Isle of Wight.

TREBILCOCK, G.D. — *L. coridon* Poda a male ab. *fowleri* South taken Portland was exhibited in addition to some continental butterflies.

TUBBS, R.S. — *Argynnis paphia* L. Underside of female bred from wild caught fm. *valezina*. The hind wings had five black ring spots — the first time this has been seen by the exhibitor who has bred large numbers of this species — possibly a reversion to an ancestral form as black ring spots occur on the hind wings of so many fritillaries (*Argynnidae*).

YOUNG, L.D. — a splendid exhibit including five generations of *Polyommatus icarus* Rott. The five generations were achieved in fourteen months (P1 taken in Surrey 18.vi.85 with F5 appearing August—September 1986). This was achieved by providing continuous ideal conditions with the maximum of sunshine and a little extra light and warmth in the autumn brood. All generations included specimens of ab. *discoelongata*, the fifth generation consisting of sixteen striking aberrations with the black spots extending inwards. A separate exhibit displayed six specimens of *P. icarus* ab. *basielongata* bred in May and August 1986. Also shown was a very unusual male *Cupido minimus* Fuessly taken Surrey 16.vi.85 — an underside with no spots at all except the discoidal spot on the forewing and a striking black spot on the inner costal margin of the hind wing.

BRITISH MACROLEPIDOPTERA

The fall in the number of exhibitors in this section from 45 in 1985 to 36 this year and also the generally smaller size of the exhibits is undoubtedly a reflection of the very poor summer in 1986, in which there appears to be no evidence of any spectacular migratory movements. In spite of this, there were some really exciting exhibits, including specimens of *Thera cupressata* Gey., *Polyphaenis sericata* Esper, *Trachea atriplicis* L. *Mesapamea remmi* Rezbanyai-Reser, *Semiothisa signaria* Hubn. and other noteworthy species. Members are to be congratulated on producing such interesting exhibits in a year which most considered disappointing.

AUSTIN, R.A. and PEET, T.N.D. — *Thera cupressata* Gey. taken as a larva from a mature *Cupressus* tree at St Peters, Guernsey in August 1986. This species was first taken in October 1985 by Dr P.D.M. Cutter also at St Peters. The exhibitors suggest the *Cupressus* Carpet as an English name. *Polyphaenis sericata* Esper taken at MV at Petit Bot, Guernsey on 14.viii.86. This is an exciting rediscovery of a moth last seen on Guernsey over 80 years ago.

BAKER, B.R. — Immigrant Lepidoptera taken or bred in 1986 being: *Peridroma saucia* Hübn., var. *nigrocosta* Tutt; *Heliothis peltigera* D. & S.; and *Trichoplusia* ni

(Hübner), all taken at Swanage, Dorset, 10.x.86 and *H. peltigera* D. & S., an example bred from a larva found on marigold at Lyme Regis, Dorset, 3.viii.86.

BRITTON, M. — Two display cases of oak-feeding microlepidoptera.

BRADFORD, E.S. — Lepidoptera taken or bred during surveys of Shakespeare Cliff, Dover, Kent, one of the sites that will be drastically altered by the construction of the Channel Tunnel and a small box of Lepidoptera taken or bred during 1986.

CLASSEY, E.W. — A short series of *Arctia caja* L. showing wide variation, taken in a single season (1986) from a stationary MV trap at Uffington, Oxfordshire and a diminutive wild-caught specimen of *Laothoe populi* L. from the same locality.

CRONIN, A.R. — A case of Lepidoptera which included varieties resulting from unusual temperature conditions or different food plants and other moths taken or bred in 1986.

EMMET, Lt. Col. A.M. — Some noteworthy macrolepidoptera from Essex, mostly Saffron Waldon, comprising the following. *Catarhoe cuculata* Hufn., 13.vii.86, very rare in Essex but probably resident in the north west, where four have occurred in the last three years. *Eupithecia fraxinata* Crewe, 29.vi.86, apparently extending its range and becoming more plentiful in Essex. *Spaelotis ravida* D. & S. More plentiful than usual in 1986 in north-west Essex, up to three a night coming to MV. *Xestia rhomboidea* Esp., 17.viii.86, apparently confined to the extreme north-west in Essex, where four have been taken in the last three years. *Anaplectoides prasina* D. & S., 5.vii.86, the first record from the immediate district. *Mythimna obsoleta* Hübner, 16.vii.86, taken well away from its natural habitat. *Apamea scolopacina* Esp., 7.viii.86, the first record from the immediate district. *Oligia versicolor* Borkh., 19.vii.86, only the seventh record from Essex, although it is probably underrecorded. *Hydraecia petasitis* Doubl., 28.ix.86, the fourth record from Essex. The most recent prior record (1975) was also from the north-west of the county. *Heliothis peltigera* D. & S., 9.x.86, a primary or secondary migrant? *Abrostola trigemina* Wernb., 19.vii.86, although formerly widespread, this species has now almost disappeared from the county.

FENN, J.L. — A series bred from a *Semiothisa signaria* Hübner female taken at Ham Street, which suggest a case of hybridization between that species and *S. liturata* Cl., together with other specimens of each species for comparison. Aberrations of *Idea aversata* L. from Brandon and *X. fluctuata* L. from Hockwold and examples of *Cleorodes lichenaria* Hufn. from Weeting, *Trichopteryx polycommata* D. & S. from Foulden and *Plusia putnami gracilis* Lempke from larvae on *Calamagrostis canescens* (Weber). Also a series of first and second brood *Diarsia florida* Schmidt and *D. rubi* View. for comparison.

FOSTER, A.P. — A male *Rhyacia simulans* Hufn. at Rye Harbour, East Sussex, a *Lithophane leautieri* Boisd. at Mawnan Smith, Cornwall and a female *Hylaea fasciaria* L. taken at Dunwich Forest, Suffolk, having red forewings and green hindwings.

GIBSON, Dr. C.W.D. — Melanic forms of *Drymonia ruficornis* Hufn., *Lycia hirtaria* Cl. and *Agriopsis marginaria* F., a banded form of *Cyclophora linearia* Hübner and an aberration of *Cabera exanthemata* Scop., all taken at Wytham Woods, Oxford during 1986.

HALSEY, J. and M. — Aberrations and forms of some common species including

ab. *fusca* of *Crocallis elinguaris* L. and also a specimen of *Semiothisa signaria* Hübn. taken at Ham Street, Kent.

HARMAN, T.W. — A specimen of *Chrysodeixis acuta* Walk., a male taken at MV light at Sandwich Bay Bird Observatory on the night of 18.x.86, believed to be the ninth record for Britain.

HARMER, A.S. — A series of *Parasemia plantaginis plantaginis* L. bred from a pairing of f. *hospita* D. & S. from Honister, Cumbria.

HART, C. — Some specimens taken at Ham Street Woods on the night of 27.vi.86, comprising: *Chlorissa viridata* L., last recorded in Kent in 1949; *Deltote bankiana* F., well away from its normal marshy habitat and an early *Xestia c-nigrum* L., probably a migrant at this early date.

Also some interesting records from a garden trap at Buckland, Surrey. *Meganola albula* D. & S., this moth is inclined to wander, and the exhibitor records about one a year. *Parascotia fuliginaria* L., breeds locally on pine and birch fungus up to about eight caught each year. *Xanthia gilvago* D. & S. one only of this much decreased moth. *Lacanobia suasa* D. & S., one only of this vagrant from marshland. *Dicycla oo* L., two specimens in six years of this lovely moth. *Ipimorpha subvsa* D. & S., quite common some years in August, an interesting local species.

JORDAN, M.R.J. — Two specimens of *Mesapamea remmi* Rezbanyai-Reser, both from Hampshire VC12 1985, a species new to Britain. Photographs of the male and female genitalia were also exhibited with a summary of the main diagnostic characters.

KNILL-JONES, S.A. — Specimens of *Mythimna unipuncta* Haw., *Spaelotis ravida* D. & S., *Nola aerugula* Hübn., and *Orthonama obstipata* F., all taken at Freshwater, Isle of Wight at MV.

LANGMAID, Dr J.R. — A specimen of *Chrysodeixis chalcites* Esp. taken at MV, St Margaret's Bay, 30.ix.86. First record from Kent.

MCCORMICK, R.F. and PENNEY, C.C. — Interesting species caught during 1986 including *Euphyia unangulata* Haw. from North Cheam; *Eupithecia abietaria* Goeze from Northumberland; *Abraxas sylvata* Scop. from Argyllshire (a new county record); *Furcula bicuspis* Borkh. from Belmont Downs; a variety of *Perizoma albulata* D. & S., from Belmont Downs; *Atolmis rubricollis* L. from Argyllshire (a new county record); *Cucullia lychnitis* Ramb. from Winchester larvae; an unusual form of *Mesoligia furuncula* D. & S.; *Archanaura neurica* Hübn. from Walberswick; and *Athetis pallustris* Hübn. from Lincolnshire.

MICHAELIS, H.N. — Specimens of *Rhodometra sacraria* L. from Cors-y-Sarnau, Bala, VC48. 2.vii.86, an early date, and *Eremobia ochroleuca* D. & S. Glanwyddan VC49.

PARSONS, M.S. — A selection of species noted in 1986 including: *Xanthia ocellaris* Borkh.; *Heliothis virescens* Hufn. and *Lithostegia griseata* D. & S. from the Brecks; *Adscita geryon* Hübn. from Burrington Coombe and Dolebury Warren, both in Avon; an almost melanic *Menophra abruptaria* Thunb. and a very pale *Hadena perplexa* D. & S.

PELHAM-CLINTON, E.C. — Specimens of *Epirrhoe alternata* Müll., an aberration with greatly reduced median fascia of forewings and *Hyles lineata* F. both from Axminster, Devon.

PICKLES, A.J. and C.T. — Specimens of *Orthosia gracilis* D. & S., a series of the red form from the New Forest, Hampshire illustrating the range of variation within one brood. *Parastichis suspecta* Hübn., a series bred *ex ovis* from Perthshire. *Cleora cinctaria* D. & S., a series indicating the range of variation within the population of the New Forest, Hampshire. *Lycia zonaria* D. & S., specimens from the Ardnamurchan Peninsula, West Argyle where they occur on rocky cliffs as well as sand dunes. One specimen approaching *ab. obscura* Harrison. *Tyta luctuosa* D. & S., specimens from Portland, Dorset. *Eupithecia abietaria* Goeze, specimens bred from larvae collected in fallen spruce cones in Northumberland. *Synanthedon scoliaeformis* D. & S., a specimen taken at rest on a birch stump by Loch Rannoch.

RUSSWURM, A.D.A. and MIDDLETON, H.G.M. — Three aberrations of *Sphinx ligustri* L. from Brockenhurst; an *ab. albescens* Tutt, a specimen transitional to *ab. albescens* with hindwings whitish and touches of white on the abdomen and an *ab. obscura* Tutt. Also, *Pseudoterpna pruinata* Hufn., ssp. *atropunctaria* Walk. from Boldre, Hants.; a melanic male *Diaphora mendica* Goeze; a forewing aberration of *Charanyca trigammica* Hufn.; and a dark form of *Dichonia aprilina* L., all from Brockenhurst.

SIMPSON, Dr A.N.B. — A specimen of *Elaphria venustula* Hübn. from Leigh Wors., a first county record.

SIMPSON, Brig. E.C.L. — Six British species with a humorous comment on their 'uncertain' and 'anomalous' vernacular names.

SKINNER, B.F. — A variable series of *Agrotis clavis* Hufn. from Addington, Surrey between 1980 and 1986. Short series of: *Egira conspiciellaris* L. from Herefordshire showing type and f. *melaleuca* View.; *Mythimna loreyi* Dup. bred from Pagham, Sussex; *M. albipuncta* D. & S. bred from Dungeness, Kent and *Orthosia opima* Hübn. from Royston, Hertfordshire and Bradwell-on-sea, Essex. Specimens of *Eilema deplana* Esp. from Hamstreet, Kent showing extreme range of variation. *Trachea atriplicis* L. from Tillingham, Essex on 8.vii.86; a melanistic *Drymonia ruficornis* Hufn. from Friday Street; specimens of *Orthosia opima* Hübn. from Royston, Herts. and Bradwell-on-sea, Essex; a series of *Agrotis cinerea* D. & S. from the old slag heaps in the Forest of Dean, Gloucestershire; a melanic *Drymonia ruficornis* Hufn. from Friday Street, Surrey and a male *Epione repandaria* Hufn. having a pale yellow ground colour and the marginal dark borders absent, from Dungeness, Kent. A heavily marked *Spilosoma luteum* Hufn., a small and albinistic *Apamea anceps* D. & S., a male *Hoplodrina alsines* Brahm having a dark central shade on forewing and a male *Agrotis exclamationis* L. *ab. posteli* Culot from Pidney, Hunts.

SOKOLOFF, P.A. — Varieties of *Mimas tiliae* L., *Lomaspilis marginata* L., *Orthosia gothica* L. and *Agrotis exclamationis* L. Other bred Lepidoptera including *Mythimna loreyi* Dup. from Cornwall and *Rheumaptera hastata* L. ssp. *nigrescens* Prout bred from Myrica on Skye. Also a short series of *Chilodes maritimus* Tausch., showing all three major forms — from Stodmarsh, Kent.

SPALDING, A. — Various migrants collected at light in Cornwall 1982 to 1985, including two *Euchromius ocella* Haw., two *Diasemiopsis ramburialis* Dup. and one *Eublemma ostrina* Hübn.

STERLING, Col. D.H. and M.J. — *Eustroma reticulatum* D. & S. from Windermere larvae; a striking aberration of *Colostygia pectinataria* Knoch, from Winchester

VC11; a specimen of *Eupithecia abietaria* Goeze, bred from Berkshire VC22, a new county record; a series of *Lithomoia solidaginis* Hübn. showing differences between Scottish and Derbyshire specimens; a specimen of *Amphipoea fucosa paludis* Tutt, from inland Hampshire, Winchester VC11.; some specimens of *Athetis pallustris* Hübn. from the Lincolnshire coast near Skegness, and a specimen of *Heliothis viripalaca* Hufn., from Winchester, Hants, VC11.

TREMBATH, D.A. — Specimens of moths taken at Dorking during 1986, including: *Trichiura crataegi* L., *Jodis lactearia* L., *Semiothisa notata* L., *Boarmia roboraria* D. & S., *Pseudoterpna pruinata* Hufn., *Lymantria monacha* L., *Hadena compta* D. & S., *Craniophora ligustri* D. & S., *Dicycla oo* L., *Mythimna obsoleta* Hübn., *Lygephila pastinum* Treit. and *Parascotia fuliginaria* L.

TREMEWAN, W.G. — The following bred aberrations of *Zygaena filipendulae* (L.): yellow and orange forms, suffused confluent red, yellow and orange forms. These examples were obtained by crossing an orange/red culture from Surrey with yellow/red and suffused confluent red cultures from Cornwall. The orange and yellow forms are recessive to red; the suffused confluent forms are dominant to the typical six-spotted form. A bilateral gynandromorph of *Zygaena trifolii* (Esper) with the right side male, and the left side female, captured on the North Downs, Surrey, in June 1986.

TWEEDIE, M.W.F. — A specimen of *Agrotis crassa* Hübn., Playden, East Sussex, 7.viii.86, the first British mainland record of this century; and of *Eupithecia abietaria* Goeze, Beckley, East Sussex.

WAITE, P. — Two normal specimens of *Trichiura crataegi* L., and one bilateral gynandromorph right side male, left side female taken at light at Cockpole Green, Berkshire.

WARING, P.M. — A series of local moths from Bernwood Forest, Oxon./Bucks. border including *Tethea* or D. & S., *Archiearis notha* Hübn., *Cyclophora porata* L., *Idaea trigeminata* Haw., *Xanthorhoe quadrifasiata* Cl., *Rheumaptera hastata* L., *Philereme vetulata* D. & S., *Plagodis pulveraria* L., *Eupithecia irriguata* Hübn., *Selenia lunularia* Hübn., *Angerona prunaria* L., *Deileptenia ribeata* Cl., *Paradarsia extersaria* Hübn., *Pelosia deplana* Esp., *Meganola strigula* D. & S., *Lacanobia contigua* D. & S., *Orthosia miniosa* D. & S., *O. populeti* F., *Lithophane hepatica* Cl., *Deltote uncula* Cl., *Photodes fluxa* Hübn., *Herminia strigilata* L., *Rhyacia simulans* Hufn., and *Cerastis leucographa* D. & S.

WEST, B.K. — Aberrations of *Arctia caja* L. ab. *schizomacula* Gdn-Smith, Dartford, ab. *consolidata* Cock., Ballyvaughan, Co. Clare, *conjuncta* Stättmyr., Carr Bridge, Inv., *disconjuncta* Cock., Dartford, *confluens* Rebel, Dartford, and the undescribed form with the 'F' band of f.w. not broken.

Aberrations taken in Kent in 1986. *Euproctis similis* Fuess. ab. *nyctea* Stdgr., Dartford; *Callimorpha jacobaeae* L., ab. *albescens* Cock., Dungeness; *Melanchnra persicariae* L., ab. *unicolor* Stdgr., Dartford, and two undescribed forms of *Ecliptopera silaceata* D. & S. from Dartford.

WILSON, D.E. — A female specimen of *Trachea atriplicis* L. from Dungeness, at light on the night of 8-9 viii.86, new to the Kent list.

WINTER, P.Q. — Specimens from Yorkshire: *Idaea fuscovenosa* Goeze, *Orthonama vittata* Hufn. A slightly unusual form of *Diarsia rubi* View; *Synanthedon culiciformis* L., *Parastichis suspecta* Hübn., *Eupithecia pygmaeata* Hübn., *Lithomoia*

soldaginis Hübn., *Discloxia blomeri* Curt., *Macroglossum stellatarum* L., *Schrankia costaestrigalis* Steph., *Chloroclysta siterata* Hufn., *Thera obeliscata* Hübn., *Acrionictaalni* L. and *Celaena leucostigma* Hübn.

From Berkshire: a specimen of *Synanthedon flaviventris* Stdgr.

From Killin, Perthshire: *Mniotype (Blepharita) adusta* Esp., *Chloroclysta siterata* Hufn. and *C. miata* L.

YOUNG, D.A. — Lepidoptera from Berkshire and area, caught or bred in 1986. *Synanthedon spheciformis* D. & S. also displayed were two birch stumps from which the specimens were bred with the extruded pupal cases; *Diachrysia chryson* Esp., *Callimorpha dominula* L., *Mythimna obsoleta* Hübn., *Archanara geminipuncia* Haw. and *Chilodes maritimus* Tausch., with two reed stems with larval workings from the reed bed in the Kennet Valley.

Four locally common footman moths: *Eilema sororcula* Hufn., *E. deplana* Esp., *E. griseola* Hübn., type and ab. *stramineola* Doubl. and *Mitochrista miniata* Forst.

Two unusual forms of *Lomaspilis marginata* L.

Four melanic forms of *Colocasia coryli* L. (plus two typical), from the chalk woods of the Chilterns in Berkshire and south-east Oxfordshire where ab. *melanotica* Haverkamp is not uncommon.

Hypenia crassalis F., *Meganola strigula* D. & S. and *Euphyia unangulata* Haw.

BRITISH MICROLEPIDOPTERA

AGASSIZ, Rev. D.J.L. — British examples of *Prays fraxinella* Bjerck. and a possible sister species which may be described by Dr J. Kyrki. The other species has only the unicolorous form and occurs later than *fraxinella*.

AUSTIN, R.A. and PEET, T.N.D. — British micromoths from Guernsey. *Chrysocrambus linetella* F. or *C. craterella* Scop., to MV, 29.vi.86, awaiting determination. *Orthotaelia sparganella* Thunb., Vale Marais, Guernsey, at MV, 9.viii.86, new to Guernsey.

BEAUMONT, H.E. — *Phyllonorycter roboris* (Zell.). In recent years this species has been found to occur widely and locally commonly in a number of South Yorkshire (VC63) woods. It is the third most frequent of the oak feeding *Phyllonorycter* species after *quercifoliella* (Zell.) and *harrisella* (L.). *Phyllonorycter schreberella* (F.), Worsbrough Country Park, near Barnsley (VC63), mines on a regenerating diseased elm in October 1985, moth reared April 1986. A scarce moth in Yorkshire with only three previous records, two from VC62 and one from VC63. *Elachista triatomea* (Haw.), Wombwell Wood, near Barnsley and Swinton, near Mexborough (VC63), July 1986. Although recorded from the other four Yorkshire vice-counties these are the first from VC63. *Batia unitella* (Hübner), Roche Abbey, near Maltby (VC63), 25.vii.86. The second county record, previously recorded at Rossington, near Doncaster (VC63) in 1985. *Argyresthia glaucinella* (Zell.), Wombwell Wood, near Barnsley, (VC63), 6.vii.85. The only previous Yorkshire record was from the Sheffield district prior to 1883. *Apotomis semifasciana* (Haw.), Owston Wood, near Doncaster (VC63). A scarce moth in Yorkshire, there are old records from three other Yorkshire vice-counties but this is the first from VC63. *Endothenia nigricostana* (Haw.), Denaby Ings, near Mexborough (VC63), 27.vi.86. There are several old county records dating from the end of the last century, but none since 1917. *Epinotia*

rubiginosana (H.-S.), Greno Wood, near Sheffield (VC63), 22.vii.86. The first vice-county 63 record, the few other Yorkshire records are all from VC62.

Myelois cribrella (Hüb.). A Yorkshire distribution map showing the records received to the end of 1985 and illustrating the spread of this moth in the county during the past nine years. It is now widespread and common in the south of Yorkshire as far north as York and Filey. Moths have been reared from larvae feeding in stems of burdock at three localities, the text books suggest that this is an infrequent foodplant.

Homoeosoma sinuella (F.). A Yorkshire distribution map showing records received to the end of 1985. This moth is now well established in the Rotherham and Doncaster districts of VC63 with occasional records further north at Whitgift, near Goole (VC63) and Howden (VC61). The text books (including Goater, 1986) still give its distribution as 'Norfolk southwards'.

BLAND, Dr K.P. — *Nematopogon pilella* (D. & S.), Forest Lodge, Glen Tilt, Perthshire, NN 9475, 14.vi.86, new locality. *Psyche casta* (Pallas), North of Gala Bank, Midlothian, NT 4446, 27.iv.86, new to south-east Scotland. *Aethes smeathmanniana* (F.), ex seed heads of yarrow, Duddingston Loch LNR, Midlothian, NT 2872, coll.25.ix.85 em.6.vii.86, on the edge of its range in Southern Scotland. *Philedone gerningana* (D. & S.), Adderstonlee Moss SSSI, Roxb., NT 5311, 10.viii.86, widespread but local. *Cydia cosmophorana* (Treits.), ex *Petrova resinella* gall, Methven Moss SSSI, Perthshire, NO 0123, coll. 9.xi.85, em.31.v.86, the most southern Scottish locality? *Eudonia lineola* (Curt.), To MV light at Arinagour on Isle of Coll. NM2256, 18/19.vii.86, local and restricted to the west. *Adaina microdactyla* (Hüb.), ex galls on hemp agrimony, yellow Craig, Coldingham, Berwickshire, NT 9266, coll.26.x.85, em.18.vi.86, the only known locality in S.E. Scotland.

Collected by R.M. Lyszkowski: *Anania funebris* (Ström.), Glen Etive, Argylls. NN 14, 17.vi.84, local and restricted to the western half of Scotland.

BRADFORD, E.S. — Lepidoptera taken or bred during surveys of Shakespeare Cliff, Dover, Kent. One of the sites that will be drastically altered by the construction of the Channel tunnel.

Water colour drawings of some of the Gelechiidae to be published by the Society.

CORLEY, M.F.V. — *Pammene suspectana* L. & Z. (thought to be only the fifth British record), resting on hogweed leaf, Dry Sandford near Abingdon, 24.vi.86, new to VC 22. *Metzneria metzneriella* Staint., associated with *Serratula*, Cothill near Abingdon, 5.vii.86, new to VC22. *Clavigesta purdeyi* Durrant, Buckland Warren near Faringdon, 12.viii.86, new to VC22. *Leioptilus carphodactyla* Hbn., Chinnor Hill, bred 26.ix.86, new to VC22. *Coleophora therinella* Teng., Buckland Warren near Faringdon, 15.vii.86, new to VC22.

CHALMERS-HUNT, J.M. — The following taken or bred in 1986. *Eucosma catoptrana* Rebel, red form, St Osyth, Essex, 23.vi.86. *E. pauperana* Dup., near Moulsoford, 2.vi.86, first confirmed Berkshire record. *Esperia oliviella* Fab., Dunkirk, East Kent, 19.vi.86. *Dahlia inconspicua* Stainton, cases collected 19.iii.86, two males bred 11.iv.86., hymenopterous parasites bred 24.iv.86., all Tilgate Forest, Sussex. *Plutella xylostella* L. (Diamond-back moth), melanic form, two, West Wickham, Kent, 14.viii.86 and 22.viii.86.

EMETT, Lt.Col. A.M. — Species from Essex. *Acrolepiopsis assectella* (Zell.) Saffron Walden, 21.viii.86, new to Essex; it is resident in Suffolk. *Coleophora aestuariella* Bradley, a species recently added to the British list from the Essex

salt-marshes. *Coleophora taeniipennella* Herrich-Schäffer, Epping Forest, reared from the viviparous form of *Juncus bulbosus* L. *Mompha subbistrigella* (Haworth), a series reared from seed-pods of *Epilobium montanum* L. growing in the exhibitor's garden. There is virtually no visible evidence for the presence of the larva. The larva is ochreous; it is described as crimson in all the text books, but assumes this colour only when full-fed. *Lozotaenia forsterana* (F.) Saffron Walden, shown because of the late date — 6.x.86. The latest record this year for the normal summer emergence was 25.vii.86. *Cydia conicolana* (Heylaerts), Saffron Walden, at MV light 16.vi.86. The first confirmed record from Essex. The late H.C. Huggins recorded one in his house at Leigh-on-Sea, but suspected that it had been brought from Surrey in pine-cones. *Pediasia contaminella* (Hübner.), Saffron Walden, 2.viii.86. The first record from north-west Essex. *Platytes alpinella* (Hübner.), Saffron Walden, 12.viii.86. New to VC19 and the first record from inland Essex; previous records have been from the Thames estuary. *Phlyctaenia perlucidalis* (Hübner.), Langham, 6.vii.86; Saffron Walden, 16.vii.86. Now widespread in Essex. *Endotricha flammealis* (D. & S.), Saffron Walden, 2.viii.86. The first record from north-west Essex, although it is abundant in the south and east. *Dioryctria abietella* (D. & S.), *D. schuetzeella* Fuchs and *D. mutata* Fuchs, all from Saffron Walden, vii.86. *D. schuetzeella* is new to Essex; a specimen taken at Good Easter on 14.viii.84 was not then recognised. *Ephestia parasitella unicolorella* Staud., a local species but well established in the exhibitor's garden, where it probably feeds on dead ivy conserved for its benefit.

Species from Sussex. *Yponomeuta sedella* Treits. (*vigintipunctata* (Retz.)), Lewes, 10.viii.86, possibly a locality of interest. *Coleophora frischella* (L.), Lewes, reared 23.vi.86 from a seed-head of *Centaurea nigra* L., collected for possible *Metzneria neuropterella* (Zell.). It is believed that this is the first occasion on which this species has been reared in Britain. Patzak gives *Centaurea* as a foodplant and quotes Hering as saying that it feeds on the seeds. The British literature (based on research in New Zealand) gives *Trifolium* as the only foodplant. The larva may well have fed on *Trifolium* and moved to the *Centaurea* head to overwinter, but it is also possible that the continental writers are right after all. The seed-heads were collected on 27.xii.85. *Hypochalcia ahenella* (D. & S.), Lewes, 1.vii.86, an exceptionally small specimen.

Species from Kent. *Phyllonorycter distentella* (Zell.), Blean Wood, reared from mines collected in early September, 1985. *Gymnancycla canella* (D. & S.), Sandwich Bay, reared from larvae collected in early September, 1985.

Species from Suffolk. *Eupoecilia angustana* (Hübner.), Icklingham, reared vi.86 from larvae collected the previous autumn in the seed-heads of *Plantago lanceolata* L. The larva makes a silken gallery in the head, but there is no obvious sign of its presence. It can transfer to a fresh head. *Pammene albuginana* (Guenée), Dunwich Forest, reared 1.v.86 from an oak-gall.

FENN, J.L. — *Cydia molesta* Busck, Hockwold, Thetford, Norfolk, reared from larva in imported peach.

HARPER, Dr M.W. — Three unusual species. *Levipalpus hepatariella* L. & Z., Newtonmore, Inverness-shire, one, taken at light, viii.54. *Exaeretia ciniflonella* L. & Z., Deeside, one at rest on birch trunk, x.85, new to Aberdeenshire; Newtonmore, Inverness-shire, one at light, iv.52. *Acleris umbrana* Hübner., Eastnor and Ledbury, Herefordshire, two disturbed in daytime, x.73 and 74 respectively.

HART, C. — Pterophoridae — The Plume Moths. *Stenoptilia saxifragae* Fletch. This moth is now widespread in central northern England. It seems to inhabit garden rockeries where it feeds on Mossy Saxifrage. *Pterophorus galactodactyla* (D. & S.)

These specimens were bred from larvae collected at Saltfleetby in Lincs. Beirne states 'confined to England and Wales from Norfolk . . . southward.' *Leiotipilus chrysocomae* Rag. (*bowesi* Whalley) One specimen to light in Ham Street in 1985 and three larvae swept from Golden Rod in September 1986, only one still surviving but growing rapidly and feeding externally on the leaves. *Pselnophorus heterodactyla* (Mull.) Larvae were found quite commonly near Stroud this spring. Moths emerged, were paired and the larvae are now nearly fully grown and hibernating at soil level in dead leaves and other debris.

HECKFORD, R.J. — *Trifurcula griseella* Wolff, Brixham, Devon, 15 and 18.vi.86. *T. eurema* Tutt, Perranporth, Cornwall, ex larva, *Lous corniculatus* L., 13.v. and 5.vi.86. *Bucculatrix thoracella* Thunb. Buckfastleigh, Devon, ex larva *Tilia* × *vulgaris*, 31.v-1.vi.86. *Oinophila v-flava* Haw., St Mary's, Scilly Isles, ex larva, under bark of *Pitosporum crassifolium*, 16.vi-3.vii.86, new foodplant. *Argyresthia albigrista* Haw., Hembury Woods, Devon, 15.vii.86, form without white dorsal streak on forewing and having entirely black antennae. *Coleophora serpylletorum* Hering, Poldhu Cove, Cornwall, ex larva, *Thymus* sp., 7.9.vii.86. *Schiffermuelleria subaquilea* Staint., Kynance Cove, Cornwall, 13.vi.86. *Oecophora bractella* L., Hembury Woods, Devon, ex larva under bark of dead oak, 17.iv-22.v.86, second locality. *Amphisbatis incongruella* Staint., Kynance Cove, Cornwall, ex larva, *Thymus* sp., 19.iii.86. *Bryotropha basaltinella* Z., Brixham, Devon, 28.vi.86. *Lita solutella* Z., Kynance Cove, Cornwall, 13.vi.86. *Phalonidia curvistrigana* Staint., Hembury Woods, Devon, ex larva, *Solidago* sp., 16.vi.86. *Aphelia unitana* Hübn., Heddon's Mouth, Devon, 13.vi.83, new to VC4. *Olethreutes arcuella* Clerck, Hembury Woods, Devon, 27.vi.86. *Eudonia delunella* Staint., Chudleigh Knighton Heath, Devon, 6.vii.79, 29.vi.85 and Plympton, Devon, 5.vii.84. *Paralipsa gularis* Z., Plympton, Devon, ex larva, sunflower seeds, peanuts and sweetcorn, 5-10.ix.86. *Platyptilia calodactyla* D. & S., Ilfracombe, Devon, 9.vii.86. *Pterophorus fuscolimbatus* Duponchel, Coverack, Cornwall, ex larva, *Thymus* sp., 30.vi.86 and 2.vii.86; life history previously unknown in British Isles; Kynance Cove, Cornwall, 24.vii.86. *P.tridactyla* L., Harting Down, Sussex, 20.vi.80; shown for comparison with *P.fuscolimbatus*.

KNILL-JONES, Dr R.P. — *Anarsia spartiella* Schr., Old Kilpatrick (VC99); Carmyle, Glasgow (VC77). *Cosmiotes consortella* Staint., Ailsa Craig (VC75). *Coleophora striatipennella* Tengst., Pollok Park, Glasgow (VC76); Rotten Calder, Glasgow (VC77). *C. tamesis* Waters, Pollok Park, Glasgow (VC76).

KNILL-JONES, S.A. — *Pempelia palumbella* D. & S., 13.vii.86. *Ostrinia nubialis* Hübn., 13.27.vii.86. *Elophila (Nymphula) nymphaeata* L., 30.vi.86. All taken Freshwater, Isle of Wight.

LANGMAID, Dr J.R. *Stigmella svenssoni* Johan., Botley Wood, Hants., bred *Quercus* sp.; new to Hants. *Bucculatrix cidarella* Z., Browndown, Hants., bred *Myrica gale* L. *Argyresthia dilectella* Z., Partry, Co. Mayo, taken 3.viii.86, new to Ireland. *Acrolepiopsis marcidella* Curt., taken Wickham, Hants. at MV, 28.vi.86 with M.S. Parsons, first British specimen since 1892. *Coleophora serpylletorum* Her., bred from Thyme, four from Cornwall, four from north Wales, illustrating constant differences between the two forms. *C. lassella* Stdgr., Kynance, Cornwall, 13.vi.86. *C. therinella* Tengst., Southsea, Hants., vii.86. *Schiffermuelleria subaquilea* Haw., Kynance, four 13.vi.86, new to Cornwall. *Chambersia albimaculea* Haw., Southsea, Hants., 22.vi.86. *Lita solutella* Z., Kynance Cove, four taken among *Genista pilosa* L., 13.vi.86, new to Cornwall. *Ancylis upupana* Treits., Botley Wood, Hants., bred

Betula sp. *Pelochrista caecimaculana* Hüb., Portsdown Hill, 13.17.vii.86, first Hants. record for over 60 years. *Pammene albuginana* Guen., Beaulieu, Hants., one; Dunwich, Suffolk, two bred from spongy oak galls. *Cydia illutana* H.-S., Southsea, Hants., at MV, 10.vi.75, first known British specimen.

MICHAELIS, H.N. — *Epermenia illigerella* Hüb., Gresford, VC50, by B. Formstone; new to north Wales. *Scythris fletcherella* Meyr., Bryn Pydew, VC49, 7.vii.86. *Olethreutes olivana* Treits., Cors-y-Sarnau near Bala, VC48. *Capperia britanniodyctyla* Gregson, Coed Soflen, Llanrwst, VC50, 7.vii.80; not identified until 1985; new to north Wales.

NASH, S. — Specimens and records of species taken on St Mary's, Scilly Isles, 30.viii–12.ix.1986.

PARSONS, M. — A selection of species noted in 1986. *Olethreutes arcuella* Cl., Five Lords, Quantocks. *Philedone gerningana* D. & S., Roydon Common, Norfolk. *Ethmia funerella* F., Baston Fen, Lincs. *Eudemis porphyrana* Hüb., Lower Appleton Common, Oxfordshire. *Calamatropha paludella* Hüb., Bassenhally Gravel Pits, Cambs., *Blastobasis decolorella* Wol., Oxford.

PELHAM-CLINTON, E.C. — British Microlepidoptera collected during 1986. *Argyresthia dilectella* Zell., Partry, E. Mayo, 3.viii.86, new to Ireland. *Ypsolopha lucella* (F.), Axminster, Devon, 11.viii.86, no other recent Devon records. *Coleophora sylvaticella* Wood, Parracombe, Devon, 11–12.vi.86, 2 specimens. *Schiffermuelleria subaquilea* (Staint.), Lizard, Cornwall, 13.vi.86, 6 specimens of large numbers seen on wing in morning sunshine. *Agonopterix propinquella* (Treits.), Mayo, Sligo and Longford, bred viii. 1986, 6 specimens bred from larvae on *Cirsium arvense* L. and *C. vulgare* (Savi). *Agonopterix pallorella* (Zell.), Achill I., W. Mayo, bred 28.viii.86 from larva on *Centaurea nigra* L. (instead of the more usual *C. scabiosa* L.). *Lita solutella* (Zell.), Lizard, Cornwall, 13.vi.86, 4 specimens, compared with 3 specimens from Aviemore, Inverness-shire. *Aphelia unitana* (Hüb.), Axminster, Devon, 28.vi.86, not previously recognized in Devon, though perhaps recorded as *A. paleana* (Hüb.). *Metriostola betulae* (Goeze) Axminster, Devon, 29.vi.86, new to Devon.

SATTLER, K. — *Scrobipalpa stangei* (Her.) in Britain. A species previously unknown from Britain, specimens were found in historic collections in the British Museum (Natural History) (Bankes, Whittle and Rait-Smith collections), misidentified as *Scrobipalpa plantaginella* (Staint.) and *S. instabilella* (Dougl.). The data labels indicate that two of the specimens were collected at Yarmouth, Isle of Wight, in July 1882; however, attempts by members of the Microlepidoptera Section, BMNH, in 1985 and 1986 to rediscover *S. stangei* were unsuccessful. On the Continent *S. stangei* is known from various coastal and inland saline habitats. Its larva lives predominantly in Sea Arrowgrass (*Triglochin maritima* L.) but has also been observed in Marsh Arrowgrass (*T. palustris* L.).

SIDDONS, P.N. — *Biselachista serricornis* Stt., Gossmoor, Cornwall, 29.vi.86. *Caryocolum viscariaella* Stt., Ellanglaze, Cornwall, bred ex larvae, 23.vii.86. *Anacamptis populella* Cl., Grogley, Cornwall, 10.viii.86. *Spuleria flavicaput* Haw., Cubert, Cornwall, 26.v.72. *Cydia funebrana* Treits., Chyverton, Cornwall, 4.vii.85. *C. tenebrosana* Dup., Penhale, bred ex larvae, 13.vii.86. *C. gallicana* Guen., Perranporth, Cornwall, bred ex larvae, 13.vii.86. *Oxyptilus distans* Z., Perranporth, Cornwall, 2.vii.86.

SIMPSON, Dr A.N.B. — *Pempelia formosa* Haw., Leigh, 3.vii.86, in MV trap; new to Worcestershire. *Crambus uliginosellus* Z., Hartlebury Common, in bog, 27.vii.86; new to Worcestershire. *Teleiodes scriptella* Hüb., Leigh, at light, 17.vi.86; larval feeding found in ix.86; new to Worcestershire. *Pseudatemelia flavifrontella* D. & S., Leigh, at light, 26.vi.86; new to Worcestershire. *Elachista dispunctella* Dup., Trnethy-Mwnt, Cardigan, on sea cliff, amongst *Festuca ovina* L.; gen.det. *Scythris fletcherella* Meyr., Collins Green, 14.vi.86, from larva on *Helianthemum*; new to Worcestershire. *Haploinea insectella* F., near Tregroes, Cardigan, huge numbers in old hay and straw in disused farm buildings, 13.vii.86; gen.det. *Nemapogon ruricolella* Stt., Monk Wood, Worcs., ex larva in dead oak 1/2" diameter twigs, still attached to trunk, collected iv.85, hatched vi.86; gen. det. new to Worcs., VC37, Moccas Park, *Mompha divisella* H.-S., Herefordshire, end v.86.

SOLOLOFF, P.A. — A selection mostly bred during 1986, including *Argyrotaenia ljungiana* Thunb. bred from grapes, Battersea, London; a small colony appears to be established on a mature vine there; a new British foodplant for this normally moorland species. *Teleiodes paripunctella* Thunb., series of the *Myrica*-feeding race from Skye, showing considerable variation in the spotting and grey-brown colouration. *Falseuncaria ruficiliana* Haw., from a cliff-top biotope in Co. Donegal.

STERLING, Col. D.H. and M.J. — *Ectoedemia turbidella* Zell. Bred from Oxford VC23. Mines were found on fallen leaves of *Populus canescens* growing in University Park. Most leaves had two larvae mining at the base, each side of the midrib. *Opostegia crepusculella* Zell. This specimen was taken at MV light in Wychwood Forest, Oxfordshire VC23 on 30.vi.86. *Marycia inconspicua* Stt. Cases were collected from rock lichens on Iron Tors and Beeley Moor Derbyshire VC57 on 22.iii.86 and produced moths in April 1986. *Tineola bisselliella* Hum. from Nottingham VC56 in March 1986. Although known as the 'Common Clothes Moth', it is not so common in these days of man-made fibres and there are few post-1920 records from the East Midlands. *Choreutis pariana* Cl. Bred from Hampshire VC12, a new vice-county record. The larvae were found on a small *Malus domestica* L. beside a car park on Newtown Common on 24.viii.86. Moths emerged during September. *Rhigognostis incarnatella* Steud. From Carrbridge, Inverness. Taken at MV on 9.vi.86 and one of the few interesting species found during a very wet and cold trip to that area. *Coleophora orbitella* Zell. Bred from Havant Thicket Hampshire VC11, a new County record. Three *Coleophora* cases were collected from *Betula* on 19.x.81 and 2 moths emerged in May 1982. They have now been determined after dissection. *Coleophora hemerobiella* Scop. Bred from Little Wittenham NR VC22, a new vice-county record. A number of cases were found on *Crataegus* on 22.vi.86 and produced moths in July. *Elachista regificella* Sirc. First confirmed county record for Hampshire. Bred from mines in *Luzula pilosa* L. in Crab Wood, Winchester VC11 found on 19.iv.86. Moths emerged during July 1986. *Schiffermuelleria tinctella* Hüb. Taken at MV light on 27.vi.86 at Savernake Forest, Wiltshire. *Aplota palpella* Haw. Found dead on a tree trunk in Savernake Forest, Wiltshire on 23.viii.86. No other record for this species in recent times can be traced. *Mompha locupletella* D. & S. Bred from larval mines in leaves of *Epilobium obscurum* found in Emer Bog NR Hants VC11 on 23.vii.86. Moths emerged during August. *Aethes piercei* ning on 12.vi.86. *Eudemis porphyra* Hüb. Bred from New Forest, Hampshire VC11 and Wychwood Forest Oxon. VC23. Larvae were found in rolled leaves of *Malus sylvestris* L., usually more than one larva in each roll. Larvae were found in early June 1986, moths emerging in July. *Pterophorus spilodactylus* Curt. Bred from larvae from Isle of Wight, VC10. The cliff colony near Freshwater on *Marrubium vulgare* L.

continues to flourish. On 19.v.86, larvae were very small and inside the growing shoots. They developed at varying speeds, producing imagines between June and early August.

FOREIGN LEPIDOPTERA

CRONIN, A.R. — Some Philippine butterflies taken in September 1986.

ELSTON, Maj. H.J. — A display showing 56 species of butterfly and 11 species of hawkmoth bred or captured in the Sultanate of Oman between 1984 and 1986. The four cases exhibited showed specimens caught or bred in the Sultanate of Oman during the years 1984 to 1986. The Sultanate of Oman lies in the south eastern corner of the Arabian Peninsula. It has a remarkable variety of habitats including high mountains, oases, coastal plains, wadis and deserts. In what is essentially an arid country there is a good variety of Lepidoptera with many resident species. Migrants appear regularly from Africa and occasionally from the Indian sub-continent. During the time in Oman the exhibitor was able to collect in many localities throughout the length and breadth of the country. Species from the north are strongly allied to those from the Asian continent; the species from the south being allied to those from Africa. The arid deserts of central Oman therefore appear to provide a dividing line between the butterfly fauna of Africa and Asia. The exhibitor hopes to produce a list of records and observations for future publications in the Proceedings, together with some of the amusing anecdotes that the presence of an Englishman with a butterfly net in Arabia is destined to produce.

HALL, N.M. — Switzerland and France 1986. During a holiday to France and Switzerland in August this year, the exhibitor was able to do some mothing in five localities: (1) Above Bullet in the Jura Mountains in the Swiss Canton of Neuchatel at an altitude of about 1300m, August 17/18; (2) at Les Haudères in the Swiss Valais (Val d'Herens) at about 1600m (here it was possible to run a light trap on the edge of the stream adjacent to an organised campsite, the noise of the water being far greater than the noise of the generator, so that it did not disturb other campers), August 19/20; (3) at Arolla in the Swiss Valais (Val d'Herens) at about 2000m, August 20/21; (4) at Zeneggen in the Swiss Valais, above Visp in the valley leading to Zermatt, at about 1300m, August 21/22 and (5) at Sanilhac in the French département of Gard, near to the Pont du Gard, in 'garrigue' vegetation, August 25th to 30th. All the specimens set in the field were shown. In collecting, unless the species showed considerable variations in a single locality, small numbers were taken, but from many localities. Hence the selection contained some moths common or easily obtainable in the UK. Identifications were tentative so far, and a large proportion may be wrong. This is mainly because the only relevant literature available was Forster & Wohlfart's Noctuidae (Eulen) and Geometridae (Spanner) and Calle's Noctuids of Spain. 'In Forster & Wohlfart' the exhibitor reported 'I find the illustrations not good enough for positive identification. Aspects of wing patterns I find most distinctive are not present in the corresponding illustrations. Calle gives photographs which are very helpful even though their standard, and the standard of the specimens themselves leave something to be desired.' Many of the specimens were labelled with identifications, but separate lists were provided for convenience and for comment.

HARMAN, T.W. — A selection of Lepidoptera taken in the Dordogne, France during late May and early August, 1986, while surveying a limestone valley in the region. Species include *Papilio machaon* L., *Iphiclidus podalirius* L., *Argynnis paphia* L.,

Gonepteryx cleopatra L., *Colias croceus* Geoff., *C. hyale* L., *Issoria lathonia* L., *Minois dryas* Scop., *Aporia crataegi* L., *Limenitis reducta* Stand., *Vanessa atalanta* L., *Meliataea phoebe* Schiff., *M. cinxia* L., *M. didyma* Esp., *Clossiana dia* L., *Euphydryas aurinia* Rott., *Mellicta parthenoides* Kef., *Maculinea arion arion* L., *Cyaniris semiargus* Rott., *Claucopsyche alexis* Poda, *Philotes baton* Berg., *Lycaena dispar rutila* Wern., *Heodes tityrus* Poda., *Lysandra coridon* Poda (female form *syngrapha*), *Ephesia fulminea* Esp., *Catocala nymphagoga* Esp., *Trachea atriplicis* L., *Thaumetopoea pinivora* Treits., *Callopietria juvenina* Stoll., *Macdunnoughia confusa* Steph., *Tarache lucida* Hufn., *Lithosia quadra* L., *Agrotis cinerea* D. & S., *Euplagia quadripunctaria* Poda, *Rhyparia purpurata* L., *Hyphoraia aulica*, *Eucharia casta* L., *Pachetra sagittigera* D. & S., *Caephria alchymista* D. & S., *Hybocampa milhauseri* F., *Saturnia pyri* L., *Proserpinus proserpina* Pall., *Dendrolimus pini* L., *Stauropus fagi* L., *Deridea anceps* Goeze, *Tritophia tritophus* D. & S., *Spatalia argentina* D. & S., *Hyloicus pinastri* L., *Hyles euphorbiae* L., *Macroglossum stellatarum* L., *Hemaris fuciformis* L., *H. tityus* L.

KNILL-JONES, R.P. — Some Brazilian Lepidoptera.

PLANT, C.W. — *Canephora unicolor* (Hufn.) (Lep.; Psychidae). Adult male and larval case. Cordes. (Tarn), Southern France, May 1986. This is Europe's largest Psychid, and the large and sexually dimorphic bugs were found on the trunks of oak trees. A selection of twenty-three microlepidoptera from various families, taken at MV light during May 1986 on a limestone ridge at Cordes, southern France.

ROBINSON, Dr G.S. — Artificial birds' nests, composed of feathers wrapped in nylon net, were deployed in Sulawesi to allow wild tineid moths to oviposit in them. Series of *Monopis impressella* Walk., *M. pentadisca* Walk. and *M. congestella* Meyr. (the last two species larviparous) were shown, bred from recovered nests.

TREBILCOCK, G.D. — Three species, *M. arion*, *C. dia* and *P. aegeria* from the Perigord region of France. Each showed aberrant forms. All specimens taken between 4.vii.86 and 25.vii.86. Of particular interest was the abundance of *M. arion* in the region.

TUCK, K.R. (British Museum (Natural History)) — *Semutophila saccharopa* Tuck, a new genus and species of Tortricidae attended by ants on bamboo stems in Malaysia.

WILSON, D.E. — Exhibited on behalf of Mr R.H. Mays an unidentified moth found on cargo being unloaded at Stansted Airport, on a flight from Bangkok, Thailand, on 25.x.86.

WILTSHIRE, E.P. — Material collected by M.D. Llagher and others in the Al Wahiba Sands area of Oman. The Royal Geographical Society's 1986 Expedition. Representative species of Macro Heterocera of which group 55 different species have in fact been collected from this area. *Arenipses sabella* Hps., female (date pest); *Sumeria dipotamica* Tams., male (in date gardens); *Spodoptera liura* F., male, (garden pest); *Spodoptera exigua* Hübn., male (migrant and pest); *Helicoverpa armigera* Hübn., male (pest); *Trichoplusia ni* Hübn., female (garden pest); *Tephрина disparata* Gn., male; *Tephрина perviaria* Sed., male; *Casama vilis* Wkt., male; *Paropta l-album* (B.-B), male; *Masalia albida* (Hps), male; *Heteropalpia vetusta* Wkt., male; *Heteropalpia acrosticta* Pgl, male; *Pericyma signata* Brdt., female; *Gnamptonyx innexa* Med., female; *Gnamptonyx innexa* Med, female *Acantholipes circumdata* Wkt., female; *Mocis frugalis* Gn., male; *Clytis benenotata* Warren,

female; *Anumeta straminea* B-H, female; *Anumeta asiatica* Wilts., female; *Anumeta eberti* Wilts., female; *Anumeta spilota harteri* Roths., female; *Anumeta atosignata*, female; *Anumeta hilgerti popovi* Wilts., male and female; *Anumeta surcoufi* Dumt., female; *Drasteria kabyllaria* B.-H., female; *Atomorpha hedemanni baloutchistana* Welsh, male; *Acontia biskrensis orientalis* Brdt., female; *Eublemma bistellata* Wilts. male; *Eublemma rushi* Wilts., male; *Iranada turcorum atrior* Wilts., female; *Acrobyla kneuckeri* Rebel, female; *Armada gallagheri* Wilts, female; *Armada mariitima* Brandt., male; *Amicta murina* Klug., male.

Bag constructions from twigs of *Calligonum* of two different species of Psychid moth. One bag-worm of the *Amicto* (pyramidal or 'log-cabin') type fed from July to October in the UK on *Polygonum* spp and its emergence was hoped for in November.

DIPTERA

APPLETON, D. — Four species of Stratiomyidae from 'the Lower Test Nature Reserve near Southampton, Hants.: *Oxycera trilineata* (F.), 26.vii.86; *O. nigricornis* (Ol.), 19.vii.86; *O. rara* (Scop.), 28.vi.86; *Vanoyia tenuicornis* (Macquart), 21.vi.86.

BALL, S.G. — Some scarce Diptera found outside their previously known ranges. *Pelecocera tricineta* (Meig.) (Syrphidae), Stover Park, Devon, 5.vi.86, on dry heathland overrun by *Rhododendron*, previous records are from bogs and wet heathland in Dorset, Hants and Surrey. *Dichetophora finlandica* Verbeke (Sciomyzidae), Newham Fen NNR, Northumb., 30.viii.85, tussock sedge on the edge of birch/sallow scrub in an old lake bed, a typical habitat but much further north than the known East Anglian and single Yorkshire records. *Ectinocera borealis* (Zett.) (Sciomyzidae), Erme Estuary, Devon, 1.vi.86, swept from common scurvy grass at top of beach adjacent to woodland; previous records are from the Caledonian pine forests of Speyside and shady woodland in the Malham Tarn and Snowdonia regions. *Scathophaga scybalaria* (L.) (Scathophagidae), College Valley, Cheviot, 31.viii.85, swept from an *Eleocharis* bed in a small oxbow of the Lambdon Burn; it is locally abundant in the New Forest, parts of Wales and the Western Highlands of Scotland.

CHANDLER, P.J. — The British species of the fungus gnat genus *Neoempheria* (Mycetophilidae): four of the five British species were exhibited, the fifth *bimaculata* (von Röser) known from Hants., Wilts. and Dorset only being presently represented in the BMNH collection. Until 1973 only two species were known as British, the frequent *pictipennis* (Haliday) (the only one known from Scotland and Ireland) and the scarce *lineola* (Meig.). The latter, a large conspicuous species, was only known on old material from the New Forest until 1986 when it was rediscovered by P.J. Chandler and A.E. Stubbs around large decayed beech logs at The Knowles in the New Forest (also found this year in a new locality — see exhibit by Clements and Alexander). *N. winnertzi* Edw., found at two localities in Gloucs. in 1973 by A.M. Hutson and A.E. Stubbs, has not been found since. *N. striata* (Meig.), new to the British list on a single male from carr woodland at Cothill, near Oxford, found by P.J. Chandler in 1985, its larvae are known to spin webs on dead wood or bracket fungi. *N. proxima* not a British species, but superficially similar to *striata*, was exhibited from Spain. The frequent but local *Leptomorphus walkeri* Curt. was also exhibited as it could conceivably be confused with *N. lineola*.

CLEMENTS, D.K. & ALEXANDER, K. — Scarce or local Diptera from the National Trust Biological Surveys in 1985–6. *Neoempheria lineola* (Meig.) (Mycetophilidae), a female from Cirencester park, Gloucs., 24.v.86, the first locality outside the New Forest. *Xylophagus ater* Meig. (Xylophagidae), Cirencester Park, vi.86, a female reared under artificial conditions from a final instar larva found under bark. *Oxycera dives* Loew (Stratiomyidae), a pair *in copula* from low birch on heathland at Wallington, Northumb., 4.viii.86. *Acrocera orbicula* F. (Acroceridae), Horsey Warren, Norfolk, 27.vi.86, a mass emergence amongst fixed dune vegetation. *Megasyrphus annulipes* (Zett.) (Syrphidae), Allen Banks, Northumb., 20.viii.86. *Dasysyrphus friuliensis* van der Goot (Syrphidae), Cragside, Northumb., 21.vii.86, a recent colonist associated with conifers. *Neoscia obliqua* Coe (Syrphidae), Ruskin Reserve, Cothill, 30.v.86.

COLLINS, G.A. — A selection of 12 species of Syrphidae found in 1986, including: *Cheilisia carbonaria* Egger, Ashtead, Surrey, 11.vi.86; *Brachyopa pilosa* Collin, Limpsfield, Surrey, 1.vi.86; *Pelecocera tricincta* (Meig.), Bramshill, Hants., 5.vii.86; *Neocnemodon latiusaris* (Egger), Netley Heath, Surrey, 4.vi.86; *Triglyphus primus* Loew, St Ann's Hill, Surrey, 7.vi.86; *Microdon devius* (L.), Hackhurst Down, Surrey, 21.vi.86.

GODFREY, A. — A wide range of uncommon or local Diptera mainly from the south of England, including the following more notable records. *Oxycera morrisii* Curt. (Stratiomyidae), Pig Farm Lake, Hemel Hempstead, Herts., 3.vii.86, from sedges by side of lake. *Odontomyia tigrina* (F.), 21.vi.86 and *Stratiomys potamida* (Meig.) 3.viii.85 (Stratiomyidae), both from Cassiobury Park Nature Reserve, Watford, Herts. *Acrocera orbicula* F. (Acroceridae), Dowrog Common, Pembroke, 11.vii.86, on heathland. *Mephrocerus flavicornis* Zett. (Pipunculidae), Harrock's Wood, Watford, Herts., 14.vii.86, in water trap in birch/hazel woodland. *Myolepta luteola* (Gmel.) (Syrphidae), Harrock's Wood, 19.viii.86. *Caliprobola speciosa* Rossi (Syrphidae), Denny Wood, New Forest, 16.vi.84, resting on beech stumps and defending territories around stumps. *Microdon eggeri* Mik (Syrphidae), Denny Wood, 9,16.vi.84, resting on stumps or logs. *Paraclusia tigrina* (Fall.) (Clusiidae), Whippendell Wood, Herts., 12.x.85 on cut end of log. *Hemyda vittata* (Meig.) (Tachinidae), Harrock's Wood, 15.ix.86, the first British example of this species was from Whippendell Wood, 12.v.1956 but the few more recent British records are all from Sussex. *Subclytia rotundiventris* (Fall.) (Tachinidae), Harrock's Wood, 15.viii.85.

HODGE, P. — A selection of 17 species of Diptera, mainly Syrphidae, found during 1986, including the following. *Atherix ibis* (F.) (Rhagionidae), on river bank at Glasbury on Wye, Radnorshire, 7.vi.86. *Psilocephala rustica* (Panz.) (Therevidae), from sandbank on R. Irthing, near Newby East, Cumbria, 24.vii.86, probably the most northerly British record. *Xanthandrus comtus* (Harris) (Syrphidae), Furnace Wood, E. Sussex, 13.viii.86. *Rhingia rostrata* (L.) (Syrphidae), Furnace Wood, 10.x. and 18.ix.86. *Ferdinanda ruficornis* (F.) (Syrphidae), Lewes, E. Sussex, 27.vii.86, the second Sussex record, the first having been found at Lewes By M.O. Hughes, 9.v.1964 (*Entomologist's mon. Mag.*, 100: 192). *Microdon devius* (L.) (Syrphidae), Hackhurst Down, Surrey, 29.vi.86.

HOLLIER, J.A. and WISTOW, R.J. — An exhibit on conservation of the Montgomery Canal, included 12 species of Syrphidae and Dolichopodidae.

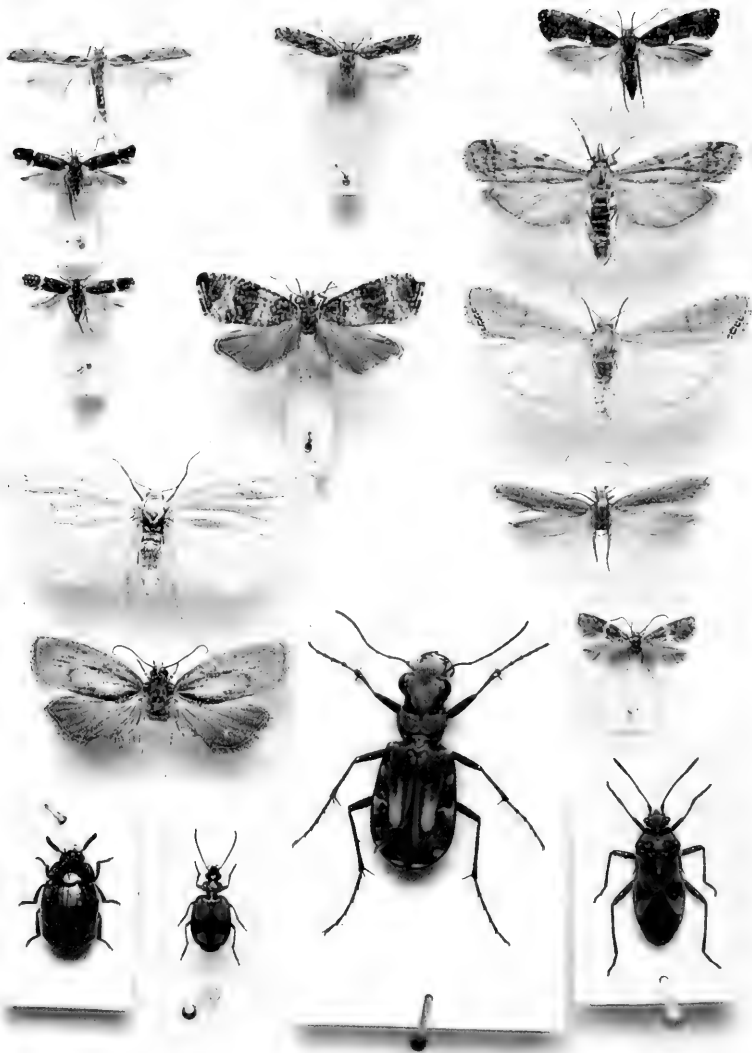


Plate IV. ANNUAL EXHIBITION 1985

1	2	3
4	6	7
5		10
8		11
9		12
13	14	15
		16

1: *Caloptilia hemidactylella*, Wychwood, 17.x.85, M. Corley. 2: *Anarsia lineatella*, A.M. Emmet. 3: *Acrolepiopsis betulella*, Inverpolly, vii.85, D.J.L. Agassiz. 4 (male) & 5 (female): *Syncopacma suecicella*, Lizard, 4-7.vii.85, E.C. Pelham-Clinton. 6: *Celypha rurestrana*, Tintern, 16.vi.62, E.C. Pelham-Clinton. 7: *Ephestia parasitella*, Playden, 3.vii.85, M.W.F. Tweedie. 8: *Eana argentana*, Glen Tilt, 18.viii.85, R. Knill-Jones. 9: *Eudemis profundana*, Hembury Woods, 26.viii.85, R.J. Heckford. 10: *Euchromius ocella*, Southsea, 6.x.85, J.R. Langmaid. 11: *Scrobipalpa stangei*, l.o.W., 11.vii.1882, Banks coll., BMNH, K. Sattler. 12: *Elachista cingillella*, Linton, 25.v.82, J.R. Langmaid. 13: *Diaperis boleti*, Holme Fen, R. Key. 14: *Lebia crux-minor*, Ditchling, 19.v.84, N.F. Heal. 15: *Cicindella campestris*, Mark Ash, 8.vi.84, I. McClenaghan. 16: *Corizus hyoscyami*, Daymer Bay, 9.ix.85, P. Kirby and S.J.J. Lambert.

Photo: D. Wilson.



Plate V. ANNUAL EXHIBITION 1986

1	2	3
4		7
5		
6		8

1: *Cupido minimus*, Surrey, 16.vi.85, L.D. Young. 2: *Hylaea fasciaria*, Hamstreet, M. Halsey. 3: *Cyclophora linearia*, Wytham Woods, 20.vi.86, C.W.D. Gibson. 4: *Maniola jurtina*, bilateral gynandromorph, N. Dorset, viii.86, R.D.G. Barrington. 5: *Polygonia c-album*, ab *reichstettensis*, 19.vii.86, A.M. Jones. 6: *P. c-album*, ab *reichstettensis*, 20.vii.86, R.C. Revels. 7: *Nymphalis polychloris*, extreme ab. *testudo* (high temp.), vii.85, K.E.J. Bailey. 8: *Argynnis paphia*, mixed gynandromorph with f. *valezina*, N. Dorset, vii.86, R.D.G. Barrington.

Photo: D. Wilson.

HUDSON, I.R. — Examples of 23 species of uncommon or striking Diptera, including the following. *Odontomyia tigrina* (F.) (Stratiomyidae), both sexes by a pond at Farlington Marshes, Hants., and a female at a drainage ditch on Gillkicker golf links, Gosport, Hants. *Oxycera rara* (Scop.) and *O. trilineata* (F.) (Stratiomyidae), Lower Test Valley, wet meadows, where 20 species of Stratiomyidae have been recorded. *Ogcodes gibbosus* (L.) (Acroceridae), in numbers at two Hants, & Isle of Wight Naturalists' Trust reserves — at Oxenbourne Down and in the New Forest. *Tabanus sudeticus* Zell. (Tabanidae), a female from West Wood, near Winchester, Hants., and a male from long grass by a stream at the Lower Test Reserve, vii. *Bombylius minor* L. (Bombyliidae), reared from cells of the bee *Colletes succinctus* (L.), excavated from a sandpit at Purbeck, Dorset, vii — the spiny armoured pupae wriggled from the host cells during the excavation and flies emerged on the following day while the unparasitised bee cells yielded adult bees about a fortnight later. *Xanthandrus comus* (Harris) (Syrphidae), males from Oxenbourne Down, Hants., vii.85 at *Pastinaca sativa* L. flowers and Botley Wood, Hants., ix.86 on *Succisa pratensis* L. *Psilota anthracina* Meig. (Syrphidae), New Forest, on *Crataegus* blossom. *Brachyopa bicolor* (Fall.) (Syrphidae), Mark Ash Wood, on *Sorbus* blossom, v. *Pocota personata* (Harris) (Syrphidae), New Forest, vi.86, a female seen entering a small rot hole 8 feet up a beech trunk. *Callicera aenea* (F.) (Syrphidae), two examples from West Sussex, viii.85, one at *Heracleum* flowers on the grass verge of the A27, the other nearby in Rewell Wood, a Forestry Commission plantation. *Eumerus sabulonum* (Fall.) (Syrphidae), in good numbers in early July on fixed sand dunes behind the beach at Studland Bay, Dorset, flying slowly low over the sand and frequently alighting to rest — nearly all those seen were males. *Anasimyia lunulata* (Meig.) (Syrphidae), Bishop's Dyke, New Forest, vii, both sexes in numbers by vigorously sweeping bog myrtle (*Myrica gale* L.) bushes. *Leopoldius signatus* (Wied.) (Conopidae), frequent at *Hedera helix* L. blossom, Warsash, Hants., ix-x.85. *Scathophaga scybalaria* (L.) (Scathophagidae), abundant on grazed meadows in the Lower Test Reserve in vii.86. *Cistogaster globosa* (F.) (Tachinidae), on *Daucus* and *Pastinaca* flowers, Portsdown Hill, Hants., 16/30.vii.83, a pair showing the remarkable sexual dimorphism — the male has the abdomen largely dull orange and the thorax with golden dusting on the anterior half, while the female is all glossy black with silver dusting on the shoulders and pleura. *Gymnosoma rotundatum* (L.) (Tachinidae), in numbers on *Pastinaca* flowers and other umbels, Rewell Wood, W. Sussex, early vii.85. *Lophosia fasciata* Meig. (Tachinidae), frequent at Oxenbourne Down while *Pastinaca* is in flower and a single example also found in Rewell Wood on *Heracleum*. *Gonia ornata* Meig. (Tachinidae), fixed dunes at Hayling Island, Hants., a single worn example at end of v.85 but found in good numbers at the beginning of v.86, visiting *Veronica serpyllifolia* L. flowers.

KIRBY, P. & LAMBERT, S. — Twelve species of Diptera found during 1985-6 on Nature Conservancy Council surveys, including the following: *Vanoyia tenuicornis* (Macquart) (Stratiomyidae), Whiteford Burrows, W. Glamorgan, 25.vi.86. *Oxycera morrisii* Curt. (Stratiomyidae), Castor Hanglands NNR, Northants., 6.vii.85. *Pamponerus germanicus* (L.) (Asilidae), Oxwich Burrows, W. Glamorgan, 20.vi.86. *Atylotus rusticus* (L.) (Tabanidae), Bradwell, Essex, 27.vii.86. *Bombylius caescens* Mikán (Bombyliidae), Common Cliff, W. Glamorgan, 23.vi.86; and from Oxwich Burrows, W. Glamorgan, 20.vi.86. *Ogcodes gibbosus* (L.) (Acroceridae), Aston Rowant NNR, Oxon., 30.vi.86. *Psilota anthracina* Meig. (Syrphidae), Weald Park, Essex, 27.v.85. *Anasimyia interpuncta* (Harris) (Syrphidae), Bassenhally Pits,

Cams., 15.vii.86. *Dichetophora finlandica* Verbeke (Sciomyzidae), Borough Fen Decoy, Northants., 30.vi.86. *Schoenophilus versutus* (Hal.) (Dolichopodidae), Whiteford Burrows, W. Glamorgan, 25.vi.86.

McLEAN, I.F.G. — Some Diptera from Pembrey Burrows, Carmarthenshire, included in a Nature Conservancy Council Exhibit on the Invertebrate Site Register: this complex of sand dune, slack and saltmarsh as well as rides and clearings in conifer forest planted on part of the dunes, produced the following: *Tabanus autumnalis* L. (Tabanidae), *Pamponerus germanicus* (L.) (Asilidae), *Schoenophilus versutus* (Hal.) (Dolichopodidae), *Ochthera mantis* (Deg.) (Ephydriidae), *Sciomyza simplex* Fall. and *Pherbellia dorsata* (Zett.) (Sciomyzidae).

A selection of uncommon flies found at other localities in 1986. *Tabanus sudeticus* Zell. (Tabanidae), on window in Trinity College, Carmarthen, vii. *Hilara platyura* Loew (Empididae), Fowlmere, Norfolk, 7.viii. *Dolichopus signifer* Hal. (Dolichopodidae), Broomhall Burrows, Carmarthen, 10.vii. *Rhaphium elegantulum* Meig. (Dolichopodidae), Devil's Punchbowl, Norfolk, 16.vii. *Cryptaciura rotundiventris* (Fall.) (Tephritidae), The Flits, Hereford, 14.vii. *Acinia corniculata* (Zett.) (Tephritidae), Chippenham Fen, Cams., in meadow, 24.viii. *Themira biloba* Andersson (Sepsidae), Fowlmere, Norfolk, 7.vii. *Sarcophaga sinuata* Meig. (Sarcophagidae), Gwaun Garthenor, Carmarthen, 5.vii.

PLANT, C. — *Xanthandrus comtus* (Harris) (Syrphidae), Shoreham, W. Kent, larva found 2.viii.86 on a leaf of *Heracleum sphondylium* L., pupated 3.viii.86, a male emerged 11.viii.86; recent records suggest that this normally scarce hoverfly is widening its range in the south-east.

SIMPSON, A.N.B. — *Chalcosyrphus eunotus* (Loew) (Syrphidae), four males seen (two taken) at Shrawley Wood, Worcs., 4.vi.86, resting on semi-shaded alder logs in and on the banks of streams, corresponding to the previously recorded habitat association for the species, which is known from very few localities, chiefly in the West Midlands. *Criorhina floccosa* (Meig.) (Syrphidae), Collins Green, Worcs., 14.vi.86, *Crataegus* flowers at woodland edge.

COLEOPTERA

Despite protestations from many, the weather in 1986 did not have the effect on beetle exhibits that it may have had on those of Lepidoptera. The Coleopterists had not been 'fair weather' entomologists and had secured many interesting finds. And although the number of exhibitors was down, the quality of the exhibits and the interest of the specimens was as high as ever.

As always, Coleopterists have been more than conscientious when it comes to providing full and detailed reports of their exhibits, giving the precise details of finds and observations, which are published in full below.

The twelve exhibits varied from a single species upwards. Mr Appleton showed a single rare *Leptura*, Mr Cronin a single huge coconut beetle from the Philippines. The only other foreign beetles were a few from Greece in my own exhibit. Many displays followed a theme. Dr Morris, for example, exhibited 46 species of weevil, mainly from Dorset, including the recently discovered *Hylobius* and *Furcipus*. Other exhibits were based around a survey area. Mr Alexander showed beetles collected as

part of the National Trust Biological Survey including the beautiful violet *Chrysolina*. Messrs Hollier and Wistow had surveyed the Montgomery Canal and showed among other insects the bee beetle *Trichius*. On the Nature Conservancy Council stand beetles from two survey sites were exhibited; the status of each species being given with reference to the ISR reviews and the Insect Red Data Book. The theme of other exhibits was also the general rarity of the species. Mr Drane showed many interesting finds including *Oulema*, *Hylobius*, and *Furcipus*. Mr Hodge also showed an extensive array of very local beetles, *Oulimnius*, *Selatosomus*, and *Cryptocephalus* being very notable. Mr Halstead's selection included the rare *Prionocyphon* which was bred, and Messrs Lambert and Kirby's the interesting 'cramp ball' weevil *Platyrhinus*. Some species were overlooked when exhibited. Mr Fosters *Cathormiocerus* for example, exhibited as *C. myrmecophilus* proved to be *C. britannicus* after the exhibition.

There were a few notable absentees from the list of exhibitors, and as always some of the best finds did not get officially shown, various shady characters pulling boxes of specimens out of bags and pockets to test an identification. Perhaps we'll see some of them next year.

ALEXANDER, K.N.A. — A selection of beetles mostly taken during the 1985 and 1986 field seasons of the National Trust Biological Survey. *Agapanthia villosoviridescens* (Deg.), one of about ten swept in tall coarse grasslands on the Horsey Estate, Norfolk, 26.vi.86. *Stenostola dubia* (Laich.) from woodland on Wenlock Edge, Salop., 16.vii.85. *Phytoecia cylindrica* (L.), from Bradenham Woods, Bucks., 10.vi.86 — one of three sightings during the period, the others from Hughenden Manor, Bucks., and Tewkesbury, Glos. *Chrysolina violacea* (Muller, O.F.), one from Gulf Scrubs, near Colesbourne, Glos., 1.vi.85. *Schizotus pectinicornis* (L.), reared from a pupa found in rotten birchwood at Cwm Coel, Radnor., 8.vi.86. *Prionychus ater* (F.), one of 23 found beneath loose dry bark on dead ancient beech in Attingham Deer Park, Salop., 1.vii.85. *Mordella villosa* (Schr.), from ragwort flower in clearing within Hailey Wood, Cirencester Park, Glos., 10.viii.85. *Nacerdes melanura* (L.), from rotten railway sleepers at Ashchurch, Glos., 29.vi.85. *Thanasimus formicarius* (L.), taken in flight by Sherborne Common, Glos., 29.v.85. *Rhagonycha translucida* (Kryn), from oak in wood by Wilderhope Manor, Salop., 18.vii.85, and also seen in Oakley Wood, Glos., 30.vi.85. *Malthodes fibulatus* Kiesenw., swept in woodland at Bradenham, Bucks., 10.vi.86. *Platycis minutus* (F.), one taken by I.F.G. McLean in a wood near Ripon, Yorks., 3.x.85 — one of its most northern localities in Britain. *Ampedus cinnabarinus* (Esch.), one of a pair found in rotten alder timber near Cannop Ponds, Forest of Dean, Glos., 11.v.85. *Plegaderus dissectus* Er., three specimens, all from 1985 — Ashdown Park, Oxon., 17.iv.85, in oak stump, Dovers Hill, Glos., 22.v.85, in ash stump, and Shugborough Park, Staffs., 30.vii.85, beneath bark on felled oak. *Oxyporus rufus* (L.), by Oakley Wood, Cirencester Park, Glos., 27.ix.86, the first Gloucestershire record for 30 years. *Conopalpus testaceus* (Ol.), from Attingham Deer Park, Salop., 1.vii.85, and also seen at Millichope Park in the same county, 13.vii.85. *Caenopsis waltoni* (Boh.), from sparsely vegetated stoney slope on Long Mynd, Salop., 8.vii.85. *Rhynchites cupreus* (L.), one of two found in Hawksmoor Nature Reserve, Staffs., 6.viii.85. *Rhinomacer ateloboides* F., taken in flight in Harwood Forest, Northumbs., 28.vii.86. *Tapinotus sellatus* (F.), one found on yellow loosestrife on Horsey Estate, Norfolk, 26.vi.86. *Drupenatus nasiurtii* (Germ.), swept from watercress on River Leach near Sherborne, Glos., 28.v.85 — the second county record. *Grypus equiseti* (F.), swept from horsetails in Dunham Park, Manchester, 14.viii.85. *Pissodes*

castaneus (Deg.), beaten from pine at Formby, Lancs., 29.viii.85. *Tetratoma desmarestii* Lat., one swept on Walton Moor, Somerset, by I.F.G. McLean, 17.x.86.

APPLETON, D. — *Leptura fulva* Deg., one female 19.vii.86 — one of two found in the Lower Test Nature Reserve near Southampton, Hampshire.

CRONIN, A.R. — A coconut beetle found on a tree in San Pablo, Philippines, September 1985.

DRANE, A.B. — *Perileptus areolatus* (Cretzer), Glasbury Shingles, Radnor, Wales, 2 under stones, 8.vi.86. *Thalassophilus longicornis* (Sturm), Glasbury Shingles, Radnor, Wales, 3 in shingle bank, 8.vi.86. *Zabrus tenebroides* (Goeze), St Margarets at Cliff, Kent, 1 from edge of cornfield, 28.viii.86. *Bidessus minutissimus* (Germ.), Glasbury Shingles, Radnor, Wales, Inlet of Wye, 8.vi.86. *Anthophilus punctatus* (Müll.), Bagmore Pond, Stanford Battle Area, Norfolk, rabbit burrow, 26.iii.86. *Neuraphes talparum* Lokay, Rockingham Castle Park, Keeper's Coppice, in mole castle, 15.ii.86. *Geodromicus longipes* (Mann.) Little Man (Skiddaw), Cumber., under stone, 24.vii.86. *Anthophagus alpinus* (Payk.), Little Man (Skiddaw), Cumber., under stone, 24.vii.86. *Micralymma marina* (Ström), St Bee's Head, Cumber., in cracks of intertidal rocks, 27.vii.86. *Sepedophilus bipunctatus* (Grav.), Stedham Common, Sussex, 2 under log bark, 1.vi.86. *Gyrophana hanseni* Strand, Calke Abbey, Derby., one male from stump-gill fungus, 16.viii.86. *G. munsteri* Strand, Bailey Einon Wood, Radnor, Wales, one male, from stump-gill fungi, 7.vi.86. *Helichus substriatus* (Müll.), Bransford Bridge, Worcs., fallen elder, under bark, 6.vi.86. *Macronychus quadrituberculatus* Müll., Bransford Bridge, Worcs., fallen alder, under bark 6.vi.86. *Onlimnius rivularis* (Rosen.) Cotton's Corner, 16ft drain, Cambs., on submerged bricks, 2.ii.86. *Stenelmis canaliculata* (Gyll.), Waternewton, Northants., 6 under stones by weir, 15.vi.86. *Agrilus sinuatus* (Ol.) Bushy Park, Surrey, 1 on hawthorn, 10.vii.86. *Fleutiauxellus maritimus* (Curtis), Glasbury Shingles, Radnor, Wales, on sand, 8.vi.86. *Negastrius sabulicola* (Boh.), Glasbury Shingles, Radnor, Wales, 3 on sand, 8.vi.86. *Tillus elongatus* (L.), Calke Abbey, Derby., one male, on small-leaved lime, 22.vi.86. *Cyanostolus aeneus* (Richt.), Bransford Bridge, Worcs., 3, fallen alder — under bark, 6.vi.86. Calke Abbey, Derby., 1, under fallen beech bark (pond edge), 22.vi.86. *Diplocoelus fagi* Guer., Bedford Purlieu, Northants., 1, under pine log bark, 20.iv.86. *Mycetophagus populi* F., South Wood near Corby, Northants., 3, boundary ash-fungoid wood, 26.iv.86. *Pycnomerus fuliginosus* Er., Stedham Common, Sussex, under log bark, 1.vi.86. *Mycetochara humeralis* (F.), Calke Abbey, Derby., 4, under small-leaved lime branch bark, 22.vi.86. *Hallomenus binotatus* (Quen.), Stedham Common, under log bark, 1.vi.86. *Ischnomera sanguinicollis* (F), Glasbury Shingles, Radnor, Wales, 3, on hawthorn, 8.vi.86. *Pyrrhodium sanguineum* (L.) Bailey Einon Wood, Radnor, Wales, under fallen oak branch bark, 7.vi.86. *Oulema erichsoni* Suff., Meare Heath, Somerset, one male and one female, on young grass (dyke), 30.v.86. *Phaedon concinnus* Steph., Ravenglass Saltmarsh, Cumber., 4, saltings grubbing, 29.vii.86. *Apion (Omphalapion) dispar* Germ., Lydden, Kent, on *Matricaria*, 28.viii.86. *A. (Taenapion) semivittatum* Gyll., Lydden, Kent on annual mercury, 28.viii.86. *A. (Taenapion) urticarium* (Hbst.), Stanhope-le-Marsh, Essex, on nettles, 10.v.86. *Otiorhynchus porcatus* (Hbst.), Hensingham, Whitehaven, Cumber., 1, under *Primula*, 27.vii.86. *Hypera pastinacae* (Rossi), Capel-le-Ferne Cliff, Kent, on wild carrot, 28.viii.86. *H. venusta* (F.), St Bee's (Marsh House), Cumber., *Anthyllis*, 29.vii.86. *Hylobius transversovittatus* (Goeze), Meare Heath, Somerset, 1, climbing grass stem, 30.v.86. *Mesites tardii* (Curtis), Beacon Plantation, Ravenglass,

Cumber., under bark, 29.vii.86. *Bagous lutosus* (Gyll.), Stedham Common, Sussex, muddy track rut, 29.v.86. *Ceutorhynchus angulosus* Boh. Meare Heath, Somerset, on *Galeopsis*, 30.vi.86. *C. viduatus* (Gyll.), Church Moss, Camber, 4, on *Stachys palustris* L., 29.vii.86. *Phytobius olssoni* Israel. Stedham Common, Sussex, one female, muddy track rut, 29.v.86. *Furcipes rectirostris* (L.), near Clum-yr-Afon, Radnor, Wales, Bird Cherry, 7.vi.86. *Sibinia sodalis* Germ., Gosport, Hants, 4, sweeping thrift, 1.vi.86. *Xyleborus dispar* (F.), Stedham Common, Sussex, in log bark, 1.vi.86.

FOSTER, A.P. — *Harpalus dimidiatus* (Rossi), 25.vii.86, Cross Plains, Mendips, Somerset. *H. froelichi* Sturm and *Coelambus nigrolineatus* (Gyll.), at MV light 2.vii.86, Foxhole Heath, Suffolk. A second British record for the *Coelambus*. *Aphodius villosus* Gyll., 23.vi.86, Sandford Hill, Mendips, Avon. *Dorcatoma dresdensis* Herbst, bred from *Ganoderma* fungus collected 16.xi.86, Burnham Beeches, Bucks. *Hadrobregmus denticollis* (Creutz.), 25.iii.86, Sturston, Norfolk, in rot hole in an alder tree. *Longitarsus brunneus* (Dufts.), 24.viii.86 West Moor, Somerset, on *Thalictrum flavum* (L.). *Miaris micros* (Germ.), vii.86, from two localities in West Cornwall, common in flowers of *Jasione montana* L. *Cathormiocerus britannicus* Blair (exhibited as *myrmecophilus* (Seidl.)), at roots of *Thymus*, Logan Rock, West Cornwall, 28.vii.85.

HALSTEAD, A. — Some local Coleoptera taken in 1986. *Agonum sexpunctatum* L., Wisley Common, Surrey, 10.v.86, running on ground. *Trox scaber* L., at actinic light, Sheerwater, Surrey, 27.vi.86. *Dascillus cervinus* L., in rough grass, Sheeples, Surrey, 29.vi.86. *Prionocyphon serricornis* Müll., bred from pupa in beech rot hole, Wood Crates, New Forest, Hampshire, emerged 13.vi.86. *Byrrhus fasciatus* Forst., Sheerwater, Surrey, 2.vi.86, in water trap (garden rain butt). *Opilo mollis* L., Rothamsted light trap, RHS Garden, Wisley, Surrey, 27.vii.86. *Tritoma bipustulata* F., on birch bracket fungus, Wisley Common, Surrey, 15.v.86. *Bitoma crenata* F., on dead beech, Therfield Heath, Royston, Hertfordshire, 28.v.86. *Blaps mucronata* Lat., The Grape House, Hampton Court, Middlesex, 20.vi.86. *Orchesia undulata* Kraatz, on birch fungus, Wisley Common, Surrey, 29.v.86. *Ischnomera caerulea* L., on hawthorn flower, White Downs, Surrey, 12.vi.86. *Saperda populnea* L., on aspen, Wisley Common, Surrey, 14.vi.86.

HODGE, P.J. — A selection of rare species taken in 1986. *Dromius quadrisignatus* Dej., one on old hawthorn, running on trunk in sunshine, Bushy Park, Middlesex, 9.viii.86, a very rare species. *Tachyporus formosus* Matth., Buxted Park, East Sussex, 18.ix.85, one swept; Meare Heath, Somerset, 6.vi.86, one swept, a scarce wetland species. *Oulimnius major* Rey on stones in the River Ouse, Brampton, Huntingdonshire, 15.vi.86, this species has only recently been detected in Britain and is known only from a few sites. *Negastris sabulicola* Boh., from a shingle bank on the River Wye at Glasbury, Radnorshire, 7.vi.86, the first record for many years, recorded from shingle banks on a few rivers in western and northern Britain. *Fleutiauxellus maritimus* (Curt.), taken with the last species, known from similar types of habitat but more frequently. *Selatosomus angustulus* (Keisenw.), common in a meadow beside the River Ithon at Disserseth, Radnorshire, 8.vi.86. Prior to 1986, this species had only been taken on the River Vyrnwy near Malverley, Shropshire in the 1930s. *Athous campyloides* Newm., one male in a garden at Horton, Buckinghamshire, 9.vii.86, one female in the exhibitor's garden at Ringmer, East Sussex, 4.vii.86. Restricted to south-east England, the males may sometimes be

taken at MV light whilst females are seldom found. *Meligethes kunzei* Er., one on flowers of garlic mustard, near Buxted Park, East Sussex, 19.v.86, a scarce species. *M. viduatus* (Heer), common on *Galeopsis tetrahit* L. at Meare Heath, Somerset, 13.vii.86. *Epuraea rufomarginata* (Steph.), one swept, 25.v.86, near Coleman's Hatch, East Sussex, associated with dead twigs. *Stethorus punctillum* Weise, one running on raspberries in the exhibitor's garden at Ringmer, East Sussex, 25.vi.86, a local species. *Tetratoma ancora* F., one on a hornbeam trunk, 21.v.86, Crump's Wood, Little Horsted, East Sussex, associated with fungoid growths. *Oulema erichsoni* Suff., one swept off grass in peat workings on Meare Heath, Somerset, 13.vii.86. This rare species is only known from East Sussex and Devon. It was discovered in Somerset in May 1986 by Mr A.B. Drane. *Cryptocephalus nitidulus* (F.), one on the underside of a hazel leaf, 29.vi.86, (a very hot day), Hackhurst Downs, Surrey. This is the first British record since 1945. *Hypera meles* (F.), three swept off white clover (*Trifolium repens* L.), West Wood, Netley, Hampshire, 13.vii.86. Recent captures suggest that this species is less rare than earlier records indicate. *Hypera pastinacae* (Rossi) taken in the seed heads of *Daucus carota* L. on the cliffs at Folkstone Warren, Kent, 28.viii.86. A very rare species only found in Britain on a small stretch of the Kent coast. *Hylobius transversovittatus* (Goeze) at the roots of *Lythrum salicaria* L., 31.vi.86, Meare Heath, Somerset. This very rare species is only otherwise known from one place on the east Devon coast. *Trachodes hispidulus* (L.) with *Tetratoma ancora* on 21.v.86. associated with dead wood and perhaps not as rare as records suggest. *Bagous puncticollis* Boh., Pevensey Levels, East Sussex, one female, 18.v.86. The exhibitor had taken this rare species on a few other occasions, it is only known from the Pevensey district in Britain. *Ceutorhynchus angulosus* Boh., on *Galeopsis tetrahit* L. in abundance on 31.v.86 at Meare Heath, Somerset, a very scarce species. *Phytobius olsoni* Isrealson, one male at roots of *Peplis* (*Lythrum*) *portula* L., 24.viii.86, Stedham Common, West Sussex. Only otherwise known from Berkshire.

HOLLIER, J.A. and WISTOW, R.J. — Insects and conservation on the Montgomery Canal, a selection of insects with comments, among which the following interesting beetles. *Judolia cerambyciformis* (Schrank), Welshpool, Powys, 17.vi.85. *Trichius fasciatus* (L.) Abermule, Powys, 25.vii.85.

JONES, R.A. — *Synchita separanda* Reitt., a third British locality? First notified as British in 1964, this beetle has until now been known from only two localities — Windsor Forest (Berkshire) and Knole Park, Sevenoaks (Kent). The specimens exhibited were among many taken from a sycamore log infected with a black smut-like fungus, in the exhibitor's Peckham garden in May 1986 where it occurred in profusion along with *Enicmus brevicornis* (Mannerheim).

Some insects from the Greek island of Samos. A variety of specimens and photographs of insects found during a two-week trip in early May 1986. Although very few specimens had been named, there were interesting comparisons to be made between this Mediterranean fauna and our own. The Buprestidae showed a bewildering array of bright active species on flowers, tree trunks and logs. The Oedemeridae proved the most common beetles on the island, there being about 10 black or brown species present. The Carabidae were rather poor, a few *Bembidion* species being found on a sandy stream bank. The Staphylinidae were apparently absent. Despite the amazing variety of plant life, the Curculionidae were few, although bruchids were sometimes common, as were some chrysomelids. The Scarabaeidae were divided into the frequent and various chafers which filled the air

with their buzzing, and a few elusive *Onthophagus* species which were found under one small patch of fresh mule dung. One of the most startling species was the brightly coloured clerid *Trichodes aparius* (L.).

LAMBERT, S. and KIRBY, P. — Coleoptera 1985–6. *Cicindela maritima* Lat. & Dej., Whiteford Burrows, W. Glamorgan, 26.vi.86. *Harpalus punctulatus* (Dufts.), Roydon Common, Norfolk, 3.viii.85. *Bembidion virens* Gyll., Loch Maree, West Ross, 3.viii.86. *Georissus crenulatus* Rossi, Whiteford Burrows, W. Glamorgan, 25.vi.86. *Helophorus dorsalis* (Marsh.), Weldon Park Wood, Northamptonshire, 10.v.86. *Aphodius villosus* Gyll., Llangenith Burrows, W. Glamorgan, 21.vi.86. *Bolitophagus reticulatus* (L.), Beinn Eighe NNR, West Ross, 3.viii.86. *Osphya bipunctata* (F.), Aversley Wood, Huntingdonshire, 7.vii.86, Hardwick Wood, Cambridgeshire, 18.v.86. *Aderus populnea* (Creutz.), Chippenham Gravel Pit, Cambridgeshire, 21.viii.86. *Phytoecia cylindrica* (L.), Wychwood Forest, Oxfordshire, 28.vi.86. *Anaglyptus mysticus* (L.), Aversley Wood, Cambridgeshire, 7.vii.86. *Donacia clavipes* F., Oxwich Burrows, W. Glamorgan, 26.vi.86. *Calomicrus circumfusus* (Marshall) Ancaster Valley, Lincolnshire, 14.ix.86. *Longiarus pusillus*, Gog-magot Golf Course, Cambridgeshire, 21.viii.86. *Platyrhinus resinosus* (Scop.) Great Morton Sale, Northamptonshire, 30.vi.85. *Rhynchites cavifrons* Gyll., Aversley Wood, Huntingdonshire, 7.vii.86. *Otiorhynchus scaber* (L.), Dundonnell House, West Ross, 6.vii.86. *Hypera dauci* (Ol.), Newborough Warren, Anglesey, 17.viii.85. *Baris scolopacea* Germ., Bradwell, Essex, 27.vii.86. *Mesites tardyi* (Curt.), Oxwich Wood, W. Glamorgan, 22.vi.86.

MORRIS, M.G. — Some rare, local or interesting weevils taken in 1986. *Anthribus fasciatus* (Forst.), two at separate localities near Bloxworth, Dorset, June and August. *A. nebulosus* (Forst.), near Bloxworth, Dorset, June. *Apoderus coryli* (L.), widespread in Dorset from May to September in 1986; this pair from near Dorchester, May. *Rhynchites aeneovirens* (Marsh.), also widespread in Dorset; this pair from a wood near Dorchester, May. *Byctiscus betulae* (L.), not uncommon on young hazel (*Corylus avellana* L.) coppice near Dorchester, Dorset, May. *Deporaus mannerheimi* (Humm.), generally a late summer weevil, Crincombe Bottom, near Milton Abbas, Dorset, August. *Apion meliloti* Kirby, though generally common, it is very local in Dorset (first county record); Chesil Beach, May. *Apion reflexum* Gyll., very local, on Sanfoin (*Onobrychis viciifolia* Scop.), Bratton Castle, Wilts., September. *Otiorhynchus rugifrons* (Gyll.), seldom abundant and often on the coast, near Bridport, Dorset, June. *Polydrusus confluens* Steph., not generally common, though widespread on heathland, near Wareham, Dorset, June. *Polydrusus flavipes* (Deg.), not a very uncommon species, but, unusually surviving into September in 1986; near Bovington, Dorset. *Polydrusus mollis* (Stroem), usually local, beaten from hazel, Llandeilo Graban, Radnorshire, June. *Brachysomus echinatus* (Bons.), widespread but seldom abundant, near Sixpenny Handley, Dorset, June. *Strophosoma faber* (Herbst), local, an uncommon species of sandy soils, Gosport, Hants., June. *Cneorhinus plumbeus* (Marsh.), not generally common, but widespread in Dorset; near Bridport, June, and Corfe, August. *Tropiphorus elevatus* (Herbst), common at one Dorset site near Rampisham, May, adults much parasitised. *Sitona cambricus* Steph., local, though widespread, on Large Birdsfoot Trefoil (*Lotus uliginosus* Schkuhr), near Charmouth, Dorset, September. *Sitona gemellatus* Gyll. still common at its locality near Bridport, Dorset, usually under restharrow (*Ononis spinosa* L.) but also black medick (*Medicago lupulina* L.). *Larinus planus* (F.) generally uncommon, on various thistles, three specimens from

different localities in Radnor., Somerset and Dorset. *Rhinocyllus conicus* (Fröl.), common in Dorset though rare elsewhere, near Bridport, June. *Hypera suspiciosa* (Herbst), a specimen bred from a larva on the host, Tufted Vetch (*Vicia cracca* L.), Ibberton, Dorset, eclosed August. *Hylobius transversovittatus* (Goeze), a vary rare sp., associated with Purple Loosestrife (*Lythrum salicaria* L.), Meare, Somerset, June. *Acalles roboris* Curt., generally uncommon; its congener, *A. misellus* Boh., (= *A. turbatus* Boh.), is widespread in Dorset, near Corfe, Dorset, June. *Bagous lutulosus* (Gyll.), like most *Bagous* spp., scarce and difficult to find, near Midhurst, West Sussex, June. *B. nodulosus* (Gyll.), rare, from the recently-discovered site at Kingsbury Episcopi, Somerset, May. *Hydronomus alismatis* (Marsh.), local, generally on Water Plantain (*Alisma plantago-aquatica* L.), Meare Heath, Somerset, June. *Notaris scirpi* (F.), local and uncommon, Meare Heath, Somerset, June. *Pachytychius haematocephalus* (Gyll.), a rare sp. in Britain, despite its association with common Birdsfoot Trefoil (*Lotus corniculatus* L.), from the classic Gosport site, Hants., June. *Orthochaetes setiger* (Beck), not uncommon, but a ground-living weevil seldom swept or taken on herbs, Gosport, Hants., June. *Ceutorhynchus angulosus* Boh., a scarce fenland sp. on Hemp-nettle (*Galeopsis* spp.), Meare Heath, Somerset (in abundance), May. *Ceutorhynchus euphorbiae* Bris., rare and little known, on Forget-me-nots (*Myosotis* spp.), Llandeilo Graban, Radnor., June. *Ceutorhynchus pulvinatus* Gyll., very local, but abundant where found, on Flixweed (*Descurainia sophia* L.), Lakenheath, West Suffolk, June. *Ceutorhynchus rapae* Gyll., very local, on *Sisymbrium* spp. and *Descurainia*, Meare Heath, Somerset, May, and Lakenheath, West Suffolk, June. *Ceutorhynchus sulcicollis* (Payk.), local, though not uncommon, on various Cruciferae, Meare Heath, Somerset, May. *Ceutorhynchus terminatus* (Herbst), local, worked for in Dorset without success until this year, on Wild Carrot (*Daucus carota* L.), near Bridport, June. *Ceutorhynchus timidus* Weise, local, mainly associated with Hedge Mustard (*Sisymbrium officinale* L.), Meare Heath, Somerset, May. *Rhinoncus bruchoides* (Herbst), local, on Persicaria (*Polygonum persicaria* L.), near Shaftesbury, Dorset, September. *Amalus scortillum* (Herbst), a teratological specimen of this common sp., which has four well-developed legs on the right side (left side normal), near Shaftesbury, Dorset, September. *Anthonomus rufus* Gyll., rare, though widely distributed, associated with Blackthorn (*Prunus spinosa* L.), West Bexington, Dorset, June. *Furcipes rectirostris* (L.), overlooked, proving to be widely distributed, associated with Bird Cherry (*Prunus padus* L.), near Talgarth, Brecons., June. *Curculio villosus* F., local, larvae in galls of *Biorhiza pallida* Ol. (Cynipidae) on Oak (*Quercus* spp.), near Dorchester, Dorset, May. *Tychius schneideri* (Herbst), very local, associated with Kidney-vetch (*Anthyllis vulneraria* L.), Chesil Beach, Weymouth (the only known Dorset locality), June. *Sibinia sodalis* Germ., extremely local, associated with Thrift (*Armeria maritima* L.), from the classic Gosport site, Hants., June. *Gymnetron veronicae* (Germ.), local, usually on Brooklime (*Veronica beccabunga* L.), Llandeilo Graban, Radnor., June. *Kissophagus hederæ* (Schmitt), local, associated with Ivy (*Hedera helix* L.), near Corfe, Dorset, June. *Xyleborus dispar* (F.), local, perhaps not as rare as sometimes thought, in recently-dead wood, near Midhurst, West Sussex, June.

NATURE CONSERVANCY COUNCIL — Three boxes of specimens representing new sites included in the Register in 1986. Species status as per the ISR reviews of the status of Coleoptera and the Insect Red Data Book.

Glasbury Shingle Beds, Radnorshire, a length of private riverbank along the River

Wye with extensive shingle beds, sand and silt banks, some with well developed marsh and carr vegetation, old trees, hedges and pasture along the river bank. This site was visited on the Coleopterist's field meeting on 6–8.vi.86. The specimens were collected by R. Key, P. Hyman and A. Drane. *Clivina collaris* Herbst, (notable B); *Perileptus areolatus* Creutz., (notable A); *Thalassophilus longicornis* (Sturm), (notable A); *Tachys parvulus* Dej., (notable A); *Bidessus minutissimus* (Germ.), (Red Data Book 3); *Georissus crenulatus* Ross, (notable A); *Helophorus arvernicus* Muls., (notable B); *Hydraena rufipes* Curt., (notable A); *Negastrius sabulicola* (Boh.), (Red Data Book 3); *Fleutiauxellus mariimus* (Curt.), (notable A); *Hylecoetus dermestoides* (L.), (notable B); *Eledona agricola* (Herbst), (notable B); *Ischnomera sanguinicollis* (F.), (notable A); *I. caerulea* (L.), (notable B); *Stenostola dubia* (Schrank), (notable B); *Dorytomus ictor* (Herbst), (notable B).

Cornbury Park, Oxfordshire, a large area of private parkland, adjacent to Wychwood Forest, ancient oak forest and pasture woodland with old beech and field maple; A high proportion of species are strongly associated with ancient woodlands. The following species were collected as part of the NCC survey by P. Hyman in 1986. *Ctesias serra* (F.), (notable B); *Xestobium rufovillosum* (Mots.); *Dorcatoma dresdensis* Herbst, (Red Data Book 1); *D. serra* (Panz.), (notable A); *Ptinomorphus imperialis* (L.), (notable B); *Ptinus subpilosus* Sturm, (notable B); *Stenagostus villosus* (Fourc.); *Cerylon histeroides* (F.); *Rhizophagus nitidulus* (F.), (notable B); *Prionychus ater* (F.), (notable B); *Ischnomera caerulea* (L.), (notable B); *Orchesia micans* (Panz.) (notable B).

HEMIPTERA

The number of Hemiptera exhibits was down again, as some collectors appear to have concentrated their energies on other groups like Diptera! Nevertheless, it was nice to see the appearance of the 'other' group of bugs — the Auchenorrhyncha — in a fine display by Mr Kirby. Perhaps the Hemiptera being delicate creatures are more prone to the effects of bad weather.

ALEXANDER, K.N.A. — Some rare and local Heteroptera found in Gloucestershire during 1985. *Macroplox preyssleri* (Fieb.), swept from steep limestone pasture on Rodborough Common, 30.v.86 — this rare species is only known from a handful of sites on the limestones of Western Britain. *Oncochila simplex* (H.-S.), one swept in Standish Wood, 5.vi.86. *Catoplatys fabricii* (Stal) one swept on Minchinhampton Common, 3.vi.86 and also found on neutral grassland at Ashchurch, near Tewkesbury, 29.vi.86. *Campylosteira verna* (Fallen), plentiful amongst limestone scree at Crickley Hill, 24.v.86.

APPLETON, D. — Three bugs previously unrecorded from Hampshire, All from the Lower Test Nature Reserve near Southampton. *Anthocoris limbatus* Fieb., 19.vii.86, one specimen, the only site record. *Stenodema trispinosum* Reut., 1.viii.86, common on the site. *Velia saulii* Tam., 26.x.86, about six found.

HOLLIER, J.A. and WISTOW, R.J. — *Zicrona caerulea* (L.) Llanymynech, Powys, 3.vi.86. Part of an exhibit on insects and conservation on the Montgomery Canal.

JONES, R.A. — Some bugs from the Greek island of Samos, collected during a two-week trip during early May 1986. Despite the fact that none have as yet been named, comparison with our fauna is interesting. There seemed to be preponderance

of red and black species, from all families, three similar yet distinctly different nabids, three lygaeids and a capsid illustrate this recurrent theme. The Scutelleridae were also very various, a selection of six casually collected species showing something of the range of this group.

KIRBY, P. — Auchenorhyncha 1984–6. *Centrotus cornutus* (L.), Bedford Purlieu, Northamptonshire, 23.vi.85, Benfleet Downs, Essex, 25.v.1985. *Gargara genistae* (F.), Maulden Wood, Bedfordshire, 20.ix.86. *Idiocerus herrichi* (Kirsch.), Little Paxton Pits, Huntingdonshire, 5.x.85. *Idiocerus poecilus* (H.-S.), Kew, Surrey, 9.ix.84. *Idiocerus vittifrons* (Kirsch.), Maulden Wood, Bedfordshire, 20.ix.86. *Ledra aurita* (L.), Upminster, Essex, 23.vii.84. *Agallia brachyptera* (Boh.), Oundle, Northamptonshire, 21.vii.85. *Athysanus argentarius* Metcalf, Snape Warren, Suffolk, 19.viii.84, Bedfords Park, Essex, 26.vii.86. *Macrosteles ossiannilssoni*, Beinn Eighe NNR, West Ross, 1.viii.86. *Cicadula intermedia* (Boh.), Inverasdale, West Ross, 6.viii.86. *Chlorita viridula* (Fall.), East Tilbury, Essex, 27.viii.84. *Cixius simplex* H.-S. Brancaster, Norfolk, 3.viii.85. *C. remotus* Edw., Dungeness, Kent, 23.viii.85. *Oliarus leporinus* (L.), Bradwell, Essex, 27.vii.86. *Asiraca clavicornis* (F.), Benfleet Downs, Essex, 25.v.85. *Stenocranus fuscovittatus* Fairm., Lakenheath Warren, Suffolk, 5.x.86. *Kelisia sabulicola* Wagner, Lakenheath Warren, Suffolk, 5.x.86. *Chloriona dorsata* Edw., Earith Gravel Pits, Huntingdonshire, 15.vi.86. *Euconomelus lepidus* (Boh.), Bassenhally Pits, Cambridgeshire, 23.ix.85. *Tettigometra impressopunctata* Lat., White Downs, Surrey, 8.ix.84.

HYMENOPTERA

HALSTEAD, A.J. — Some local or uncommon sawflies taken or bred in 1986. Male *Abia sericea* L. taken 28.v.86 at Therfield Heath, Royston, Herts. Female *Allanitus togatus* Panz., bred from a prepupal larva found in a rotten oak branch at Woking, Surrey; adult emerged 27.v.86. Female *Hemichroa crocea* Geoff. taken on Wisley Common, Surrey, 16.viii.86. Female *Priophorus rufipes* Lep. on elm leaf at Therfield Heath, Royston, Herts., 28.v.86. Female *Amauronematus crispus* Benson, taken while ovipositing in *Salix repens* L. buds, 11.v.86 at Horsell Birch, Woking, Surrey. Male and Female *Nematus umbratus* Thom. bred from larvae on birch on Wisley Common, Surrey; adults emerged 18.vi.86. Male and female *Nematus cadderensis* Cam., bred from larvae on birch, Chobham Common, Surrey; adults emerged 19–29.v.86.

HOLLIER, J.A. and WISTOW, R.J. — A selection of various insect orders taken by the Montgomery Canal Ecological Survey on the 57 km waterway between Frankton to Llangollen. This canal, which includes about 25 km of SSSI status, is soon to be restored to navigation. Solitary wasps shown were *Omalus puncticollis* Mocsary (Chrysididae), *Sapyga clavicornis* L. (Sapygidae) and *Crossocerus cetratus* Shuck. (Sphecidae).

HUDSON, I.R. — Some uncommon or local aculeate hymenoptera taken in Southern England in recent years.

Family Chrysididae. Two species of ruby-tailed wasps were exhibited. *Omalus puncticollis* Mocs. is a rare species collected on *Succisa pratensis* Moench. along a ride in Botley Wood, Hants., in July 1984. *Omalus violaceus* Scop., one specimen was reared from a cocoon found in the soft wood of a dead silver birch tree at Gosport, Hants. Also present in the dead wood were pre-pupae of *Pemphredon lugubris* F.,

which may have been the host species. A second specimen was collected from inside the exhibitor's greenhouse at Gosport; an effective trap over the years.

Family Tiphidae. *Tiphia femorata* F. was collected along the banks of the M27 at Fareham, Hants., where it was feeding on *Daucus carota* L. 12.ix.84. *Methocha ichneumonides* Latr., one specimen, collected by Mr D. Appleton at Emer Bog, Hants — a Hants. and Isle of Wight Naturalists Trust reserve (HLOWNT), another was collected on heathland at Purbeck in Dorset. This wasp's size varies considerably, depending on which species of tiger beetle is used as prey.

Family Sapygidae. Specimens of *Sapyga clavicornis* L. were taken at Roydon Wood, Hants. (HLOWNT) in July 1985, on wooden fence posts and railings where the bee *Chelostoma florissomne* L. was nesting in some numbers.

Family Mutillidae. Both British species of velvet ant were shown. *Mutilla europaea* L. has been encountered quite widely in the New Forest, although only as odd specimens. The less common male was taken on *Daucus carota* L. on Portsdown Hill, Hants., in July 1983. *Smicromyrme rufipes* F. is more common than the previous species and females have been seen at Gillkicker Point, Gosport; Hayling Island sand dunes and on the Purbeck Heaths. Their size variation is probably due to their wide range of host selection. The male, again much scarcer than the female, was taken flying over fixed dunes at Hayling Island.

Family Pompilidae (spider-hunting wasps). *Auplopus carbonarius* Scop. was reared from mud covered cells found under the bark of a dead silver birch tree at Gosport, Hants. This species is unique in Britain in producing its nests prior to capturing its prey. *Aporus unicolor* Spinola, collected at Oxenbourne Down, Hants. (HLOWNT) in July 1985, where both sexes were common on flowers of *Pastinaca sativa* L. The females attack the mygalomorph spider *Atypus affinis* Eich. in its silken underground lair.

Family Eumenidae. Three species were exhibited. *Pseudepipona herrichii* Saus. is a very rare species only occurring on the Isle of Purbeck, Dorset. There, however, it is quite numerous within a small area of heathland. The females stock their nests with caterpillars of Tortricinae. *Odynerus melanocephalus* Gmel. was collected at Browndown, Gosport — a small area of heath and fenland owned by the MOD. The male was collected on *Heracleum* and females were seen nesting in flat soil where they construct characteristic 'chimneys' above the entrance to their borrows. *Microdynerus exilis* H.-S. is a very small species and rather uncommon. The two specimens exhibited were found on a wooden fence post at Warsash, Hants., and on *Daucus* blossom at Halsea ramparts, Portsmouth.

Family Sphecidae. *Podalonia affinis* Kirby has been recorded by the exhibitor from two sites in South Hampshire and it seems to be quite numerous at both. These are on heathland at Browndown, Gosport, and fixed dunes at Hayling Island. Apparently the wasps pass the winter as adults. *Ectemnius dives* Lep. & Brulle. This and the next species nest in cavities in decaying wood and stock their cells with Diptera. It is generally considered rather rare but the exhibitor has recorded it from a number of localities including Gosport (two sites), Halsea ramparts and Botley Wood. *Ectemnius borealis* Zett. This species was added to the British list in 1972 when Mr G. Else collected it at Oxenbourne. The two specimens exhibited were taken on a wooden fence post at Kingley Vale National Nature reserve in 1983 and on *Pastinaca* flowers at Oxenbourne last year. *Philanthus triangulum* F. is a large wasp that stocks its nests with honey bees and is very rare in this country. The male and female exhibited were collected in 1984 on the Isle of Wight from one of the very few sites where the species seems to have gained a permanent foothold.

Family Andrenidae. *Andrena florea* F. is an uncommon solitary bee added to the Hampshire list when specimens were collected at Browndown heath in 1981. Since then many females have been seen nesting at this site and it seems well established there. *Andrena nitidiusculus* Schenck is another uncommon species in Hampshire. These specimens were taken *in copula* whilst at rest on *Daucus* flowers at Gillkicker Point, Gosport. Since then it has been recorded from another site at Gosport.

Family Melittidae. *Macropis europaea* Warncke is a wetland speciality and seems confined to areas where *Lysimachia vulgaris* L. grows, since the females exclusively gather pollen from this plant. It has been recorded from a few sites in Southern England but is very local. It occurs in good numbers at Browndown fen where these specimens were taken. *Dasypoda altercator* Harris. This handsome bee prefers light, sandy soils for nesting and it has been taken from dunes at Hayling Island and on the Isle of Wight, as well as from heaths at Purbeck.

Family Megachilidae. *Hoplitis claviventris* Thom. is a local and uncommon bee which nests in dead *Rubus* stems — especially those lying on the ground. The male and female exhibited were reared from stems collected at Oxenbourne, Hants., during the winter of 1984/85 but the bee is not common on the reserve. *Stelis ornatula* Klug. This bee is parasitic on the previous species and once again rather rare. At Oxenbourne, where these reared specimens came from, the characteristic cocoons were found in sections of *Rubus* stem that *H. claviventris* had been nesting in. Strangely, the parasite seemed more numerous than the host, at least in 1984/5 when these were collected.

Family Xylocopidae. *Ceratina cyanea* Kirby is a rare and local bee which is apparently confined to south-facing chalk downland in southern England. These specimens were collected at Oxenbourne Down, where the species is quite common. They were taken during January, 1985, while hibernating as adults inside hollowed out dead *Rubus* stems. Many bees may share a stem to pass the winter in this way.

Family Halictidae. *Lasioglossum prasinum* Smith, F. is a heathland bee that nests in sandy soil, often along paths. It is locally common in some areas of the New Forest and Purbeck.

ORTHOPTERA

DANAHAR, G.W. — Two examples of crickets of the genus *Platypleis*. The species were not known but one pair come from Atlantic neutral wet meadows by the River Drone in the Dordogne, France, while the other was taken in montane scrub, 1238 m up in the French Pyrenees in the Valley of the Aspe.

HOLLIER, J.A. and WISTOW, R.J. — Specimens of the groundhopper *Tetrix subulata* L. taken at Rednal, Salop., 22.v.85 and at Llarymyrech, Powys, on 24.v.85 during the Montgomery Canal Ecological Survey.

CRUSTACEA

BRATTON, J. — Live specimens of two rare crustaceans that live in temporary pools with distribution maps showing pre-1960 records. *Triops cancriformis* Bosc. may now be confined to one pond in Britain although old records show it scattered from Kent to Kirkcudbrightshire. It is adapted to its habitat by being able to develop to maturity from parthenogenetic eggs in about two weeks. The other species, *Chirocephalus diaphanus* Prevost is a filter feeder that has declined in recent years.

ILLUSTRATIONS

The following is a list of illustrations shown at the exhibition. There were fewer than last year — the majority being photographs or transparencies, with only a few paintings and drawings in colour and black and white.

BARRINGTON, R.D.G. — Ten very fine colour paintings of some British butterflies.

BRADFORD, E.S. — Thirty water-colour drawings of the Gelechiidae. The drawings will be included in future colour plates to be published by the Society.

BROOME, DR G. — Some colour photographs of butterflies taken in Bernwood Forest, together with black and white photographs of three views of the Forest, and requests for help in recording the fauna and flora.

JENNER, H.E. — A photograph of a male *Trachea atriplicis* L. (Orache moth) taken at light on 4.vii.86 at St Olaves, near Great Yarmouth, Norfolk.

JONES, R.A. — Colour photographs of a variety of insects from the Greek island of Samos, together with photographs and specimens of *Synchita separanda* Reitt. (Coleoptera) from the third British locality, his own garden.

JORDAN, M.R.J. — Black and white photographs of the genitalia of *Mesapamea remmi* Rezbanyai-Reser, a species new to Britain.

PORTER, J. and CHURCH, S.H. — Photographs of 747 macrolepidoptera larvae and 700 macrolepidoptera imagines. All were prints taken from slides. The pictures are the result of the past 6 years work.

REVELS, R. — A display of photographs of a variety of British wildlife including the life history of the Comma butterfly, and one hatching from the crysalis.

ROTHSCHILD, M. — Colour photographs of adults and larvae of *Eumaeus atala*, a very toxic and rare butterfly; also black and white photographs of the host plant *Zamia floridana* in the southern USA, one of the very primitive plants the Cycads.

TWEEDIE, M. — Ten microlepidoptera photographed abroad in colour and 231 monochrome photos of insects other than lepidoptera.

Despite the apparent drop in illustrative material, photography exhibits were up. Thanks to the arrangements made by Mr C.B. Ashby and the courtesy of the Sutton Camera Club the BENHS procured a slide cabinet and at indoor meetings before the annual exhibition, members were asked to reserve space for their slides. On the day of the exhibition, 120 superb slides were displayed in an anteroom between the main hall and the refreshment rooms. Each exhibitor was asked to provide a catalogue of their slides, which was kept on hand for reference by those examining the pictures.

ASHBY, C.B. — *Phlogophora meticulosa* L. Angle Shades, *Ouraapteryx sambucaria* L. Swallow-tailed Moth, *Dasychira pudibunda* L. Pale Tussock, *Eriogaster lanestris* L. Small Eggar, *Deilephila elpenor* L. Elephant hawk-moth, *Mythimna pallens* L. Common Wainscot, *Colotois pennaria* Hubn. Feathered Thorn, *Pterostoma palpina* Cl. Pale Prominent, *Xanthia aurago* D. & S. Barred Sallow, *Arctia caja* L. Garden Tiger, *Abrostola triplasia* L. Spectacle. Small larvae of *Eriogaster lanestris* were taken from a web in Sweden in 1977. After feeding actively on birch at night they could be found each morning in the position shown: two by two, head to tail, exactly matched either side of a stem. Apart from web dwelling, and with the exception of

Thaumetopoea, European Lepidoptera are not noted for social behaviour; yet this association of two larvae was seen repeatedly, and most of the 20 individuals would be found thus during daylight. Similar behaviour occurred in a further batch of *lanestris* larvae taken from a web on blackthorn in 1984. One slide showed a naturally assumed position of the autumn species *Xanthia aurago* on a coloured leaf of birch. The tip of the leaf, which otherwise would be truncated by the presence of the moth, is very accurately made good in colour, form and margin by the markings of the forewing.

BRADFORD, E.S. — *Metzneria lappella* L., Monkton Nature Reserve, Thanet, Kent. An unidentified fungus with a plea for identification. Views of Shakespeare Cliff, Dover Kent, showing the Channel Tunnel site and old tunnel casings from the previous attempt. *Melanargia galathea* and *Cryphia domestica* larva from Shakespeare Cliff, *Strangalia maculata* (L.), Pean Hill, Whitstable, Kent, *Ophrys sphegodes* Spider orchid, Shakespeare Cliff, *Micrommata virescens*, Church Wood, Blean, Kent, *Pistius truncata*, Childs Forstal Wood, East Blean, Kent.

BURTON, G.N. — *Leptinotarsa decemlineata* (Colorado beetle), adult and larva, *Argiope bruennichi*, *Mantis religiosa*, *Timarcha tenebricosa* (bloody nose beetle), cicada (*Lyristes plebejus?*), cicada pupal case, *Argynnis paphia* (L.) (silver-washed fritillary), *Pyrgus malvae* (L.) (grizzled skipper), *Anthocharis cardamines* (L.) (orange tip), *Zerynthia polyxaena* (southern festoon) ovipositing, *Mimas tiliae* (L.) (lime hawk), *Saturnia pyri*.

CALLOW, N.A. — Newly-emerged Pentatomid bugs clustered round their egg-cases on nettle, East Hoathly, Sussex, 12.vii.86. Ants, *Myrmica rubra*, removing their pupae from under a disturbed log, Millyford Bridge, New Forest, 18.vi.86. Silver-spotted Skipper *Hesperia comma*, Martin Down, Hants., 17.vi.86. Buff-tip Moth, *Phalera bucephala*, limestone quarry, South Glamorgan, 21.vi.86. Burnet Moth and Crab-spider, *Xysticus cristatus*, The Burnet moth had pollinia attached to its tongue. The crab-spider was unwilling to tackle such a large insect but remained in an alert position while the moth fed, Ranmore, Surrey, 6.vii.86. *Anaglyptus mysticus*, Mickleham, Surrey, 8.vi.86. *Melolontha melolontha*, Merthyr Mawr, South Glamorgan, 21.vi.86. Bloody-nosed beetles, *Timarcha tenebricosa*, Martin Down, Hants., 17.vi.86. Shore Crab, *Carcinus maenas*, digging backwards into soft sand, Oxwich Bay, Gower, 22.vi.86. Sea Mouse, *Aphrodite aculeata*, Oxwich Bay, Gower, 22.vi.86. Sea Squirts, *Phallusia mammillata*, Oxwich Bay, Gower, 22.vi.86. Starfish, *Asterias rubens*, Oxwich Bay, Gower, 22.vi.86.

JONES, R.A. — Some insects from the Greek Island of Samos. The typical view was of purple mountains beyond green and fragrant olive terraces. The May flora on the olive terraces was very varied, but by mid-May, the flowers began to look noticeably 'over'. A hairstreak at sage flower. This species waved its hind wings about, perhaps giving its 'tails' the appearance of antennae. The 'bee-eating' beetle *Trichodes apiarus* just about the take flight. A furry robberfly on its perch. This species would dart out at any passing insect (or shadow) and if missing, would straightaway return to its lookout. Buprestid on an olive log. The variety of this family was astonishing. Jumping spider on an olive log. Ant lion 'traps'. Exposed ant lion. Trough under a standpipe, attracting honey bees to the water's edge. Honey bees at water's edge.

MURPHY, F. — *Thomisus onustus* (Thomisidae) eating *Dictyna arundinacea* (Dictynidae) on Chobham Common, Surrey. The *Thomisus* has entered the *Dictyna*'s web (of which remains could be seen) and captured the owner of the web.

Female and male of *Pistius truncatus* (Thomisidae). These spiders were photographed in France. This species has recently been re-found in Britain by Mr Eric Bradford in his wood in Kent. The male was swept from shrubs but the female was spotted sitting on the upper surface of the leaf of a young oak tree. *Aelurillus v-insignitis* (Salticidae). This male was seen on Chobham Common making unsuccessful courting gestures to a female. *Trochosa terricola* (Lycosidae) being consumed by a Pompilid larva (which did not mature and could not therefore be named). The spider and larva were found in the spider's retreat under a small stone on Heyshott Down, West Sussex. *Araneus quadratus* (Araneidae) sub-mature female and male. They were found together in the retreat on which they are photographed (on Chobham Common). It is quite common for males of a number of different families to enter the retreats of females in the penultimate instar and mate with them when they become mature. In some cases at least a pheromone is involved. *Thomiscus onustus* female, Chobham Common, eating a bumble bee. *T. annitus*, immature, eating a fly. *Clubonia corticalis* male caught in the house. *Aelorinius vittatus* female in web with eggs, Northumberland. *Sericopelura commune* female from the hotel car park near Volcan, Chiriquei Hills, Panama.

PARKER, R. — Some insects from Cyprus. *Daphnis nerii*, the Oleander Hawk Moth, ova laid in captivity by a female taken at light, together with freshly hatched larva. The larvae hatched green, but some changed to the yellow form well before pre-pupal discoloration. *Deilephila alecto cretica*, the Mediterranean Hawk Moth. This unfamiliar species is fairly common in Cyprus. The slide showed the loose cocoon of vine leaves in which it pupates. They were found at shoulder height on garden vines. The stick insects *Bacillus cyprius*. This species is very similar to *B. rossius*, but is restricted to Cyprus, on its foodplant, Lentise.

PARKER, W. — Six slides of Tipulidae. *Tipula maxima*, *T. oleraceae*, *T. varipennis*, *T. fulvipennis*, *Nephrotoma questerlica*, *Pedicia rivosa*.

SOKOLOFF, P. — *Mythimna loreyi* (Cosmopolitan) bred from 1985 immigration. 'Scarecrow' — South Downs. Sunset over Stodmarsh — famous Kentish locality. *Acherontia atropos* (Deaths Head Hawkmoth) larva found on potato on local allotment (Orpington, Kent). Transferred to privet. Imago reared from above larva. Leaf mine of *Tischeria marginea*, Blean, Kent. Larval feeding of *Leioptilus lienigianus* (Lep: Pterophoridae) on *Artemisia*. Benfleet, Essex. *Bombilius major* (bee fly) on *Arabis*. Orpington, Kent. Cockchafer, *Melolontha melolontha*. Ham Street, Kent. Larva of *Ennomos alniaria* (Canary Shouldered Thorn) on birch. *Teleiodes paripunctella* (Lep. Gelechiidae) bred *Myrica*, Skye. Overwintering case of *Coleophora gryphipennella* on *Rosa* stem.

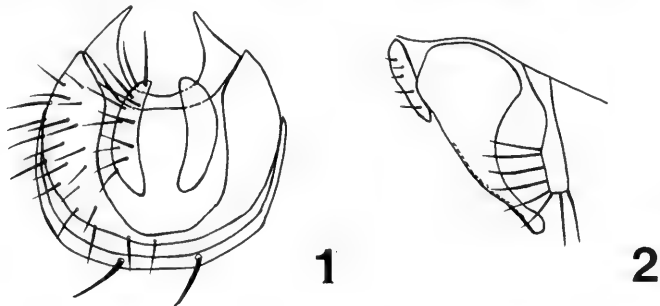
STERLING, P.H. — *Ectoedemia arcuatella* (Herr.-Sch.): a larval mine found on *Potentilla reptans* L., Wytham Woods, Oxford (VC22). *Stigmella tityrella* (Stt.): a larval mine on *Fagus sylvatica* L., Wytham Woods, Oxford (VC22). *Stigmella floslactella* (Haw.): a larval mine on *Corylus avellana* L., Little Wittenham NR, near Didcot (VC22). *Stigmella microtheriella* (Stt.): a larval mine on *Corylus avellana* L., Little Wittenham NR, near Didcot (VC22). *Coleophora hemerobiella* (Scop.): first case (on *Crataegus*) showing case-building of previous autumn or year (whichever?) in grey, and that of the present spring in brown. The case was now attached and abandoned beneath a mined area of leaf margin which had been cut out to form the final case. Is this species always biennial? The fact that the first case had only two colours might indicate that it had only passed through one winter — one would expect

to see more algae on it if parts were nearly 18 months old. *Coleophora hemerobiella* (Scop.): final case (10mm) affixed to a hawthorn stem for pupation, Little Wittenham NR, Didcot (VC22). *Coleophora hemerobiella* (Scop.): the adult, with the distinct second discal stigma, which only this special and *Col. salicorniae* have in this country, Little Wittenham NR, Didcot (VC22). *Coleophora artemisicolella* Bruand.: the larval case formed from an empty seed-head of *Artemisia vulgaris* L. and attached to the side of another to feed, Cliffe Marshes, Kent. *Coleophora artemisicolella* Bruand.: the tell-tale holes in the seeds indicative of a wandering seed-capsule near-by! *Oecophora bractella* L.: reared from larvae found under dead wood in Harewood Forest, Hants (VC12), in 1983. *Eustroma reticulatum* D. & S.: adult reared from larvae collected at Windemere in the Lake District, autumn 1985. *Selenia tetralunaria* Hufn.: adult reared from a larva found on *Corylus* at Ramsden, Oxfordshire (VC23).

UFFEN, R.W.J. — Brazil, May 1986, dry season at Planaltina, Brazilia, altitude 3000 feet: Savanna woodland; acacia flowers; termite nests; a termite track on a tree trunk, broached to show insects; Leaf of a shrub with Nepticulid leaf mines, a family previously unrecorded from South America; Downlooker fly — a tachinid parasite with rigidly extended female abdomen; white fly (Aleyrodidae), the colonies of which make white waxy spiral patches on leaves; Oecophorid larvae gregariously window-feeding in webs (Oecophorids predominate over tortricids in Brazil). From the sub-tropical coast, Sao Paulo Province: Bromeliad on the sandy shore at Bertioga, Bromeliads carpet the ground on burning hot sand dunes and in densely shaded woodland on the sandy shore; sand dune orchid at Bertioga; Shrub with silky leaves both on sand and on laterite soil.

The British species of *Diastata* Meigen and *Campichoeta* Macquart (Diptera: Drosophiloidea)

Correction: An unfortunate error has arisen due to figures being misplaced during the preparation of my recent paper on 'The British species of *Diastata* Meigen and *Campichoeta* Macquart (Diptera: Drosophiloidea)' (*Proc. Trans. Br. ent. nat. hist. Soc.* 19: 9–16), in which two of the figures do not represent the species concerned. The genitalia figure of *Campichoeta punctum* (Meigen) (Fig. 2) actually represents *C. griseola* (Zetterstedt), a widespread European species not found in Britain, while that of *Diastata vagans* Loew (Fig. 6) represents the eastern Palaearctic species *D. ussurica* Duda, which it resembles in genital structure but not in external characters. The correct figures are given here: Fig. 1, *C. punctum* (Meigen); Fig. 2, *D. vagans* Loew. Peter J. Chandler.



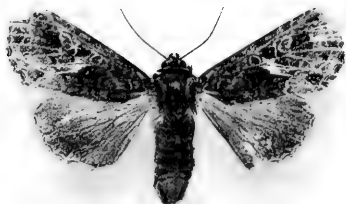


Plate VI. ANNUAL EXHIBITION 1986

1	2
3	5
4	6
7	8
	9

1: *Polyphaenis sericata*, Guernsey, 14.viii.86, R.A. Austin & T.N.D. Peet. 2: *Agrotis crassa*, Playden, 7.viii.86, M.W.F. Tweedie. 3 & 4: *Angerona prunaria*, Gillingham, 29.vi.86, J.&M. Halsey. 5: *Crocallis elinguaris*, Rainham, 24.viii.86, J.&M. Halsey. 6: *Trachea atriplicis*, Dungeness, 8/9.viii.86, D. Wilson. 7: *Colostygia pectinataria*, Winchester, 27.vi.86, D.H. Sterling. 8: *Lomaspilis marginata*, Woolhampton, 18.vii.86, D.A. Young. 9: *Thera cupressata*, Guernsey, 3.x.86, R.A. Austin & T.N.D. Peet.

Photo: D. Wilson.

INDOOR MEETINGS

26 June 1986

EXHIBITS

Prof. J.A. OWEN showed a specimen of *Pterostichus angustatus* (Duftschmid), found under a piece of charcoal at the site of a bonfire, on Esher Common, Surrey on 5.v.86. This species first appeared in Britain in south-east England around 1920. It is nearly always found in areas which have been burnt and persists in the area for a few years; the reason for this choice of habitat is unknown.

THE PRESIDENT Mr J.M. CHALMERS-HUNT exhibited a large trichopteron which he believed to be *Phryganea grandis* L. The specimen was taken at light at Colne Point, near St Osyth, Essex on 23.vi.86.

Mr A. J. HALSTEAD showed examples of the gall wasp *Xestophanes potentillae* Retz. (Hymenoptera: Cynipidae) which had been bred from galls in the petioles of a herbaceous garden plant. *Potentilla* × *tonguei*. Eady and Quinlan, in their RES key to the Cynipoidea, give the wild plant *Potentilla reptans* as the host for this species. The parentage of *P.* × *tonguei* is uncertain but is thought to be a hybrid of *P. nepalensis* with either *P. anglica* or *P. aurea*. The galls were found in November 1985 in a garden at Theobalds, near Hawkhurst, Kent.

ANNOUNCEMENTS

THE SECRETARY Dr J. MUGGLETON announced that a one-day workshop on 'Recent work on stored product insects' would be held at the rooms of the RES on 14.x.86. All would be welcome.

COMMUNICATIONS

Mr S. MILES reported seeing a Hummingbird Hawkmoth (*Macroglossum stellatarum* L.) at Kingsley, Hampshire on 15.vi.86. Mr J.M. CHALMERS-HUNT said that the Red Admiral (*Vanessa atalanta* L.) had been seen as far north as Canna in the Inner Hebrides. Prof J.A. OWEN said that he had seen it at Loch Garten, Invernesshire on 23.vi.86. Mr Chalmers-Hunt also reported that Mr A.J. Dewick had taken a specimen of the Purple Cloud (*Actinotia polyodon* Clerck) a rare migrant, on the Essex coast at Bradwell-on-Sea on 17.vi.86.

LECTURE

Dr D.G.H. HALSTEAD gave an illustrated talk on the beetle pests of stored products. Some excellent slides showed the differences between closely related species and stages in their life history. Various structures visible on scanning electron micrographs of the pupae were described and their role in providing defence mechanisms for the pupae were discussed.

10 July 1986

EXHIBITS

Mr J.M. CHALMERS-HUNT showed live specimens of the following:- (1) a larva of the buttoned snout, *Hypena rostralis* L. on hop, collected at Ruxley, West Kent, on 9.vii.86; (2) a first year larva with its case of the psychid moth, *Pachythelia vilosella* Ochseneimer, on heather from Dorset; (3) a female spider with young on its back from West Wickham, Kent. This was later identified by Mrs Murphy as a *Pardosa* sp.; (4) a gelechid moth, *Athrips rancidella* H-S, taken at M.V. light on 9.vii.86. This species was first recorded as British in 1985 and is only known from the exhibitor's garden at West Wickham.

Mr A.J.E. HARMAN showed some larvae of the Solomon's Seal sawfly, *Phymatocera aterrima* Klug.

Mr E. BRADFORD showed the elytra of 20–30 rose chafer beetles, *Cetonia aurata* L. found close together at Shakespeare Cliff, Dover. The beetles had presumably been eaten by bats or birds.

Mr N. MALLETT showed some pupae of the green veined white butterfly, *Pieris napi* L. which had pupated back-to-front. 15 out of 63 larvae had behaved in this way, without apparently affecting their emergence.

ANNOUNCEMENTS

The Librarian, Mr S. MILES, displayed two copies of the Nature Conservancy Council's publications in the 'Focus on Nature Conservation' series. These were No. 12 'Dungeness – its Ecology and Conservation' and No. 16 'Conservation of the Chequered Skipper in Britain'.

COMMUNICATIONS

Reports were received from several members, of migrants such as the red admiral and painted lady butterflies and the humming bird hawk moth. A letter from Mr G.B. Millington stated that humming bird hawk moths seen at Weaverham, Cheshire, were visiting red valerian flowers but not the white-flowered forms. Mr Chalmers-Hunt said that Mr Dewick had taken the Orache moth, *Trachea atriplicis* L. at Bradwell, Essex, on 6.vii.86 and that Bernard Skinner had taken another specimen two days later at the same place. Dr C.J. Luckens had seen a pale clouded yellow butterfly in the New Forest [may have been Berger's]. Mr E. Bradford reported on the colonisation of his pond and speculated on how insects with specific host preferences, such as reed mace, managed to locate new habitats. He also reported seeing the cream spot tiger moth, *Arctia villica* L. and a small cloud of about 50 males and females of the tineid moth, *Monopis ferruginella* Hüb. at Shakespeare Cliff, Dover.

LECTURE

JOHN BEBBINGTON talked on the significance of the colours and markings of insects in relation to their biology. The talk was illustrated with many excellent slides showing examples of camouflage, disruptive colouration, warning colouration, mimicry and threatening behaviour, as shown by the larvae, pupae and adults of moths and butterflies.

24 July 1986

EXHIBITS

Mr J.M. CHALMERS-HUNT showed a specimen of the Orache moth, *Trachea atriplicis* L. bred in 1902. This species had not been seen in Britain since 1915 until single specimens were taken at Bradwell on Sea, Essex, on the 6 and 8.vii.86, by A.J. Dewick and B. Skinner respectively. The President also showed a live adult of the yarrow pug, *Eupithecia millefoliata* Rossl. bred from larvae collected at Faversham, Kent.

Mr E.S. BRADFORD showed a live adult of the rose chafer beetle, *Cetonia aurata* L. collected on a return visit to Shakespeare Cliff, Dover, Kent, on 23.vii.86. At the last meeting, the exhibitor had shown elytra of this beetle that had been found during an earlier visit to the site. The cause of the beetles' demise was now believed to be a kestrel. A number of pellets were found which contained bones, feathers and fragments of *Cetonia aurata* and other beetles.

Mr R.A. JONES showed several specimens of *Axinotarsus marginalis* Cast. (Coleoptera: Melyridae) taken by sweeping in Richmond Park on 29.vi.86. This recent colonist from the Continent was first recorded in Hampshire in 1966 and is now spreading rapidly in south-east England.

Mr A. GODFREY showed a male pipunculid fly *Nephrocerus flavicornis* Zett. taken 14.7.86 at Harrock's Wood, Watford, Herts. This rare fly appears to be restricted to southern England, where it is possibly parasitic on the homopteran *Ledra aurita* L. It is one of Britain's largest pipunculids with a wing span of up to 9 mm.

Mr R.D. HAWKINS showed two specimens of the buprestid beetle *Agrilus sinuatus* Oliv., taken at Sinodun Hills, Oxon, on 28.viii.85 and at Horley, Surrey, on 30.vi.86.

Prof. J.A. OWEN displayed a live specimen of the timberman beetle, *Acanthocinus aedilis* L. bred from a larva found in a pine log at Loch Garten in March, 1986.

Mr R.A. SOFTLY showed specimens of the skipper butterflies *Thymelicus sylvestris* Och. and *T. lineola* Poda, and discussed their separation on antennal characters.

Mr A.J. HALSTEAD showed a female specimen of *Pachygaster orbitalis* Wahlberg (Diptera: Stratiomyidae) taken at the RHS Garden, Wisley, Surrey, on 22.vii.86. Members of this genus lay their eggs in the tunnels of wood boring beetles and this scarce species is associated with beetle tunnels in holly, horse chestnut and poplar.

MEMBERSHIP

The names of S.J. Willott, Peter John Brooksbank and the Herbert Art Gallery and Museum were read for the second time and duly elected.

ANNOUNCEMENTS

Mr S. MILES displayed two recent acquisitions for the library. These were the NCC publication 'Management of Chalk Grassland Butterflies' and 'Insects in Camera — a Photographic Essay on Behaviour' by C. O'Toole and K. Preston-Mafham

COMMUNICATIONS

Col. A.M. EMMET reported three records of the pyralid moth *Dioryctria schuetziella* Fuchs in Essex, two of which were in his garden.

Mr B.K. WEST reported that a female of the rarely seen *Eupithecia abietaria* Goeze had been taken at MV light in his garden at Dartford, Kent, on 21.vii.86. 'The Lepidoptera of Kent' by J.M. Chalmers-Hunt listed only three previous records for the county.

Mr G. PRIOR commented that *Eupithecia abietaria* spends most of its time at the tops of mature trees and is probably more common than the captures of adults might suggest.

LECTURE

Mr H.C. EVE showed slides of continental grasshoppers, crickets and other insects taken on recent visits to France, Spain and Italy.

11 September 1986

Joint Meeting of the BENHS and the London Natural History Society

The meeting was held at the rooms of the Linnaean Society with Mr C. Plant, President of the LNHS, in the Chair.

EXHIBITS

Mr J.M. CHALMERS-HUNT showed the larvae of two pyralid moths collected 10.ix.86 at Dartford, Kent. These were *Evergestis extimalis* Scop., found feeding on perennial wall-rocket, (*Diplotaxis tenuifolia*) and *Sitochroa palealis* D. & S. on the seed heads of wild carrot (*Daucus carota*).

Mr C. PLANT showed a male *Xanthandrus comtus* Harris (Diptera: Syrphidae). This uncommon hoverfly was bred from a bright green larva found on a leaf of hogweed (*Heracleum sphondylium*) at Shoreham, Kent, on 2.viii.86. The larva pupated 36 hours later and the adult emerged on 11.viii.86.

Mr A.P. FOSTER showed a spotted fritillary, *Melitaea didyma*, sent to him for identification by a schoolboy. Few details of its capture were available but the butterfly had apparently been seen with three others on a saltmarsh in Essex in late July. It is assumed that these specimens had been released from bred stock.

Mr R.A. JONES showed examples of *Platycis minutus* F. (Coleoptera: Lycidae) which were found in some numbers in rotten birch logs at the Ridges, Finchampstead, Berks., on 7.ix.86. This very local beetle is active in late August – early September and is possibly on the increase. It has in recent years been discovered in Windsor Forest and Arundel Park.

Col. A.M. EMMET showed an unidentified leafhopper (Homoptera: Cicadellidae) which had markings on its wing tips similar to those on certain microlepidoptera. Shown for comparison were *Leucoptera laburnella* Stainton, *L. orobi* Stainton, *Lyonetia clerkella* L., *Phyllocnistis unipunctella* Haw. and *P. xenia* Hering. Col. Emmet said that the markings resembled a small hymenopteran and suggested that they might have a protective function, either by deterring predators or by deflecting attacks away from the insect's head.

Mr I.D. FERGUSON showed a birch shoot that had been galled by caterpillars of *Lampronia fuscatella* Tengstrom (Lepidoptera: Incurvariidae). The specimen was collected during the field meeting at Blean Woods, Kent, on 23.iii.86.

ANNOUNCEMENTS

A letter and brochure from the Cornwall Trust for Nature Conservation concerning the Cornish Wildlife Appeal was brought to the attention of the meeting.

LECTURE

Dr P.H. STERLING gave an informative talk on his research into the habits and biology of the brown-tail moth. When abundant, the larvae of this moth cause extensive defoliation of trees and shrubs, and there is also a public health problem caused by their irritant hairs. Various control measures were discussed with particular emphasis on the potential of a nuclear polyhedrosis virus as a specific control of the larvae.

25 September 1986

EXHIBITS

Mr J.M. CHALMERS-HUNT showed a larva of the local pyralid moth, *Gymnancyla canella* D. & S. on its food plant saltwort (*Salsola kali*) collected at Sandwich, Kent, on 22.ix.86.

Mr A.J. HALSTEAD showed a specimen of *Opilo mollis* L. (Coleoptera: Cleridae) taken in a Rothamsted light trap at RHS Garden, Wisley, Surrey, on 27.vii.86. This uncommon beetle occurs in southern England and is associated with dead wood where it preys on wood boring insects.

Mr R.A. JONES showed examples of *Cionus tuberculosus* Scopoli (Coleoptera: Curculionidae) taken on water figwort in Richmond Park, Surrey, on 17.viii.86. Although well recorded from south-west London, this species is of local occurrence and may be confused with the very similar *Cionus scrophulariae* L. Examples of both species were shown.

Mr G. W. DANAHAR showed pinned specimens of *Gomphus vulgatissimus* L. and its nymphal exuviae taken at Port Meadow, Oxford. This local dragonfly was found in some numbers on 25.v.85 but at a similar time in 1986 only a few adults and exuviae were found. A colour transparency of an adult seen this year was also displayed.

Mr A. VALETTA showed a colour photograph of an unnamed variety of the small cabbage white butterfly (*Pieris rapae* L.) taken by L. F. Cassar at Ghadira Nature Reserve in Malta on 12.viii.86.

ANNOUNCEMENTS

THE SECRETARY, Mr J. MUGGLETON, asked for volunteers to help man the Society's stand at the AES exhibition and to assist at our own Annual Exhibition.

COMMUNICATIONS

Mr G. PRIOR asked if members going to Dungeness or some other coastal area could collect for him some larvae of the pug *Eupithecia millefoliata* Rossl. from the old seed heads of yarrow.

LECTURE

Mr P.C. BARNARD spoke on caddis flies and moths – are they really different? Although Lepidoptera and Trichoptera are known to be closely related orders of insects, it is generally assumed that they are easily separable. The traditional characters for separating adults of the two groups are the wing venation, the presence of wing-scales, and so on. However, some primitive moths have identical venation to Trichoptera, and the wing-scales of Trichoptera are shown to be remarkably similar to those of Lepidoptera, when examined under the scanning electron microscope. Larval case construction in the Psychidae is very similar to that shown by Trichoptera, and even the aquatic habitat of caddisfly larvae is not diagnostic, as a few species are entirely terrestrial. The only consistent differences between the two groups are very small morphological and anatomical features, which seem to have little functional significance.

9 October 1986

THE PRESIDENT welcomed Dr Yukata Yoshiyasu from Japan.

EXHIBITS

THE PRESIDENT, Mr J.M. CHALMERS-HUNT showed living larvae, in their cases, of *Reuttia subocellea* (Steph.) on seed-heads of *Origanum vulgare* (Marjoram) collected at Shoreham, Kent, on 6.x.86. The cases are made of florets or husks.

Mr M.J. SIMMONS: *Sphinx ligustri* ab. *pallida* from larvae purchased in 1984 nine pupae were obtained. These pupae in 1985 produced eight wild type *ligustri* and one ab. *pallida*. The ab. *pallida* specimen was only noted after it had died. Upwards of 250 larvae pupated and, from 150 pupae kept, nine ab. *pallida* emerged this year in July. Those seen hatching on the weekend of the 12–13.vii.86 were put in a separate cage and allowed to inbreed. On checking the dead adults it was revealed that three ab. *pallida* has been left with the wild type. It is unclear whether these mated with the wild type. From the *pallida* × *pallida* cross 67 larvae were obtained. Thirty two survived to the penultimate instar. Three finally buried for pupation though only one pupated. It was noticeable during the final two instars that the majority of the larvae never became firm but were very soft and exuded a brownish liquid, often in evidence on the ventral half of the larva. This condition was noticed in the larvae from the wild type crosses though not in such large numbers. A similar number of the wild type cross larvae (possibly including larvae from a *pallida* × wild type cross) were reared. Twenty four larvae buried for pupation and sixteen pupated.

COMMUNICATIONS

Mr K.G.W. EVANS revived an old custom and offered some spare livestock of pupae of *Stauropus fagi* L. from East Grinstead, Sussex for the benefit of other members. Mr Evans drew attention to the lateness of the season and reported seeing the Lackey from 27–29.ix.86, Magpie on 23.ix.86, Dingy Footman up to 2.x.86 and the Drinker on 25.ix.86, all in perfect condition.

Dr B.J. MACNULTY confirmed similar conditions in South Wales and added Copper Underwing on 23.ix.86.

Mr R.W.J. UFFEN reported many flowers in full bloom, including Sea Wormwood, on the Gower.

The Rev. D.J.L. AGASSIZ reported that the rare migrant *Chrysodeixis chalcites* Esper was taken in Kent on the 30.ix.86.

LECTURE

In the unavoidable absence of the scheduled speaker Dr Clive Betts, Dr R. WOOTTON, also of Exeter University gave the lecture on Insect Flight. The great majority of insect species are capable of flight – in their adult stage, when they need mobility to disperse the population. Flight is valuable for reaching oviposition sites, but may also be involved in locating and sometimes in catching food; in escape; and in courtship and territorial behaviour. These varied functions are reflected in a wide variety of flight techniques, whose details, and aerodynamic mechanisms, are becoming better known. Many aspects of insect flight are under investigation. Dr Wootton's group at Exeter are particularly concerned with making functional sense of wing structure. They use high-speed cinematography of freely flying insects to analyse the motion and the changes in shape and attitude of the wings during the stroke cycle; and study how these changes are controlled by the arrangement and properties of the veins, the membrane and the special hinge-lines within the wing. Many characters familiar in keys – corrugation, vein branching patterns, ambient veins, hemi-elytra, nodes, costal breaks and fold-lines – are now emerging as subtle adaptations for controlling bending, twisting and camber, and as safety devices. There is much to be learned from these mechanisms, and some of the lessons may well be applicable in the design of man-made deformable aerofoils such as sails.

23 October 1986

EXHIBITS

Mr J.M. CHALMERS-HUNT showed live larvae of *Coleophora squamosella* Stainton (Lep: Coleophoridae) on the seed heads of blue fleabane (*Erigeron acre*) collected at Stone, near Dartford, Kent.

Mr M.J. SIMMONS showed some forms of the common blue butterfly (*Polyommatus icarus* Rott.). A female taken in Sherwood Forest, Notts., had enlarged spots on the underside of the forewing, with the postdiscal spots extending to the orange/red lunules. An unsuccessful attempt had been made in September to mate this female with a male from the same area. Also shown was a male with some postdiscal spots absent and poor development of most basal spots on both fore- and hind-wings. It was taken *in copula* at Eynsford, Kent, in June 1986. The resulting larvae have not produced a second generation and are now overwintering.

Mr I.R. HUDSON showed a male and female of the local bee fly *Bombylius minor* L. (Diptera: Bombyliidae). They emerged from some cocoons of the solitary bee, *Colletes succinctus* L. dug up from a sand pit on Godlingston Heath, Purbeck, Dorset. Four cocoons were found on 13.vii.86 and they produced two adult bee flies

the next day, with two males of the host bee emerging on 1.viii.86. Adults of both sexes of the bee fly were seen on the wing at the site on 13.vii.86 but no adult bees were seen at that time.

Mr A.J. HALSTEAD showed:- (1) a dried paeony flower that was being damaged by larvae of the Indian meal moth, *Plodia interpunctella* Hüb. (Lep.: Pyralidae). The specimen had come from the Channel Islands via a florist's shop in Godalming, Surrey. (2) An alate specimen of the deer ked, *Lipoptena cervi* L. (Diptera: Hippoboscidae) found on the exhibitor's arm at White Downs, Surrey, on 22.ix.86. This blood sucking fly feeds on deer and is likely to be associated with roe deer at this site. Newly emerged flies have wings but these are broken off once the fly has located a suitable host.

B. K. WEST showed six foreign butterflies chosen to illustrate various flight patterns. These were:- (1) *Othomia drymo* Hubn. from Port of Spain, Trinidad, 20.viii.65, which has a slow fluttering flight in jungle shade. The flight path is difficult to follow due to the transparent nature of the wings. (2) *Acraea cerasa* Hew., a canopy dweller from Eshowe, Natal, collected on 3.iv.56. (3) *Delias belladonna* F. from Gunong Jasar, Pahang, Malaya, on 19.iv.59 at an altitude of 5500 ft. This has a rapid erratic flight on the mountain peaks restricted to between 8 and 9 a.m. (4) *Hamanumida daedalus* F. from Dabola, Guinea, on 12.viii.62 and Salisbury, Rhodesia, on 14.ix.47. This species glides close to the ground and settles frequently. (5) *Colotis erone* Angas from Umhlanga, Natal, on 23.vi.56, where they fly in rapid straight lines along the forest edge, although they would deviate momentarily to inspect a pinned white butterfly. (6) *Colotis celimene* Lucas from Wyliespoort, Transvaal, on 10.vii.56. This hovers on the sunny side of thorn trees at a height of 7-15 ft but breaks off to rest on low herbage at intervals of 10-30 minutes.

ANNOUNCEMENTS

THE SECRETARY, Dr J. MUGGLETON, asked for volunteers to help at the Annual Exhibition, and drew attention to the closing date for places at the Annual Dinner. He also reported receiving the new programme card from the Lancashire and Cheshire Entomological Society. The Field Meetings Secretary, Mr A.J. HALSTEAD, asked for volunteers to lead field meetings in 1987.

COMMUNICATIONS

Dr D. LONSDALE reported seeing a female glow-worm near Bentley Station, Hants, on 8.x.86, which was thought to be a late date for this insect.

LECTURE

Mr T. PRICE described some of the management problems involved in conserving Surrey heaths and gave details of projects which had been undertaken to restore or retain this type of habitat.

13 November 1986

THE PRESIDENT, Mr J.M. CHALMERS-HUNT, announced the deaths of special life member, the Rev. J.N. Marcon, and a non-member, Dr E.A. Ellis.

EXHIBITS

Prof. J.A. OWEN showed a live larva and adult of *Ampedus cardinalis* Schiodte (Coleoptera: Elateridae). The adult had been bred from a half-grown larva collected from a fallen oak bough in Richmond Park on 23.ix.83. This larva was reared in a jar filled with rotten oak wood and it pupated in July 1986. The pupal stage lasted three weeks but the adult will remain in its pupal cell until the summer of 1987. The long

larval period and dormancy of the adult is characteristic of many elaterid species that develop in rotten wood. The live larva shown was obtained from Windsor Forest. Also shown were pinned specimens of other *Ampedus* species that Prof. Owen had reared from larvae in recent years. These were *Ampedus balteatus* L., *A. cardinalis* Schiodte, *A. elongatulus* F., *A. nigerrimus* Lac., *A. pomonae* Steph., *A. pomorum* Herbst, *A. rufipennis* Steph. and *A. sanguinolentus* Sch.

Mr R.A. JONES showed specimens of *Eledona agricola* Herbst (Coleoptera: Tenebrionidae) found in an old bracket fungus (possibly *Polyporus sulphureus*) on an old beech tree in Richmond Park on 17.viii.86. Also shown was a live specimen of the drone fly, *Eristalis tenax* L. (Diptera: Syrphidae) found indoors in Peckham, perhaps seeking an early hibernation site?!

Mr R.D. HAWKINS showed two live specimens of the ladybird *Halysia sedecimguttata* L. bred from pupae found on a fallen ash leaf in Norbury Park, Leatherhead, Surrey, on 2.xi.86. The pupae were smooth and black with four yellow spots. They were kept in a refrigerator and adults emerged on 7.xi.86.

MEMBERSHIP

The names of Gary John Skinner, Michael John Bleckwen, Andrew M. Proudfoot and Nigel Gill were read for the second time and were duly elected.

REPORTS ON THE ANNUAL EXHIBITION

The EXHIBITION SECRETARY, Mr K. EVANS, reviewed the organisation of this year's exhibition and stated that 111 exhibits had been shown. He thought that poor weather in 1986 had resulted in fewer large displays but there had nevertheless been many interesting finds. Reports were given by Mr Evans and Mr J.M. CHALMERS-HUNT of the macrolepidoptera, the latter also reporting on the microlepidoptera. Mr R. TUBBS described the butterflies, Mr R. JONES the Coleoptera and Mr A. HALSTEAD dealt with the Hymenoptera and other orders. The arrangements for next year's exhibition are still to be finalised but Mr Evans hoped that it would be on 24th October at Imperial College, with the Annual Dinner being held there in the evening of the same day. Mr Evans also said that he thought it was time he handed over the post of Exhibition Secretary to someone else.

SLIDES

Dr K. SATTLER showed a series of slides of members at an earlier Annual Exhibition held at the Royal Society's rooms, possibly in 1964. Mrs F. MURPHY showed slides of spiders and other animals seen during a recent arachnological tour of the Spanish Pyrenees. Mr A. CALLOW presented a wide selection of slides showing close up views of insects, spiders, fungi, fossils and various animals of the inter tidal zone. Mr R. JONES showed slides of some insects, spiders and wild flowers seen during a visit to the Greek island of Samos in May of this year.

COMMENTS ON THE EXHIBITS

Mr E. BRADFORD, commenting on the longevity of beetles, stated that he had observed that the churchyard beetle, *Blaps mucronata* L., can live for as long as five years.

27 November 1986

EXHIBITS

Mr A.J. HALSTEAD showed a hibernaculum of the brown tail moth, *Euproctis chryorrhoea* L. found with others on a clipped hawthorn hedge in Woking, Surrey, on 22.xi.86. This species is predominantly a coastal one although it is occasionally found breeding inland.

Prof. J.A. OWEN showed the only known British examples of the staphylinid beetle, *Meotica lohsei* Benick. These consisted of a female found in sedge debris at Catfield Fen, Norfolk, in 1979, and a male found in a mole's nest at Caxton, Norfolk, on 9.xi.86. This species is sexually dimorphic with the female having normal eyes and wings, while the male has small eyes and short wings. The two forms are sufficiently different to have in the past been described as two different species, with the males being known as *M. hanseni* Scheerpeltz. The conspecificity of the two forms was worked out by Dr J. Muona of Finland, who had also confirmed the identity of the male specimen.

Mr K. EVANS displayed a butterfly trap for use with a bait such as rotten fruit that had been loaned to him by Sir John Dacie. This type of trap is often used in the tropics and Mr Evans wondered whether it might prove attractive to the purple emperor.

B. K. WEST showed some F3 generation moths of the white ermine, *Spilosoma lubricipeda* L. bred from Orlestone, Kent, stock. These included an unnamed aberration with an elongated spot on the forewing between veins 5 and 6. This character is apparently recessive. Also shown were moths with the elongated spot combined with ab. *postmagnipunctata* Cockayne and a specimen with a slight darkening approaching ab. *brunnea* Oberth.

LECTURE

Mr K. ALEXANDER gave a talk on insect conservation and the National Trust in which he described his work in recording and assessing the invertebrate fauna on properties owned by the Trust. Once properties had been surveyed, management plans could be devised to preserve and enhance suitable habitats. The speaker urged members to supply him or the local Trust property manager with details of species recorded on National Trust properties, particularly when uncommon insects or special habitats have been identified.

FIELD MEETINGS

Tantany Wood and Pigbush, New Forest, 17/18 May 1986

Leader: K. Halstead. The meeting which was poorly attended (only three people turned up), was very unrewarding, primarily because of the chilly north-west wind which seemed to have driven the majority of insects back into hibernation. Most of the species taken were fairly commonplace but it is worth mentioning that two local click beetles were found: *Ampedus pomonae* Steph. and *Actenicerus sjaelandicus* Muller. The only hoverfly evident was *Chalcosyrphus nemorum* (F.). The unusual fly *Alophora hemiptera* F. was also recorded.

Seabrook Stream, Kent, 25 May 1986

Leader: Eric G. Philp. Over twenty people turned up to this meeting held jointly with the Kent Field Club. As the majority of those attending were interested in botany the leader spent more time looking at plants and several of interest were found. Perhaps the most surprising was *Trifolium subterraneum* L. in vast quantities on some banks overlooking the stream.

Along the stream itself were some fine areas of alder-carr in which were flying large numbers of Diptera including *Tipula oleracea* L. *T. luna* Westh., *T. variicornis* Schummel, *Platycheirus albimanus* (F.), *P. tarsalis* (Schummel), *Leucozona lucorum* (L.), *Cheilosia albitarsis* Meig., *Dasydryphus venustus* (Meig.), *Melanostoma scalare* (F.), *Rhingia campestris* (Meig.), *Chrysogaster hirtella* Loew, *Lejogaster metallina* (F.) and *Chalcosyrphus nemorum* (F.). About some sandy banks where *Andrena pubescens* Ol. was nesting a fine *Bombylius discolor* Mikan was patrolling. Other bees noted included *Andrena scotica* Perkins, *A. minutula* (Kirby), *A. saundersella* Perkins, *Halictus tumulorum* (L.), *Lasioglossum albipes* (F.), *L. morio* (F.), *Nomada marshamella* (Kirby) and *N. flava* Panzer. Of the Coleoptera note should perhaps be made of the rather local *Onthophagus ovatus* (L.) and the recently recognised *Elodes pseudominuta* Klausnitzer which was quite common.

With the help of fine sunny weather everybody appeared to have an enjoyable day, enlivened at one time by being caught up in the middle of a mock battle, in what is almost a unique habitat in Kent. We are grateful to the Army authorities for granting us permission to visit this interesting area.

Grays Chalk Pit, Essex, 1 June 1986

Leader: P.R. Harvey. A total of 12 members and friends attended the meeting on a dry but rather cold day.

The silk 'purse-web' tubes of *Atypus affinis* (Eichwald) were found in quantity after a search by John and Frances Murphy.

In Waldham's Pit, two males, a gravid female and many retreats of *Zodarion italicum* (Canestrini) were found, and a Whitethroat (*Sylvia communis*) and Sand Martin (*Riparia riparia*) colony were seen. One spider *Agyneta conigera* (O.P. Cambridge) was newly recorded for the quarries and a total of 180 species of spiders and 11 species of harvestmen are now recorded from this site.

Although members wanted to concentrate their efforts on some of the areas under threat from housing development, they were unable to look at Warren Farm Pit, having been turned away by two armed men purporting to be Blue Circle Cement gamewardeners!

Wisley Common, Surrey, 14 June 1986

Leaders: A.J. Halstead and S. Pittis. Nine members and one guest attended this afternoon and night meeting. The weather was warm and sunny during the day, but the temperature dropped sharply after sunset. Thirty-five species of macrolepidoptera were seen at light or during the day, and larvae of the waved black, *Parascotia fuliginaria* L. were collected by several members. The cold night limited moth activity but daytime conditions favoured spiders and Peter Harvey recorded 52 species. The less common species are listed below. Lepidoptera: *Perconia strigillaria* Hübn., *Nola confusalis* H.-S., *Tethea* or *D.* & S., *Stauropus fagi* L. and 31 other spp. Odonata: *Enallagma cyathigerum* Charpentier, *Pyrrhosoma nymphula* Sulzer, *Agrion splendens* Harris. Coleoptera: *Clytus arietis* L., *Saperda populnea* L., *Ampedus sanguinolentus* Sch., *Phytodecta decemnotata* Marsham, *Chrysomela populi* L., *Tritoma bipustulata* F., *Scaphidium quadrimaculatum* Olivier, *Mycetophagus quadripustulatus* L. Hymenoptera (sawflies): *Tenthredopsis nassata* L., *Tenthredo maculata* Geoff., *Selandria serva* F., *Eutomostethus luteiventris* Klug, *Caliroa annulipes* Klug, *Dineura virididorsata* Retz. and larvae of *Nematus*

melanaspis Hartig. Arachnida: *Micaria subopaca* Westring, *Xysticus ulmi* Hahn, *Philodromus rufus* Walckenaer, *Pirata tenuitarsus* Simon, *P. uliginosus* Thorell, *Achaeranea lunata* Clerck, *Theridion pictum* Walckenaer, *T. blackwalli* O.P. Cambridge, *Cercidia prominens* Westring, *Hypselistes jacksonii* O.P. Cambridge and 42 other species.

The Slade, Upper Bucklebury Common, Berks., 12 July 1986

Leader: B.R. Baker. The day began most unpromisingly with steady, persistent rain all morning, continuing into early afternoon. Thereafter, skies cleared and we enjoyed a warm sunny period taking us into excellent conditions for night work. The three members who braved the morning explored the well wooded, steep gullies of The Slade, the most conspicuous insect on tree trunks being the bug *Issus coleoptratus* F. During early afternoon a flowery meadow with an extensive hedge of *Acer campestre* was discovered and cones of *Caloptilia semifascia* (Haw.) were collected. Larvae of the following sawflies were noted:- *Nematus pavidus* Lep., *Heterarthrus aceris* Kalt., and *Blennocampa pusilla* Klug, also imagines of *Aneugmenus padi* L. and *Stromboceros delicatulus* Fallén. An ant column, transporting pupae, and extending a length of some 10 feet, proved to be *Myrmica ruginodis* Nyl. and not a slavemaker as suspected. By late evening our numbers increased to seven and, from the four lights operated, a total of 106 macros were recorded. Of particular interest were:- *Eupithecia plumbeolata* (Haw.) *Chloroclystis debiliata* (Hb.), *Elaphria venustula* (Hb.) and *Hypena crassalis* (Fabr.). The list of micros included *Ptycholomoides aeriferanus* (H-S), *Pseudosciaphila branderiana* (L.) and *Cryptoblates bistriga* (Haw.).

Orlestone Forest, Kent, 19/20 July 1986

Leader: Bernard Skinner. Despite a music festival near Maidstone and road works on the M20 most members, including the leader, managed to reach the venue by dusk. Twenty-six members and friends attended and a total of 31 lights were operated over a wide area of the forest. Unfortunately members were not blessed with the above average moth-trapping conditions which prevailed earlier in the week; the weather being clear and somewhat cool. However the sheer volume of light power yielded a respectable total of 154 species of macrolepidoptera, although most of the Orlestone specialities were either absent or in very low numbers. Those worthy of mention were *Heterogenea asella* D. & S., *Tetheella fluctuosa* Hb., *Thera britannica* Turn., *Hydrelia sylvata* D. & S., *Deileptenia ribeata* Cl., *Clostera curtula* Linn., *Mythimna obsoleta* Hb., *Moma alpium* Osb., *Ipimorpha subtusa* D. & S., *Parascotia fuliginaria* Linn., *Schranksia taenialis* Hb. and *Paracolax tristalis* F. (*derivialis* Hb.).

Of the two new colonists *Peribatodes secundaria* Esp. was in good supply and a few examples of the melanic form *nigrata* Stern. were taken. Conversely the pyralid — *Dioryctria schuetzeella* Fuchs — was in low numbers as in fact were most of the interesting species of microlepidoptera with the best of a poor bunch being *Cryptoblates bistriga* Haw., *Pseudosciaphila branderiana* L., *Olindia schumacherana* F., *Eucosma aemulana* Schlag. and *Olethreutes bifasciana* Haw.

The leader would like to thank the Forestry Commission for granting permission to hold this meeting.

Wootton Bridge Area — New Forest, Hants., 26 July 1986

Leaders: A. Pickles and E. Wild. Five members attended and were later joined by an entomological family who were collecting in the area, the father of whom, has since applied for membership. A.P. was unfortunately caught up with a social function but valiantly slipped away from time to time to join the party, appearing from the darkness and fording the river in sartorial splendour and gumboots. The afternoon session was sunny with a cool east wind but members were pleased to see a number of *Argynnis paphia* L. and two *Ladoga camilla* L., species now much in decline compared with earlier years. Several species of common sawfly larvae were collected and a colony of the bog ant discovered. The temperature fell quickly at dusk. Two lights were run, at which 62 species of macrolepidoptera attended, none of which were of special note, though they reflected the range of habitats in the area, suggesting that on a good night this could be an interesting area; but this year was diabolical!

Child's Forstal Wood, East Blean, Kent, 2 November 1986

Leader: P.J. Johnson. Eight members attended this meeting, which was principally aimed at the microlepidopterist. No particularly noteworthy species were found, though *Phyllonorycter* mines which may prove to be *P. lautella* Zeller were taken by several of those present, as were tenanted or vacated mines of other species new to their collectors.

A rare observation at this meeting was a larva of *Ectoedemia subbimaculella* Haw. in the process of cutting its way out of its mine through the upper epidermis of an oak leaf, prior to descending to the ground to make its cocoon.

A review of the vegetation, especially in the areas which have been coppiced over the past few years, revealed several areas of considerable interest at other seasons of the year; particularly a diverse growth of low plants.



Alan Stubbs and Ian McLean at Mark Ash, New Forest. Field Meeting 2nd June 1984.

OBITUARY

HUGH SUTHERLAND ROBINSON

Hugh Robinson was born on 19 February 1907, the eldest of three brothers. He was educated at Christ's Hospital, Horsham, and University College, London, where he read Physics and Chemistry. Leaving university at the height of the Depression, he joined the civil service and after a short period with HM Customs & Excise he joined the Ministry of Health. He was intrigued by the new theories and practices of social security and he was to stay in that administrative field for the rest of his working life.

After the Second World War, a childhood interest in entomology was rekindled when Hugh moved from London to Alton in Hampshire and he began enthusiastically collecting Lepidoptera.

The difficulties and inefficiencies of conventional collecting methods, usually involving paraffin lamps and sheets, led Hugh with his brother Peter to experiment with portable electrical equipment. 'War surplus' generators, cable and lamps were abundantly available in the late 1940s and they rapidly acquired expertise with these. The next step was to copy American designs of insect traps, and C.B. Williams' 'Rothamsted' trap, and fit these with either filament or discharge lamps. The variable and often disappointing results of particular designs of trap led them to re-examine the way insects react to bright light sources and to research the literature on insect response to particular wavelengths of light.

Hugh and Peter found that, far from reacting to light as if to a bait and 'tracking' the light over long distances, moths were affected by bright light only when in close proximity to the source and then flew at a constant angle to it, performing a spiral.

They set out to design a novel light trap based on these observations. The result was an unpromising-looking contraption. Vertical vanes, their tops level with the light source and mounted within a cone, would interrupt the spiral flight. Insects would then fall down the cone into the container into which the cone was recessed. A high-pressure mercury-vapour lamp was employed as the light source.

The results from the unpromising contraption were spectacular and revolutionary. In an analysis published in 1951, C.B. Williams found that a Robinson trap collected about ten times as many Macrolepidoptera as a Rothamsted trap. The design was not patented: it was simple to make and widely publicised. Within a few years most lepidopterists in Britain had either made their own or bought the portable version of the trap that was available commercially.

Hugh spent considerable time in the early 1950s using his equipment to clarify the status and distribution of many of the rare British Lepidoptera to the ultimate benefit of what is now the National Collection of British Lepidoptera. A loosely-formed team including Peter Robinson, Eric Classey, Barry Goater, Robin Mere, John Bradley and Timothy Tams made expeditions to classic and not-so-classic localities such as Askham Bog (for *Diarsia florida*) and the Isle of Wight (for *Sedina buettneri*). The technological tour-de-force came with the expedition to the west of Ireland to confirm *Calamia tridens* as British. A specially modified Bentley carried a 4.5 kilowatt generator, more than a mile of cable, booster transformers, radios, four traps with 500 watt lamps, and the personnel. It was a resoundingly successful expedition.

Hugh's participation in the British entomological scene came to an abrupt end in 1954 when he took up a post in Singapore, helping set up the national provident fund. He moved on to Malaya in 1958 to start a similar scheme and remained as manager of the fund until 1964. For his services to the development of the Malaysian social



security system he was awarded the JMN (equivalent to the CBE) in 1964. He then returned briefly to Britain for a few months with the DHSS in Newcastle before being seconded to the Ministry of Overseas Development and a job setting up a provident fund for the Government of Fiji. On retirement from the UK civil service he remained in Fiji to manage the Fiji National Provident Fund which he converted to a full pension scheme before his retirement in 1975. His last years in Fiji were particularly busy. In addition to legislative and legal work in connection with the running of the fund, he also acted as an assessor and industrial tribunal chairman. He was retained as a social security consultant by the Overseas Development Agency and in this capacity he advised several territories including the Solomon Islands, Papua New Guinea, the Gilbert & Ellice Islands and Botswana on the implementation of social security schemes.

During his ten years in SE Asia, Hugh's interest in entomology dwindled. Much of the material he collected there was destroyed by mould or pests and he was greatly discouraged. However, by the mid-1960s, filial enthusiasm and advances in dehumidification meant that he could collect in company and preserve his material safely. In Fiji he threw himself back into the fray with gusto. Able to visit many of the smaller Pacific islands in connection with his consultancy work, he made valuable collections of macro- and micro-lepidoptera for the British Museum (Natural History). He became intensely interested in the Pacific *Utetheisa* species and their biology and evolution.

Above all, however, he was an inveterate gadgeteer. He built innumerable traps with bizarre modifications – occulting traps that ran intermittently to allow insects settled on vegetation to become active again, traps for microlepidoptera, traps with solar switches, and the impressive multi-directional microlepidoptera sheet – a pyramid of fine net with an internal array of fluorescent tubes. He constructed complicated and minute tools for handling microlepidoptera, modifications for microscopes, illumination systems and equipment for microphotography. His wealth of practical skills coupled with his slightly pedantic manner made him a popular guru. It was a role he relished and he cheerfully ran practical classes for university students and agriculture departments, enjoying the company and conversation of the young.

He retired at the age of 70 to Lincolnshire and devoted the last ten years of his life to his garden, greenhouse and, of course, his gadgets. Hugh Robinson died on 10 April 1986. He is survived by his wife, sons and grandchildren and the greatest of his gadgets, the unpromising-looking contraption that bears his name.

The Robinson trap has been the major factor in the post-war revolution in our knowledge of the distribution of British Lepidoptera. Worldwide it has become an indispensable entomological tool in the making of systematic collections, in ecological and in biogeographic studies. Its design and development were the work of a man whose practical and conceptual skills were remarkable. Hugh added to these skills the virtue of seemingly endless patience, good humour and the art of good companionship. He is greatly missed by his family and friends.

LIST OF PUBLICATIONS BY H.S. ROBINSON

- 1950 Some notes on the observed behaviour of Lepidoptera in flight in the vicinity of light-sources together with a description of a light-trap designed to take entomological samples. *Entomologist's Gaz.* 1: 3–20, Figs 1–12. [With P.J.M. Robinson.]
- 1950 Reply to Mr R.F. Bretherton's observations. *Entomologist's Gaz.* 1: 104–106. [With P.J.M. Robinson.]
- 1950 Prophylactic methods in the rearing of lepidopterous larvae. *Entomologist's Gaz.* 1: 139–141.
- 1951 The effect of light on night-flying insects. *Proc. S. Lond. ent. nat. Hist. Soc.* 1950–51: 112–113, Figs 1–6.
- 1951 How to build a moth trap. *Window* 4(7): 4.
- 1951 Narrative [of the 1950 expedition to the Burren, Co. Clare]. *Entomologist's Gaz.* 2: 89–94.
- 1951 Mercury-vapour light-traps. *Entomologist's Gaz.* 2: 265–266. [With E.W. Classey.]
- 1952 On the behaviour of night-flying insects in the neighbourhood of a bright source of light. *Proc. R. ent. Soc. Lond. A* 27: 13–21, Figs 1–2.
- 1952 Some suggestions on the examination of an ethical and a practical problem. *Entomologist's Gaz.* 3: 45–51.
- 1952 The use of anaesthetics in funnel mercury-vapour insect traps. *Entomologist* 85: 97–101.
- 1952 The optimum conditions for the occurrence and observation of rare insects. *Proc. S. Lond. ent. nat. Hist. Soc.* 1951–52: 118–125, Figs 1–2.
- 1953 Mercury vapour lamp technicalities. [Installation.] *Entomologist's Gaz.* 4: 280–281.

- 1954 Mercury vapour lamp technicalities. [Power factor correction.] *Entomologist's Gaz.* 5: 111–112.
- 1967 The flight-ranges of insects. *Entomologist's Rec. J. Var.* 79: 239–243. Fig. 1.
- 1972 Genital stridulation in male *Psilogramma jordana* Bethune-Baker (Lepidoptera, Sphingidae). *Entomologist's Rec. J. Var.* 84: 213–215, pl. XI. [With G.S. Robinson.]
- 1974 Notes on the genus *Utetheisa* Hübner (Lepidoptera: Arctiidae) in the western Pacific with larval descriptions. *Entomologist's Rec. J. Var.* 86: 160–163, pls. X, XI. [With G.S. Robinson.]
- 1979–80 Further observations on the species of *Utetheisa* Hübner (Lep.: Arctiidae) in the western and central Pacific with the description of a new species from Niue Island. *Entomologist's Rec. J. Var.* 91: 270–273, pl. IX; 319–322; 92: 13–16, Figs 1–4. [With G.S. Robinson.]
- 'Notes and observations' and book reviews – see *Entomologist's Gaz.* 1–5 (1950–1954) passim.
-

Orbweb-weaving spiders preying on slugs. — On 24 and 25 September 1986, I was on a spider collecting trip with four postgraduate students in the Bordeaux region of France. Over these two days the weather was very unseasonable with total cloud cover and prolonged periods of often heavy rain. Although unpleasant, such conditions made our job of collecting large numbers of *Argiope bruennichi* (Scopoli) relatively easy because their water-laden webs were conspicuous. The sodden conditions had caused many slugs (small *Agriolimax* sp.; mostly less than 20 mm extended length) to emerge from cover. Much to my surprise, I found more than 30 of the spiders feeding on these slugs. The slugs had been thinly wrapped in silk and had often been carried to the centre of the orb where they were being consumed. Several of the slugs had clearly been extensively masticated. On one occasion, I saw a slug crawling on the lower strands of a web, but I didn't have the luck to observe a slug being attacked. It is impossible to know whether the slugs had simply wandered into the webs or whether they had been actively attracted, perhaps by the presence of food adhering to the silk strands.

The prey of *A. bruennichi* has been well documented (Nyffeler, M. & Benz, G. 1978. *Rev. Suisse Zool.* 85: 747–757; Nyffeler, M. & Benz, G. 1981. *Anz. Schädlingesk.* 54: 33–39; Pasquet, A. 1984. *Entomologia exp. appl.* 26: 177–184) as has that of other araneids (Robinson, M.H. 1969. *Amer. Zool.* 9: 161–173; Robinson, M.H. & Robinson, B. 1970. *Zool. J. Linn. Soc.* 49: 345–357; Robinson, M.H., Mirick, H. & Turner, O. 1971. *Psyche* 76: 487–501; Olive, C.W. 1980. *Ecology* 61: 1133–1144) but none of these works make mention of slugs being taken as prey items. While this omission might in part reflect the sporadic occurrence of appropriate climatic conditions, it also probably indicates a dearth of observation during bad weather. Since slugs are hardly noted for the speed of their movements, it is interesting to ponder the way that the spiders detected their presence in the webs. One possibility is that the spiders were able to detect the (almost) static weight of the slugs within their webs and to make a directed attack towards the source of this loading. — Donald L.J. Quicke, Department of Zoology, University of Sheffield, Sheffield S10 2TN.

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**THE BRITISH SPECIES OF THE GENUS *SUILLIA*
(DIPTERA, HELEOMYZIDAE),
INCLUDING A SPECIES NEW TO SCIENCE**

by P. WITHERS

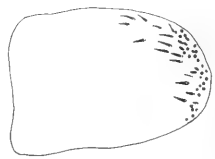
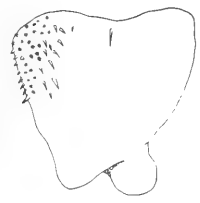
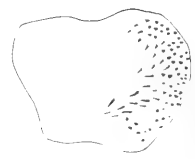
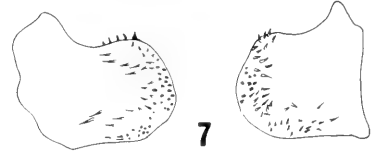
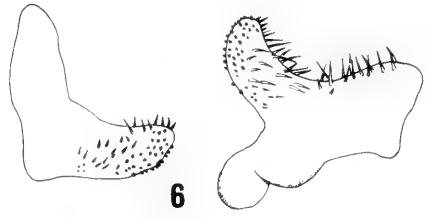
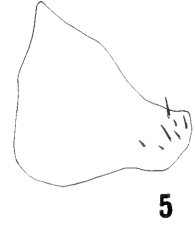
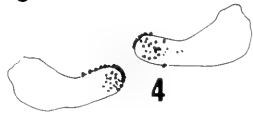
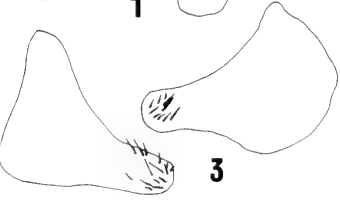
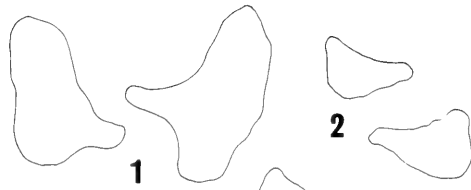
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The Heleomyzid genus *Suillia* is easily distinguished from all other members of this family by the presence of only one orbital bristle placed on a pollinose strip separated anteriorly from the eye margin (See Figs xi and xii). The previous treatment of this genus (Collin, 1943) although useful, is hampered by a number of ambiguous couplets which have caused frequent misidentifications. In an attempt to overcome this confusion, the author has examined the male surstyli of all the species currently on the British List, and found considerable intraspecific variation. Dissection of the aedeagi revealed additional useful variations in structure; apparently these have never before been figured for any member of this genus.

Since Collin's 1943 paper, much more distributional information has been gathered in the intervening years, and a number of species successfully reared. All show a close association with a wide range of fungi, especially agarics and boleti. Recent work on the fungal associations has revealed that *S. bicolor* (Zett.) may be found in over 130 different species of fungi (Dely-Draskovits, 1972). It is hoped that a synthesis of this information, linked to a more workable key, will provide a welcome reintroduction to the hitherto difficult task of identifying this genus of flies.

REVISED KEY TO THE BRITISH SPECIES OF *SUILLIA*

1. Humeral bristle present. Antennae black. Surstyli Fig. 18 Aedeagus Fig. E *atricornis* (Meig.)
- Humeral bristle absent. Antennae yellow or reddish 2
2. Scutellum with prominent apical tubular projection (Fig. i). Surstyli Fig. 6 Aedeagus Fig. R *oxyphora* (Mik)
- Scutellum without prominent projection 3
3. Scutellum entirely bare of fine dark hairs (care must be taken with *bicolor*, where hairs are present but are short and pale) 4
- Scutellum with at least marginal hairs 6
4. Wing veins heavily shaded. Antennae dark. A dark spot at junction of facial/ frontal orbit. Surstyli Fig. 19. Aedeagus Fig. J *ustulata* (Meig.)
- Wing veins clear. Antennae pale. Orbital spot absent 5
5. Scutellum with small median tubercle (Fig. ii), thoracic dorsum matt. Male fore basitarsus without ventral hook. Surstyli Fig. 1. Aedeagus Fig. C *fuscicornis* (Zett.)
- Scutellum without tubercle, dorsum subshining. Male fore basitarsus with ventral hook (Fig. iii). Surstyli Fig. 14. Aedeagus Fig. K . . . *dumicola* (Collin) [The European species *miki* Pokorny, which also would run to here, is discussed under *dumicola* below].
6. Mesopleuron and pteropleuron haired (Fig. iv) 7
- Mesopleuron and pteropleuron bare 9
7. No sub-scutellar hairs 8
- Sub-scutellar hairs present (Fig. v). Surstyli Fig. 7. Aedeagus Fig G *humilis* (Meig.)



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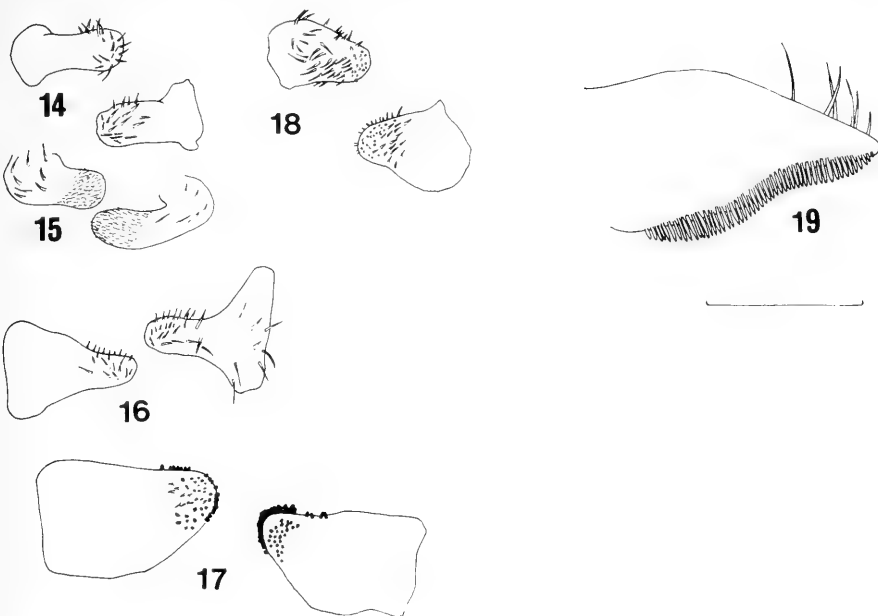


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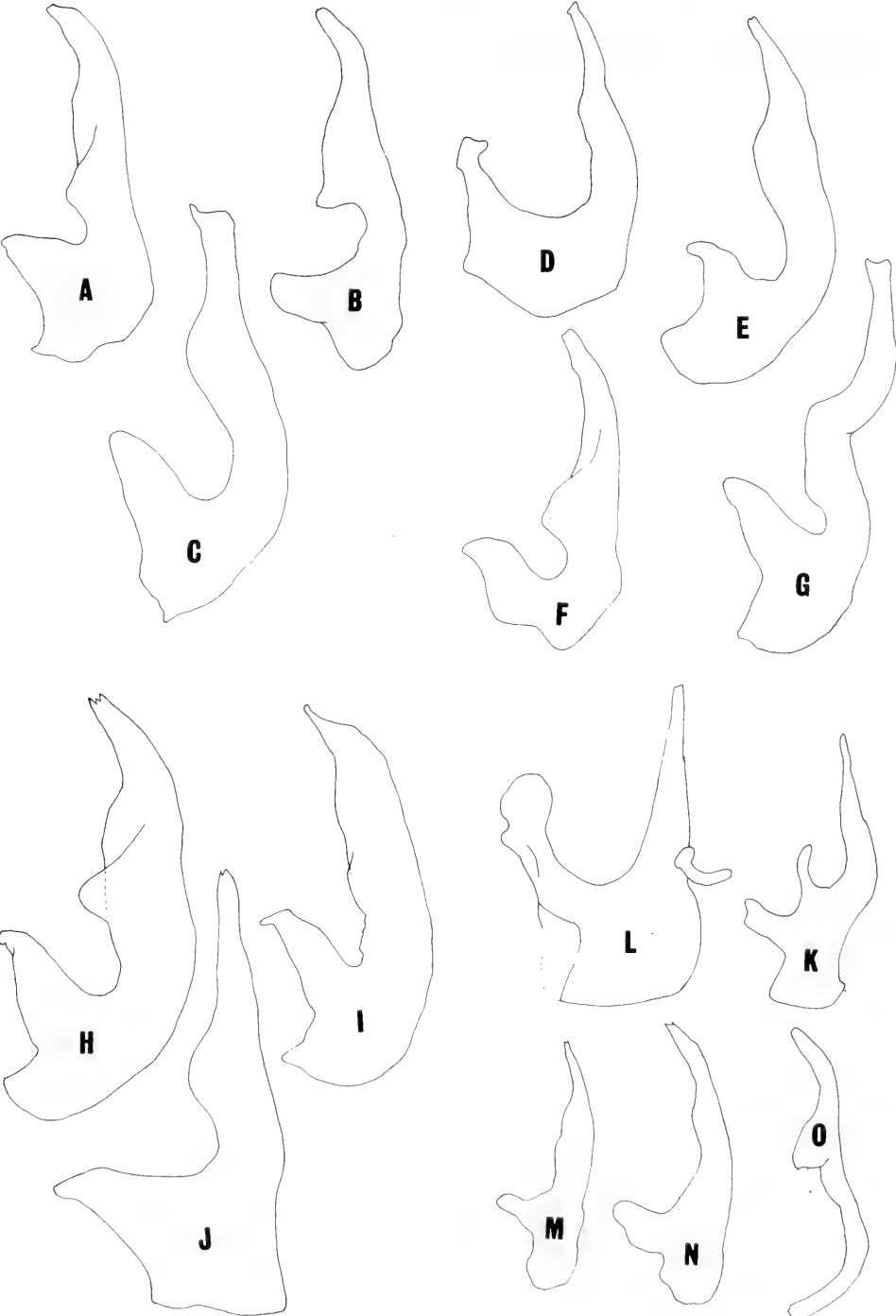
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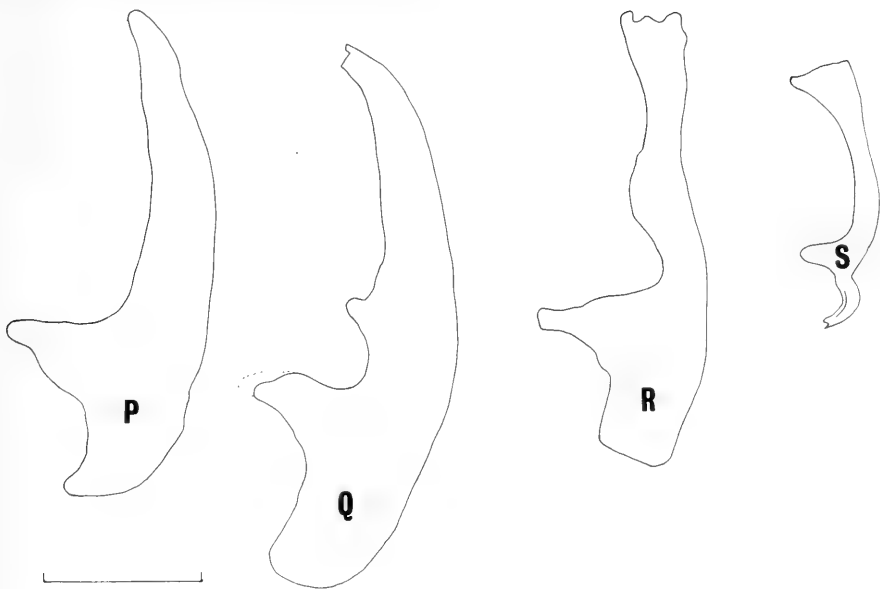




Figs 1-19. Surstyli. 1 *S. fuscicornis*. 2 *S. flava*. 3 *S. vaginata*. 4 *S. bicolor*. 5 *S. variegata*. 6 *S. oxyphora*. 7 *S. humilis*. 8 *S. notata*. 9 *S. flavifrons*. 10 *S. laevifrons*. 11 *S. imberbis*. 12 *S. parva*. 13 *S. dawnae*. 14 *S. dumicola*. 15 *S. miki*. 16 *S. pallida*. 17 *S. affinis*. 18 *S. atricornis*. 19 *S. ustulata*. [Left surstylus is to the left; all views are upper surface except fig. 9 left surstylus.] Scale = 1 mm.

- 8. Arista long plumose (Fig. vi). Cross veins and radial veins shaded, with a subapical suffusion across distal area of long veins. Surstyli Fig. 5. Aedeagus Fig. P *variegata* (Loew)
- Arista short plumose (Fig. vii). Cross veins only shaded. Surstyli Fig. 8. Aedeagus Fig. B *notata* (Meig.)
- 9. No sub-scutellar hairs 10
- Sub-scutellar hairs present (Fig. v) 13
- 10. Arista long plumose (Fig. vi) 11
- Arista short plumose (Fig. vii) or pubescent (Fig. viii) 12
- 11. Scutellar hairing at extreme margins only. Proepisternal hairs absent. Surstyli Fig. 2. Aedeagus Fig. M *flava* (Meig.)
- Scutellar hairing over most of dorsal surface. Proepisternal hairs present above base of front coxa. Surstyli Fig. 17 Aedeagus Fig. Q *affinis* (Meig.)
- 12. Cross veins clear. Male fore basitarsus with ventral hook (Fig. iii). Costal spines shorter than costa is thick. Surstyli Fig. 4 Aedeagus Fig. D *bicolor* (Zett.)
- Cross veins shaded. Male fore basitarsus without hook. Surstyli Fig. 9 Aedeagus Fig. A *flavifrons* (Zett.)
- 13. Scutellum hairy all over. Fore tarsal segment 5 enlarged, longer than 3 and 4 combined. Surstyli Fig. 3. Aedeagus Fig. O *vaginata* (Loew)
- Scutellum with bare areas. Fore tarsal segment 5 narrower and shorter than 3 and 4 combined 14

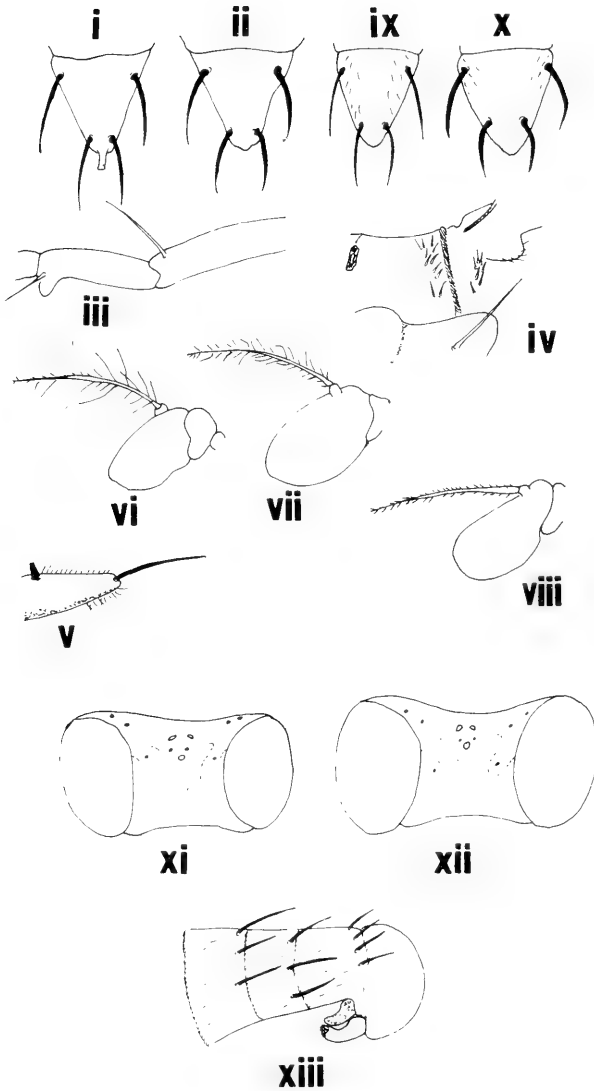




Figs A-S. Aedeagus. A *S. flavifrons*, B *S. notata*, C *S. fuscicornis*, D *S. bicolor*, E *S. atricornis*, F *S. imberbis*, G *S. humilis*, H *S. parva*, I *S. dawnae*, J *S. ustulata*, K *S. dumicola*, L *S. miki*, M *S. flava*, N *S. pallida*, O *S. vaginata*, P *S. variegata*, Q *S. affinis*, R *S. oxyphora*, S *S. laevifrons*. [Broken lines indicate areas of overlap or transparency.] Scale = 1 mm.

- 14. Cross veins faintly shaded. Arista long plumose. Surstyli Fig. 16. Aedeagus Fig. N *pallida* (Fall.)
- Cross veins and tips of radial veins heavily shaded. Arista short plumose or pubescent 15
- 15. Narrow median area on scutellum bare (Fig ix). Arista short plumose. Surstyli Fig. 11. Aedeagus Fig. F *imberbis* Czerny
- Broad median area on scutellum bare (Fig. x) 16
- 16. Arista short plumose (Fig. vii). Surstyli Fig. 10 Aedeagus Fig. S *laevifrons* (Loew)
- Arista pubescent (Fig. viii) 17
- 17. Pruinosity of ocellar triangle extends beyond that of the orbital bristles (Fig xi). Orbital bristles opposite anterior ocellus. Surstyli Fig. 12 Aedeagus Fig. H ... *parva* (Loew)
- Pruinosity of ocellar triangle does not extend as far as that of the orbital bristles (Fig. xii). Orbital bristles well forward of anterior ocellus. Surstyli Fig. 13 Aedeagus Fig. I *dawnae* sp. nov.*

*The distinctions quoted between *parva* and *dawnae* must, except for the genitalia, be considered provisional in the absence of more material, and may not necessarily work in every case.



Figs i-xiii. i *S. oxyphora* scutellum, ii *S. fuscicornis* scutellum, iii *S. dunicola* fore basitarsus, iv *S. variegata* mesopleuron, v *S. humilis* lateral scutellum, vi *S. affinis* antenna, vii *S. laevifrons* antenna, viii *S. parva* antenna, ix *S. imberbis* scutellum, x *S. dawnae* scutellum, xi *S. parva* head anterior, xii *S. dawnae* head anterior, xiii posterior of abdomen of *S. bicolor* to indicate relative position of surstyli and aedeagus — schematic.

NOTES ON THE SPECIES

Suillia atricornis (Meigen)

Conventionally, this species has been placed in the genus *Allophyla* on the basis of possessing a humeral bristle where *Suillia* has none. Examination of the male genitalia suggests no radical departure from the *Suillia* pattern, and a humeral bristle seems a very marginal character upon which to base a genus. Indeed, among the many specimens of *Suillia bicolor* examined for the purposes of this revision, one was found with a strong humeral bristle on the left side. It is therefore inappropriate to retain the genus *Allophyla* Loew, a view put forward by Gorodkov as long ago as 1965, and in the recent Catalogue of Palaearctic Diptera (Gorodkov in Soos, 1984) this species is included in *Suillia* Robineau-Desvoidy.

S. atricornis is apparently widely distributed, although never numerous. It has been bred from several agaric fungi.

Suillia oxyphora (Mik)

Ostensibly known as British only from a single male taken in Golspie, Sutherland by Colonel Yerbury on 10th August, 1900. There exists, however, further material in the British Museum (Natural History), viz: a further supposed male with same data as above, but without abdomen; one male and one female, Lochinver, Sutherland, June and July 1911, also collected by Colonel Yerbury: the female shares the extraordinary scutellar projection of the male, but less prominently.

The species has been reared on the Continent from a number of agarics and boleti, many of which are not uncommon in this country. The apparent rarity of this species cannot therefore be due to the scarcity of a larval habitat, so this species may now be extinct in Great Britain.

Suillia ustulata (Meigen)

A large dark-bodied fly with heavily infuscated wings and distinctive male genitalia. Although recorded from a number of counties, this species is almost invariably encountered as single specimens. Has been bred from truffles (*Tuber* spp.) and also from a dead elder stem.

Suillia fuscicornis (Zetterstedt)

A common and widespread species. In the past much confusion has arisen with users of Collin's key, since *fuscicornis* has an obvious small median scutellar projection. This has led many collectors to believe that they have taken *S. oxyphora*. The tubular prominence in that species is very much larger, and reference to the figure should resolve any future doubt.

The larvae are polyphagous and the species has been reared from many agarics and boleti, as well as *Phallus* and *Cantharellus*.

Suillia dumicola (Collin)

The majority of continental workers have considered this species as a synonym of *miki* (Pokorný), and it is so cited in the *Catalogue of Palaearctic Diptera* already referred to. Through the kindness of Dr Lindeberg, I was loaned a series of *miki* from the Helsinki collection. Dissection of the aedeagus and surstyli has shown that *miki* is a species distinct from *dumicola*, and figures of the genitalia of both are provided, as *miki* may well be represented in the British fauna (Figs 15; L).

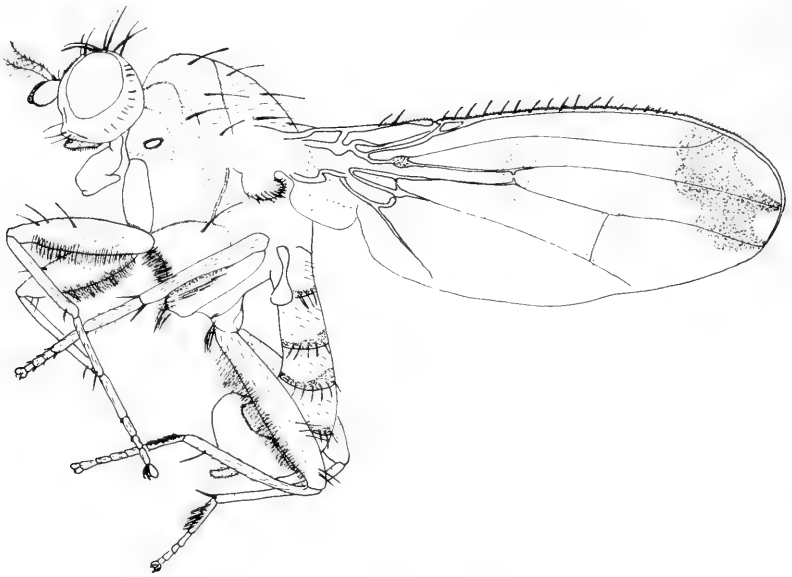


Fig. xiv. *Suillia variegata* (Loew) — Lateral aspect.

Suillia variegata (Loew)

A common species, often quite gregarious, which is readily identifiable in the field (see Fig. xiv). Frequently found *in copula* on or around appropriate fungi.

The larvae are polyphagous and have been found in many agarics, boleti, *Peziza*, *Auricularia*, *Scleroderma*, *Polyporus* and *Polypilus*. Has also been reared from roots of *Aster*.

Suillia notata (Meigen)

This species is also widespread, and British material is conventionally claimed to be the 'var. *hilaris*' of Zetterstedt. The Palaearctic Catalogue, however, treats this as a synonym.

Has been bred from many agarics, *Clavaria* and, in Europe, from boleti.

Suillia humilis (Meigen)

This species is surely the most enigmatic of *Suillia*. Persistent failure among dipterists to satisfactorily distinguish between this and *S. inornata* (Loew), and my own observation that all specimens running to this pair of species were inseparable on genitalic characters led me to investigate the problem further. All previous keys to this genus bring these species out at the same point, resorting to small differences in thoracic markings to distinguish. Such supposed distinctions overlap in material examined, and specimens taken in a single series are often referable to either (or both). An urgent examination of the types was felt necessary.

The labelled type of *humilis* is a female, contained in the Winthem collection in Vienna. Meigen's description is somewhat cursory, but clearly mentions the shaded cross veins and that the two extreme tarsal segments are darkened. A further pair of

specimens (on one pin), one of which is certainly a male, determined by Loew as *humilis*, was also loaned by the Vienna museum. The male I have dissected and compared with *inornata* material discussed below.

A male specimen of *inornata* in the Loew collection from Bayern Krieche appears to be that used by Loew when describing the species. A further pair from the same collection, the male of which has a mounted genitalia dissection, were also examined. This pair has a lectotype label, but without indication of the designator. This lectotype selection must be considered unjustified, as Loew's original holotype is not missing. Furthermore, no type locality would result if the lectotype were accepted, since no data label obtains to this pair.

Loew's description is more comprehensive, again noting the shaded crossveins, but adding that the tip of one long vein is shaded. The tips of the tarsi are again described as darkened. Other critical features include a facial spot between antenna and eye margin, a predominantly hairy scutellum and the thoracic spotting from which the dorsocentral bristles arise. This is described as *so fine as to be indistinct* (my italics). There appears to be an error in this description, where Loew quotes the *wing* as 'somewhat dark ash-yellow, third segment only rarely brownish'. This is certainly a mistake for antenna, possibly caused by misreading Flügel for Fühler.

I must record that much of this description is inapplicable when related to the actual specimen — I can find no clear clouding on the long vein at the tip, no obvious dark facial spot, and no marked darkening of the tarsi. I assume it must have faded.

Comparison of the inaccurately designated lectotype genitalia with my preparation of *humilis* revealed no differences. The *humilis* male is hereby designated as lectotype, and *inornata* reduced to synonym (**syn. nov.**)

Has been bred from truffles (*Tuber* spp.), like *ustulata*, which may replace it in this medium in much of southern England. Adults have been taken on dead hedgehogs on a gamekeepers gibbet.

Suillia flava (Meigen)

This appears to be an uncommon species with a patchy distribution. Has been reared from over 40 fungi in Europe, but surprisingly never in Great Britain.

Suillia bicolor (Zetterstedt)

Arguably the commonest and most widely distributed *Suillia* in the British Isles. Genitally, the surstyli are superficially similar to *S. dumicola*, but the aedeagus is very different, as the figures show.

The larvae are polyphagous and have been found in many agarics and boleti, *Hypoxylon* and *Lycoperdon*; in all, over 130 species of fungi have been recorded as hosts.

Suillia affinis (Meigen)

This species is among the largest of British *Suillia* and is generally widespread.

Suillia vaginata (Loew)

Since Collin (1951) added this species to the British List, very few additional records have been noted; there is no accessed material of this species in the British Museum (Natural History).

The larval stages are unknown.

Suillia flavifrons (Zetterstedt)

As detailed by Hackman (1972), the *infera* newly described by Collin in 1943 has been established to be the true *flavifrons*, while *flavifrons* sensu Collin was newly described as *collini*. This in turn is now considered a synonym of *parva* (Loew). Essential differences are reflected in the key and reference to the figures will confirm identity. The larval history is unknown.

Suillia pallida (Fallén)

Although Collin considered this species to be generally distributed, *pallida* is another species infrequently represented in collections. Although, too, he states that only occasionally are the crossveins infuscated, this feature appears consistent in the material examined. In any event, the tips of the long veins are never shaded, even faintly.

Has been reared from truffles (*Tuber* spp.).

Suillia imberbis Czerny

The original inclusion of *S. similis* (Meig.) in the British list was claimed to be an error of identification for this species. It may well be that this confusion persists unresolved among European dipterists, as Gorodkov (1970) depicts surstyli of 'similis' which are identical to the examined material of *imberbis*. It may also be significant that he makes no mention of *imberbis* as represented in the Russian fauna dealt with in his paper.

Suillia laevifrons (Loew)

A species somewhat similar to the preceding one, but with very different genitalia. Apparently much more widespread than *imberbis*. Has been noted to visit badger dung. Larval history unknown.

Suillia parva (Loew)

Hackman redescribed the *flavifrons* of Collin as *collini* (*vide supra*) and provided comparative figures of the genitalia of this and the true *flavifrons*. The Palaearctic catalogue lists *collini* as a synonym of *parva* (Loew). What is not clear from the Hackman figure of this species is the extent to which the extended process on the right surstylus is recurved and an alternative view of this is also provided among the figures in this paper to clarify the overall shape. This feature serves to distinguish *parva* from all other British species except *dawnae* sp. nov. (see below).

This species appears to be commonest in Highland Scotland, and has been noted visiting a deer carcass. Reputedly bred from a *Lactarius* sp.

Suillia dawnae sp. nov.

In the course of examining material for preparation of this paper, a male specimen was discovered which closely resembled *parva*, but clearly differed in fine details of the genitalia.

Male: similar in size to *parva*, although paler. Antennae pale yellow, third joint with slight darkening on anterior half. Basal joint of arista clear yellow, contrasting with darker majority. Frons yellow with scattered short dark hairs. Lateral eye-stripe pruinose, extending more anteriorly than pruinosity of ocellar triangle. Occiput grey

pruinose. Orbital bristles anterior to front ocellus. A cluster of short dark propleural bristles above base of front coxa. A strong posterior sternopleural bristle with scattered short fine hairs anteriorly. Scutellum with long pale ventral hairs; dorsal hairing confined to cluster around lateral scutellar bristles. Wings with crossveins and tip of radial and cubital veins moderately shaded. Mid-costal bristles longer than costa is deep. Genitalia as in Figs. I.13. The recurved portion of the right surstylus similar to *parva* but in that species is much narrower, and curvature more pronounced. Aedeagus differs in fine detail.

Female: unknown.

Holotype: male. England; East Fen, Malham Tarn, North Yorkshire (SD8867) 21 September 1976. Deposited in British Museum (Natural History). Genitalia on glass slide separately labelled.

The species is named for my wife, who patiently endured the long hours which culminated in this paper.

The distribution of British *Suillia* is summarised in Table 1. Included are records from colleagues acknowledged below, Collin (1943), the collections of the British Museum (Natural History) and my own collecting.

Little in the way of conclusions can be drawn from such a necessarily incomplete table, but several intriguing patterns warrant consideration.

The relatively widespread distribution of *S. ustulata* in England is in marked contrast to its apparently complete absence in Scotland and Ireland. *S. affinis* appears to be a species commoner in lowland Britain; records are decidedly few for 'highland' Britain and very sparse indeed for Scotland. Conversely, *S. flavifrons* and *S. parva* seem to be commoner the further north in Britain one goes. The distribution of *S. vaginata* appears distinctly odd, but it may be of significance that the two East Anglian records are from forestry areas heavily planted with coniferous species.

ACKNOWLEDGEMENTS

I would like to thank the following dipterists who kindly loaned material or contributed records: A.G. Irwin, M.C.D. Speight, P.J. Chandler, M. Drake, P. Skidmore. Brian Cogan was instrumental in encouraging and deflating as necessary. Grateful acknowledgement is due to the Hope Department of Entomology at Oxford for the loan of the type material of *S. dumicola* and the specimen of *S. oxyphora* from the Verrall-Collin collection. Dr W. Hackman was a source of informative correspondence and commented on a draft of the key; he also arranged the loan of *S. miki* material. Frau Contreras-Lichtenberg of Vienna enabled the solution of the *S. humilis/inornata* problem with loans from the collections in her care.

BIBLIOGRAPHY

- Collin, J.E., 1943. The British species of Helomyzidae (Diptera). *Entomologist's mon. Mag* **79**: 234-251.
- Collin, J.E., 1951. British Helomyzidae (Diptera). Additions and Corrections. *J. Soc. Br. Ent.* **4**: 37-39.
- Dely-Draskovits, A., 1972. Systematische und ökologische untersuchungen in Ungarn als Schädlinge der Hutpilze auftretenden Fliegen. *Acta Zool. Hung.* **48**: 283-290.
- Gorodkov, K.B., 1965. Forest fauna of Helomyzid flies (Diptera) of East Siberia and the Far East of Russia. *Ent. Obozr.* **44**(4): 927-933.
- Gorodkov, K.B. 1970. Identification key to the insects of the European Regions of USSR **5**(2): 306-325.

Table 1 continued. Distribution of British *Suillia*.

		Tipperary
		Limerick
		Clare
		Wexford
		Carlow
		Leix
		Galway
		Offaly
		Kildare
		Wicklow
		Dublin
		Meath
		Longford
		Roscommon
		Mayo
		Sligo
		Leitrim
		Cavan
		Louth
		Monaghan
		Fermanagh
		Donegal
		Tyrone
		Armagh
		Down
		Antrim
		Londonderry
<i>S. atricornis</i>		
<i>S. oxyphora</i>		
<i>S. ustulata</i>		
<i>S. fuscicornis</i>		
<i>S. dumicola</i>		
<i>S. humilis</i>		
<i>S. variegata</i>		
<i>S. notata</i>		
<i>S. flava</i>		
<i>S. affinis</i>		
<i>S. bicolor</i>		
<i>S. flavifrons</i>		
<i>S. vaginata</i>		
<i>S. pallida</i>		
<i>S. imberbis</i>		
<i>S. laevifrons</i>		
<i>S. parva</i>		
<i>S. dawsonae</i>		

Coleopterist's Workshop, Maidstone, 14 March 1987. — The sixth in this series of Workshops was held at Maidstone Museum on the afternoon of 14th March. The participants were welcomed by the organiser, Mr Eric Philp, and the meeting started, as usual, with a discussion of a number of points of general interest to coleopterists — the problem of keeping up to date with additions to the British beetle fauna, rearing of beetles from larvae (a recurrent theme), forthcoming field meetings and the best keys for dealing with particular groups. Paul Hyman (NCC, Peterborough) gave a brief report on progress with the National Coleoptera Survey.

After this, those with beetle identification problems teased the various experts present with all manner of questions and this, as usual, invoked much exchange of information. The Museum's collections were studied and admired and, later, participants were refreshed with coffee or tea.

About 20 coleopterists attended the meeting, ranging from beginners to experts and these including a number of members of the BENHS. Understandably, the Maidstone Museum Workshops have come to be recognised as important annual events for coleopterists in the South-East and the 1987 meeting was no exception. Mr Philp is to be thanked and congratulated on starting and keeping going these valuable occasions. — J. A. Owen.

NOTES ON BRITISH FUNGUS GNATS OF THE SMALLER FAMILIES AND SUB-FAMILIES (DIPTERA, MYCETOPHILOIDEA)

by PETER J. CHANDLER

Weston Research Laboratories, Vanwall Road, Maidenhead, Berks.

Additions and other changes to the groups dealt with by Hutson, Ackland & Kidd (1980) are included here. Six species are new to the British list, although two of them (in *Bolitophila* and *Phthinia*) have been mentioned as forms of doubtful status in the literature. *Boletina silvatica* Dziedzicki is confirmed as a British species and one species, *Mycomya permixta* Väisänen, already added by Väisänen (1984) is also discussed. New data are given for some other notable species.

Firstly, the status of the suprageneric taxa requires clarification. Edwards (1925) recognised ten sub-families including the Sciaridae, which has already been accorded family rank by Hutson in Kloet & Hincks (1976) and Freeman (1983). Retention of the other groups in the Mycetophilidae is not a natural arrangement as it does not reflect their phylogenetic relationships. Matile (1981) demonstrated the antiquity of these taxa and recognised a series of families in the Mycetophiloidea (= Mycetophilidae and Sciaridae of British authors). The Keroplatidae, Diadocidiidae, Ditomyiidae and Bolitophilidae are accorded family rank; their relationships have not been clarified but they are ancient apparently monophyletic groups. Matile also postulated that the more restricted concept of the Mycetophilidae (Sciophilinae, Manotinae and Mycetophilinae of Edwards) is a monophyletic group which is probably the sister group of the Sciaridae. The sub-family Sciophilinae is, however, not a natural group and some authors (e.g. Väisänen, 1984) have raised the tribes to sub-family rank but they require redefinition and Väisänen (1986) has already made studies of this problem.

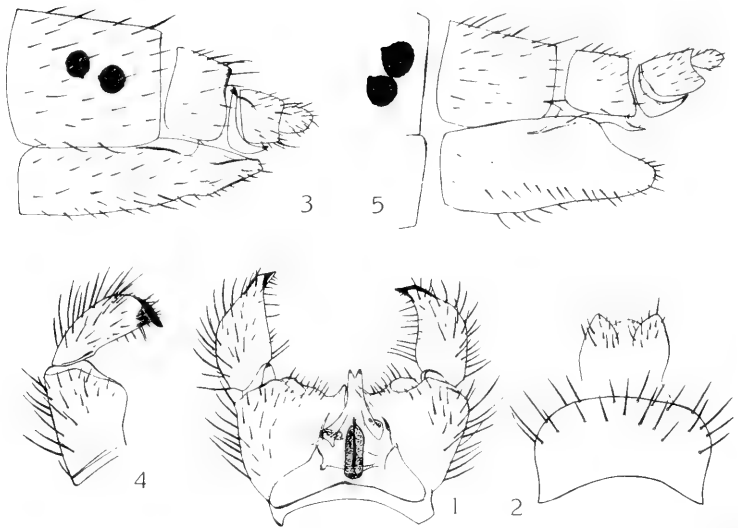
BOLITOPHILOIDAE

Bolitophila modesta Lackschewitz, 1937

New to Britain. This small to medium-size (wing length 4.4–4.7 mm) dark species has a slightly shining uniformly grey mesonotum, resembling *pseudohybrida* Landrock to which it runs on external characters in the key by Hutson *et al.* (1980) but differs in the shape of the claspers (Fig. 1). The latter more resemble *fumida* Edwards, figured here for comparison (Fig. 4). The two females referred to as 'sp. indet. 3' by Hutson & Kidd (1971) are considered to be conspecific. They also resemble *pseudohybrida* but differ in small details of the ovipositor (Figs 3 and 5) and in having only segments 2–3 of the fore tarsi swollen (2–4 in *pseudohybrida*). Cross-vein 'm-cu' (tb) may be present or narrowly obliterated in both *modesta* and *pseudohybrida* contrary to their separation in Plassmann's (1975) key.

B. modesta was described from Latvia by Lackschewitz (1937) and has been recorded by Matile (1977) from the French Alps and by Plassmann (1977, 1979, 1980*a, b*) from the German Alps and Sweden. It is proving widespread in England and appears to have been overlooked.

Material examined. Hants.: Leckford, 5.x.1975, ♂; Surrey: Virginia Water, 6.x.1974, ♂; Berks.: Applehouse Hill, 16.x.1976, ♂; Herts.: Great Offley, 29.ix.1968, ♀ (P.J. Chandler); Baldock, ix–x.1917, ♀ (F.W. Edwards, BMNH); Oxon.: Frilford Heath, 18.ix.1977, ♂ (J.W. Ismay); Gloucs.: Daneway, 12.x.1979, ♂; Witcombe Wood, 12.x.1979, ♂ (P.J. Chandler); Chedworth Wood, 12.x.1979, ♂ (A.E. Stubbs); Shewell Wood, 12.x.1979, ♀; Norfolk: Wayland Wood, 28.x.1977, ♂



Figs 1-5. *Bolitophila* species, genitalia. *B. modesta* Lackschewitz: 1, male dorsal view with tergite removed; 2, 9th tergite and cerci; 3, ovipositor. *B. fumida* Edwards, 4, male for comparison of dististyle. *B. pseudohybrida* Landrock, 5, ovipositor.

(I.F.G. McLean); Cumbria: Stock Ghyll, 5.x.1971, ♀ (A.M. Hutson, BMNH, ♂ same data lacks genitalia); N. Yorks.: Crackpot Wood, 3.x.1985, ♂ (A.E. Stubbs); Castle Bolton, 3.x.1985, ♂; Hag Wood, 4.x.1985, ♀ (I.F.G. McLean).

DIADOCIDIIDAE

Diadocidia valida Mik

This was reintroduced as British by Hutson et al. (1980) after the discovery of the female from Logie, 26.ix.1904 (F. Jenkinson) mentioned by Edwards (1925) in the Cambridge University Museum. Some new material has now been seen including a male, taken by A.E. Stubbs on 15-16.vi.1984 at Alness, Rogie Falls, Ross and Belladrun Burn, Inverness.

KEROPLATIDAE

Asindulum nigrum Latreille

This is a fenland species of which the adults feed at umbels. British records are from East Anglia and the Somerset Levels (Shapwick Peat Moor, 4.vii.1933, C. Morley, Ipswich Museum). The most recent record was from Thornden Fen, 15.vii.1944, 3 ♂ at *Heracleum* flowers (C. Morley, Ipswich Museum) but it has recently been found in Ireland by Dr M.C.D. Speight. It occurred on umbels at Scragh Bog, Co. Westmeath on 27.vii.1982.

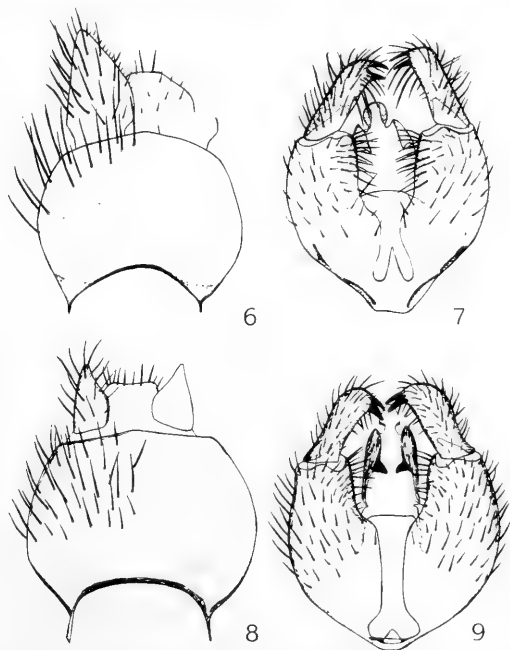
Keroplatus testaceus Dalman

A northern extension to the range is Larkrigg Spring, Sedgwick, Cumbria, 3.viii.1982, ♂ (M. Drake).

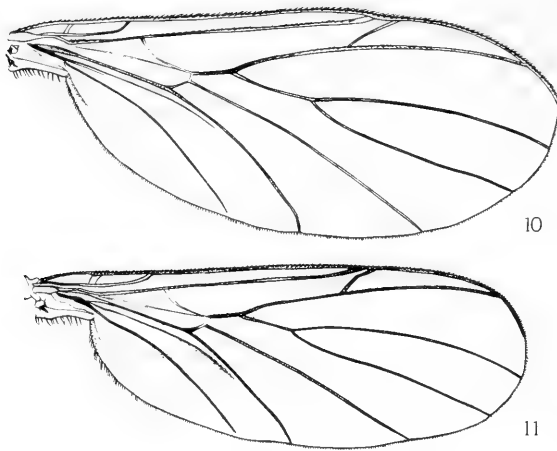
***Monocentrotia favonii* sp. nov.**

Male. Head dark brown. Antennae and palpi short, black. Thorax brownish yellow with four lighter more yellowish bare discal stripes, separated by irregularly pluriserial narrow acrostichal row and broader dorsocentral rows, a diagonal row of bristles linking the dorsocentral stripe with the irregular lateral bristling at level of wing base; all discal bristles are short. Scutellum with single row of about 14 long marginals. Anepisternum with short dark bristling near upper margin; this and katepisternum largely shining brown, darker on margins. Laterotergite brownish yellow except brown ventral margin, with dense long bristling on disc. Mediotergite yellowish brown, darker on disc, bare. Halteres yellow. Legs yellow including coxae, brownish anterior shade on mid coxae; all bristling short, dark, tibial setulae in rows, all tibiae with a single spur; tibiae 2-3 narrowly dark at tip, with 3-6 short posterior bristles near tip. Abdomen depressed and broadened to tip of 5th segment, covered with short dark bristles, mainly dark brown but with basal third of segments 1-5 indistinctly yellow, segments 6-7 and genitalia dark brown. Wings narrower than in *lundstroemi* with veins brown, well marked on brownish yellow membrane, a vague brownish shade on apical third of membrane faintly extended around posterior margin of wing. Vein R4 short, curved, ending in costa a little beyond tip of R1. Costa extended a little more than halfway from R5 to M1. Vein An fading shortly before margin. Wing length 3.4 mm. Wing Fig. 11; genitalia Figs 6 and 7.

Holotype ♂ Wales, Dyfed (Pembroke), Stackpole Quay, at rest on rock surface at base of cliffs by beach, 12.vii.1986 (Mrs M.J. Morgan). Paratype ♂ S. Devon, Chudleigh Rocks, woodland on rocky slope, 15.viii.1978 (J.H. Cole).



Figs 6-9. *Monocentrotia*, male genitalia. *M. favonii* sp. n., 6, tergite; 7, ventral view. *M. lundstroemi* Edwards, 8, tergite; 9, ventral view.



Figs 10–11. *Monocentrotia*, wings. 10, *M. lundstroemi* Edwards; 11, *M. favonii* sp. n.

Discussion

This species runs to *Monocentrotia* in the key by Hutson *et al.* (1980) and possesses all the generic characters. It is, however, readily distinguished from the only included species, *lundstroemi* Edwards by its mainly yellow coloration. *M. lundstroemi*, which is the only previously described Palaearctic species, has the body and coxae entirely dark, while the wings are broader with paler veins and uniformly yellowish membrane as well as small differences in venation. The wings and male genitalia are figured for both species (Figs 6–11). There are many small differences in the genitalia, most obviously the size of the cerci. *M. favonii* is possibly closer to the Afrotropical species, which are also mainly yellow with brown wing markings; *comoreana* Matile (1979) from the Comoro Islands agrees in most respects but differs in genital structure. The habitat of the holotype of *favonii* is anomalous; it could have originated from cliff grassland in which *Pyratula perpusilla* Edwards and *Neoplatyura biumbata* Edwards are known to occur, but the paratype locality suggests that rock crevices may be the larval habitat.

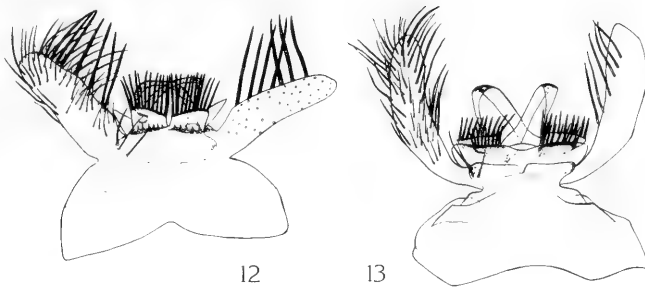
MYCETOPHILIDAE

Mycomya Rondani, 1856

One additional species and nine name changes affecting the British list result from the revision of this genus by Väisänen (1984). These changes have been cited in *Antenna* (1984, 8(3): 162) but the use of the name *fasciata* (Zetterstedt) has been found to be invalid so a further change is necessary.

Mycomya permixta Väisänen, 1984

A Scottish specimen referred to *maura* (Walker) by Edwards was identified as *permixta* by Väisänen (1984); the record of *maura* from Perthshire given by Hutson *et al.* (1980) relates to it. Further examples from the same locality, Perthshire, Aberfoyle, 6.ix.1905, ♂, 18.ix.1905 ♂, 2 ♀ (A.E.J. Carter) are in the Oxford University Museum.



Figs 12–13. *Mycomya*, male genitalia, tergal portion. 12, *M. permixta* Väisänen; 13, *M. maura* (Walker).

M. maura is common in southern England and widespread in Ireland but otherwise only recorded from France, Corsica and Spain, while *M. permixta* has a much wider Holarctic distribution (Väisänen, 1984). In the key by Hutson *et al.* (1980) *permixta* runs to *maura*, but its thorax including the scutellum is more yellowish brown with three dark stripes on the mesonotum more distinct than in most examples of *maura*, which have the thorax darker. The genitalia are similar but with several differences especially in the tergal part (Figs 12 and 13). The size range is similar; wing length of British *permixta* is 3.7–4.1 mm in ♂ and 4.2–4.3 mm in ♀.

Mycomya rosalba Hutson, 1979

Only the holotype was known to Väisänen (1984). A further male was taken at Inverness, Dalnapot, 15.vi.1982 in a wooded flush (I.F.G. McLean).

Mycomya pectinifera Edwards, 1924

This was recorded as British on a Cornish male (Hutson & Kidd, 1975). Several examples of both sexes were found at Ebbor Gorge and Withial Combe, N. Somerset in July 1985; then in October 1986 it occurred in large numbers at these localities and in moderate numbers at six other mixed woodland sites in the same district (several collectors).

Mycomya collini Edwards, 1941

The record from Berks. by Edwards (1941) was cited as Bucks. by Hutson *et al.* (1980). Two further records are known: Cumbria, Bassenfell, 2.vi.1973, ♂ (P.J. Chandler); Norfolk, Wayland Wood, 18.vi.1977, ♂ (I.F.G. McLean).

Mycomya griseovittata (Zetterstedt, 1852)

Sciophila fasciata Zetterstedt, 1838: 858. (Not *S. fasciata* Say, 1823: 26)

Sciophila griseovittata Zetterstedt, 1852: 4113. Syn. by Väisänen, 1984: 177

Sciophila clavigera Lundström, 1912: 9. Syn. by Väisänen, 1984: 177

Väisänen (1984) used the name *fasciata* (Zetterstedt) for *clavigera* (Lundström) but it is a homonym of *Sciophila fasciata* Say, an unplaced species. *Sciophila griseovittata* is thus the most senior available name for the species. The record from 'Own Fell' given by Väisänen (1984) should read: Cumbria, Dun Fell, 7.vi.1976, pitfall trap at 2050' (J. Coulson).

Neoempheria lineola (Meigen, 1818)

Until this year there were only old records from the New Forest, the most recent being in 1939. In 1986 it re-appeared in the New Forest at The Knowles, 7–8.vi.1986, 2 ♂, 2 ♀ (A.E. Stubbs and P.J. Chandler) around old beech stumps by a stream and at Gloucs., Cirencester, Oakley Wood, 24.v.1986, ♀ (K. N. Alexander) resting on a felled hollow beech trunk.

Neoempheria striata (Meigen, 1818)

New to Britain. As a conspicuous species, widespread in Europe, it is a surprising addition. Landrock (1940) considered it common in Germany. Matile (1977) recorded it from several districts in France, Väisänen (1982) recorded it from Finland and I have seen it from Finland and Greece (Corfu).

In the key by Hutson *et al.* (1980) *striata* runs to *lineola*, agreeing in the wing characters (Fig. 14) except that the postradial fold is more distinct within the apical dark marking. It differs in smaller size (wing length 5 mm) and body colour. *N. lineola* is entirely yellow including the legs and antennae while *striata* has antennae and palpi



14

Fig 14. *Neoempheria striata* (Meigen), wing.



15



16

Figs 15–16. *Neoempheria striata* (Meigen), male genitalia: 15, tergal view; 16, sternal view.

black, the mesonotum bearing 5 dark stripes along the bristle rows, the ♂ abdominal tergites 1–5 bear a dark median stripe and tergites 1–3 and 5 also have dark apical margins; remaining segments and genitalia are yellow. The structure of the ♂ genitalia (Figs. 15 and 16) is also rather different.

Material examined. Oxon.: Cothill, 13.vii.1985, ♂ swept in damp woodland adjoining fen (P.J. Chandler).

N. striata was reared by Dufour (1842) from white larvae in mucous webs under brackets of *Trametes suaveolens* (L. ex Fr.) Fr. on poplar trunks. Matile (1963) found larvae in webs on pine branches lying on the ground and considered them carnivorous as nematodes became immobilised on contact with the webs.

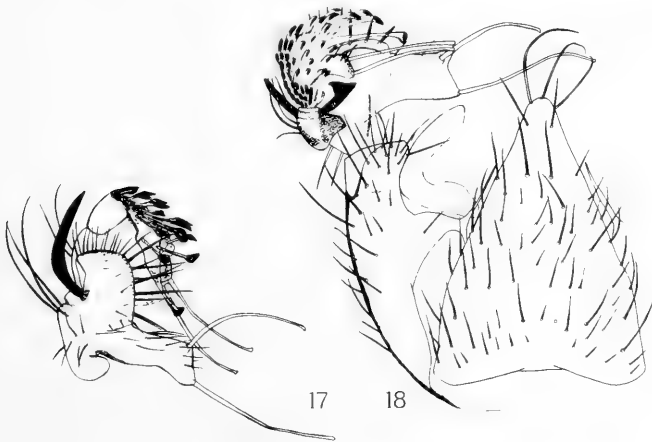
Sciophila adamsi Edwards, 1925

A second British record is from Lothian, Edinburgh, in house, 3.vi.1958, 1 ♂ (A.R. Waterston, Royal Scottish Museum).

Sciophila antiqua sp. nov.

Male. Head black. Antennae with basal segments brownish yellow, flagellum black except base of first segment. Palpi yellow. Thorax orange brown with vague dark patch on apical part of dorsum. All body hairs and bristles pale. Katepimeron and metepimeron (hypopleuron) with some pale hairs on their anterior parts. Legs with femora and tibiae entirely yellow, dark patch on trochanter, tarsi blackish. Abdomen mainly dark brown to black, tergite 1 yellow basally, tergites 2–4 narrowly yellow apically. Genitalia large, mainly black; tergite 9 narrowed apically with 3 long fine terminal bristles; clasper with strong lateral spine (Figs 17 and 18). Wing with uniform macro- and microtrichia. Vein Sc2 at the level of the base of Rs. Costa extended one third distance from R5 to M1. Wing length 3 mm.

Holotype ♂ Kent, Chislehurst, Scadbury Park, 21.vii.1985, around dead wood in overgrown ancient parkland (P.J. Chandler).



Figs 17–18. *Sciophila antiqua* sp. n., male genitalia: 17. dorsal view; 18. dististyle. dorsolateral view.

Discussion

S. antiqua runs to couplet 9 in the key by Hutson *et al.* (1980) but differs from the three included species in size or thoracic colour. Its male genital structure resembles *hebes* Johannsen (eastern USSR and north America), *neohebes* Garrett and *parahebes* Zaitzev (both Nearctic) (all figured by Zaitzev, 1982) in the presence of a strong spine on the side of the dististyle; it is closest to *parahebes* but differs from all three in the form of the 9th tergite.

Sciophila geniculata Zetterstedt, 1838

Several new British records are available and Chandler (in press) records this from Ireland. Single males seen from Cambs., Cambridge, 30.v.1904 (F. Jenkinson, Cambridge University Museum); Gloucs., Mitcheldean, 25.viii.1973 in malaise trap (A.M. Hutson, BMNH); Kent, Chislehurst, Scadbury Park, 18.vi.1983 around old beeches (P.J. Chandler).

Sciophila nonnisilva Hutson, 1979

This is proving widespread and has been found recently in Hants., Berks., Worcs. and Cornwall. It has also been reared from *Hirneola auricula-judae* collected ix.1980 at Norfolk, Lenwade Pits by R.E. Evans, emerging x.1980.

Sciophila quadriterga Hutson, 1979

A second male was taken at Hants, Leckford, 16.viii.1974 from an Autokatcher in use by S.A. Williams towards dusk (P.J. Chandler).

Sciophila plurisetosa Edwards, 1921 and *S. varia* (Winnertz, 1863)

These little known species were reared together from a specimen of *Hydnum repandum* collected at Holne Wood NNR, Devon, on 12.x.1980 (P.J. Chandler). Two males of *plurisetosa* emerged on 1.xi.1980, several of both sexes of *varia* emerged 24–30.x.1980. As shown by Zaitzev (1982) the structure of the ♂ tergite 9 in *varia* was correctly interpreted by Hutson *et al.* (1980).

These specimens do not run down in the key by Hutson *et al.* (1980) because of colour differences but were readily recognised by the genital structure. The *varia* all run to *plurisetosa* because the thorax is entirely orange and they are relatively small (wing 2.9–3.2 mm ♂, 3.3–3.4 mm ♀). The *plurisetosa* run to *fenestella* Curtis as they have shining brown thoracic stripes.

The *Phthinia humilis* Winnertz group

Hutson *et al.* (1980) figured as '*humilis* var.' a specimen differing from others they had examined in details of the male genital structure. Edwards (1913), however, based his figure of *humilis* on the same specimen. This form was also identified as *humilis* by Landrock (1916) and Caspers (1984) and this interpretation is accepted here. The *humilis* of Hutson *et al.* (1980) was described by Caspers (1984) as *plassmanni* sp. n. but Zaitzev (1984) identified this as *humilis*, having apparently not seen the *humilis* of Edwards, and placed *mira* (Ostroverkhova, 1977) of which he had examined the holotype as a synonym. Dr Zaitzev informs me that he found no distinction between *mira* and his *humilis* but the genitalia slide of *mira* was in poor condition. On his authority then *mira* is concluded to be the valid senior name for *plassmanni*. The figure of Ostroverkhova (1979) confirms this identification.

Additional British material of both species has confirmed their validity but reliable external characters have not yet been found to separate them and only males are listed below. Unfortunately only females have been found in Ireland.

Phthinia humilis Winnertz, 1863

Phthinia humilis (Winnertz); Hutson, Ackland & Kidd, 1980: 54, Fig. 222, misident.

Material examined. Devon: Yarner Wood, 9.x.1980; Ivybridge, 11.x.1980 (P.J. Chandler); Hants.: New Forest, Mark Ash, 2.vi.1984 (P.J. Chandler & A.E. Stubbs); Sussex: Hurst Wood, 27.v.1975 (A.E. Stubbs); Felcourt, 26.v.1974 (A.E. Stubbs); Crowborough, 30.ix.1908 (F. Jenkinson, BMNH); Mull: south of Gualann Dubh, 10.vi.1983 (A.E. Stubbs); Sutherland: Migdale Wood, 17.vi.1976 (P.J. Chandler).

Phthinia mira (Ostroverkhova, 1977)

Coelophthinia mira Ostroverkhova, 1977: 24

Phthinia mira (Ostroverkhova); Ostroverkhova, 1979: 84, Plate 98, Fig. 1

Phthinia plassmanni Caspers, 1984. **Syn. nov.**

Phthinia humilis (Winnertz); Hutson, Ackland & Kidd, 1980: 54, Fig. 222, misident.

Phthinia humilis (Winnertz); Zaitzev, 1984: 833, misident.

Material examined. Devon: wood above Smallacombe Farm, 30.vi.1978; Hants.: Pamber Forest, 11.vii.1970 (P.J. Chandler); New Forest, 14.vi.1902, 30.v.1909, 26.vii.1910, 30.ix.1910 (F.C. Adams, BMNH); Denny Wood (F.W. Edwards, BMNH); Berks.: Old Windsor Wood, 2.vi.1977 (P.J. Chandler); Worcs.: Wyre Forest, Town Coppice, 13.x.1984 (P.J. Chandler); Gwynedd: Bettws-y-Coed, 24.ix.1966 (R.I. Vane-Wright, BMNH); Ceunant Llannyrch, 13.vii.1976 (A.E. Stubbs).

Palaeodocosia flava (Edwards, 1913)

A further British male of this species has been examined, from N. Somerset, Leigh Wood, 5–11.vi.1949 (E.C.M. d'Assis Fonseca). Although collected so long ago it is the most recent British specimen known to me. Leigh Woods, now the Avon Gorge NNR, is understood to have changed considerably since 1949 and it is to be hoped that this species will be rediscovered there or elsewhere.

Saigusaia flaviventris (Strobl, 1894)

Matile (1983) transferred *flaviventris* Strobl from *Boletina* to *Saigusaia* Vockeroth (1980), based on two species from north America and Taiwan. According to Saigusa (1968) related species occur in Japan. The separation is based on differences in genital structure and in some external characters e.g. vein Sc ending well before the base of Rs and hairy metathoracic episterna.

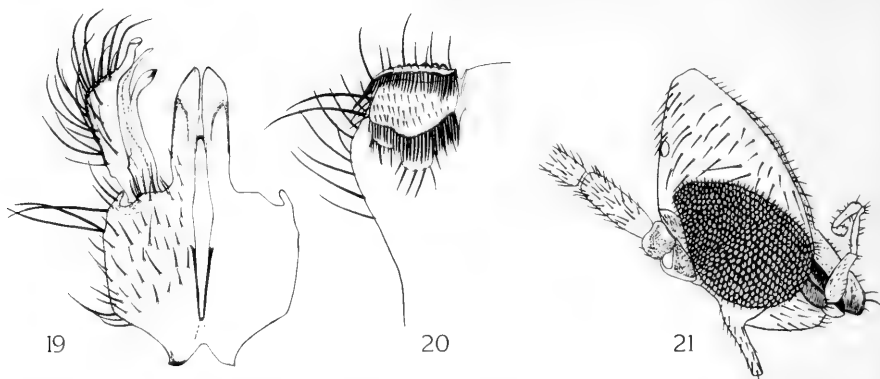
Boletina nasuta (Haliday, 1839)

Leia nasuta Haliday, 1839: 184

Boletina lundbecki Lundström; Edwards, 1913: 363, misident.

Boletina nasuta (Haliday); Chandler, 1976: 100

Matile (1983) figured the genitalia of the true *lundbecki*, which lacks the unique facial process found in *nasuta* and mentioned as 'usually present' in the description by



Figs 19–21. *Boletina nasuta* (Haliday). 19, male genitalia, ventral view; 20, ventral view of tergite 9 to show cercus; 21, lateral view of male head.

Haliday, who may have included other species. There are small genital differences (δ of *nasuta*, Figs 19 and 20), e.g. the more attenuated median ventral processes in *lundbecki*. Chandler (in press) selected a lectotype male from Haliday's collection (National Museum, Dublin). The facial process is gently tapering and rounded apically, about as long as the second palpal segment (Fig. 21).

In Britain, *B. nasuta* is a local northern and western species, not recorded since 1940. I have seen it from Moray, Lothian, Cheshire and Glamorgan as well as N. Ireland (not since the 1970 record from Glenariff).

Boletina silvatica Dziedzicki, 1885

The male recorded from Symond's Yat, Gloucs. by Edwards (1941) has been found and Mr Hutson has asked me to publish details. It belongs to the group of species only separable from *sciarina* Meigen by the male genitalia, which agree well with the figures by Dziedzicki (1885). The British specimen is illustrated here (Figs 22 and 23).

Docosia Winnertz, 1863

Several species have a predilection for trunks of old living trees bearing mosses or lichens. This habit may provide a clue to their unknown life cycle. Most are spring flying, only *pallipes* Edwards normally occurring into the autumn.

Hutson *et al.* (1980) added two species to the British list; one of these awaits description in a revision of the genus by Laštovka. Details of the British records of these species including one older example of *setosa* are given here. A further British species of *Docosia* can also be added.

Docosia setosa Landrock, 1916

Male genitalia, Figs 24 and 25.

Material examined. Lanark: Braidwood, 1.v.1905 (J.J.F.X. King, Glasgow University Museum); Perthshire (Tayside); Blair Atholl, 28.v.1973, δ around beech trunk; Powys: Nantserre Wood, 22.v.1977, 3 δ , 1 δ around lichen covered oak trunks; Cilkenny Dingle, 22.v.1977, 2 δ ; N. Yorks.: near Marske, woods by River Swale, 16.vi.1977, δ amongst dense foliage near base of wych elm trunk (all P.J. Chandler).



Figs 22–23. *Boletina silvatica* Dziedzicki, male genitalia: 22, ventral view; 23, lateral view from right.

Docosia sp. indet. of Hutson *et al.*, 1980

Male genitalia, Figs 26–29.

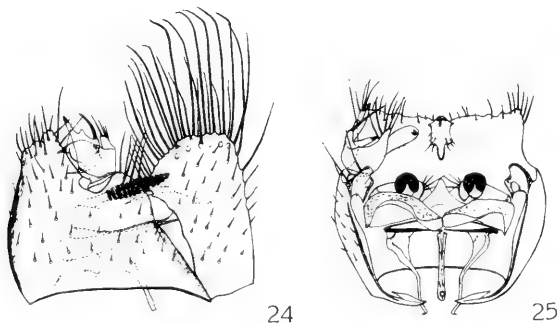
Material examined. Powys: Nantsere Wood, 22.v.1977, ♂ on lichen covered oak trunk (P.J. Chandler); Angus: Den of Airlie, 4.vii.1977, 3 ♀ (A.M. Hutson); Inverness: Belladrun Burn, 16.vi.1984, ♀ (A.E. Stubbs).

Docosia morionella Mik, 1884

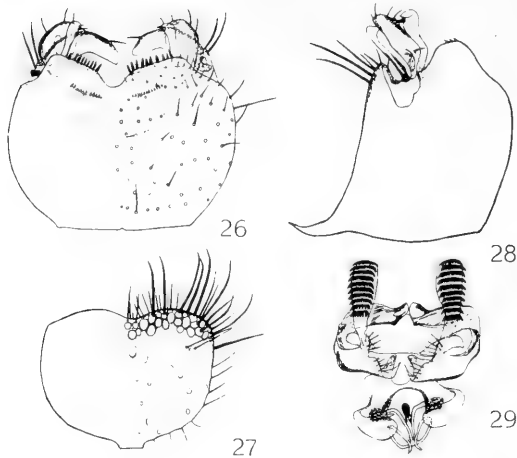
New to Britain. One British female only is known and it was first recognised as *morionella* by J.E. Collin. Mik (1884) described it from a pair and another female taken on windows in Austria, but the male genitalia have not been figured and the male had not been seen by Laštovka (pers. comm.)

This is a small dark species, running to *fuscipes* in the key by Hutson *et al.* (1980), differing in the presence of black bristles on the posterior half of the mesonotum, black scutellars, black halteres, entirely dark legs and clear wings.

The body is entirely black including most bristles except those on the anterior part



Figs 24–25. *Docosia setosa* Landrock, male genitalia: 24, lateral view; 25, dorsal view with tergite removed.



Figs 26–29. *Docosia* sp. indet. sensu Hutson, Ackland & Kidd: 26, ventral view; 27, tergite; 28, lateral view without tergite; 29, aedeagus.

of the mesonotum, including the long convergent bristles near the anterior margin and on the prothoracic sclerites. Antennae shorter than the thorax, black. Legs entirely black with some lighter shades on the femora; pale femoral hairs; black bristles on tibiae (mid with 4a, 4d; hind with 8a, 7–8d). Wings clear, costa and radial sector including r-m brown, other veins clear. Macrotrichia on posterior fork extend onto apical half of stem. Wing length 3.4 mm.

Material examined. Moray: Logie, 23.ix.1904, ♀ (F. Jenkinson, Cambridge University Museum).

Ectrepesthoneura colyeri Chandler, 1979

One further record has come to my notice: Perthshire, Camusurich, 6.vii.1979, 1 ♂ (P. Skidmore).

ACKNOWLEDGEMENTS

Dr A.I. Zaitzev (USSR Academy of Sciences) kindly confirmed that the *Sciophila* described here was not a species known to him and also commented on the synonymy in *Phthinia*. This work has benefited from the opportunity to examine Museum collections, for which I am indebted to the authorities of the Museums concerned, and from the kindness of the collectors cited who have referred their material to me. Joan Morgan and Jonathan Cole must be particularly thanked for bringing to my attention their respective examples of the remarkable new *Monocentrotia*.

REFERENCES

- Caspers, N., 1984. Mycetophiliden aus Lunz, Niederösterreich (Diptera, Nematocera, Mycetophilidae). *Zeitschrift für Entomologie* 5(15): 173–205.
 Chandler, P.J., 1976. A preliminary list of the fungus gnats (Diptera, Mycetophilidae) of Ireland. *Proc. R. Irish Acad.* 76(B): 81–110.
 Chandler, P.J., in press. New data on Irish fungus gnats. *Bull. Ir. biogeog. Soc.*
 Dufour, L., 1842. Histoire des métamorphoses du *Sciophila striata*. *Mem. Soc. Sci. Arts Lille* 1841: 201–207.

- Dziedzicki, H., 1885. Przyczynek do Fauny owadów dwuskrzydłych Rodzaje nowe: *Hertwigia* nov. gen.: *Eurycera* nov. gen. i gatunki rodzajów: *Boletina*, *Sciophilula*. *Pam. Fiz.*, Warsaw 5(3): 164–194, pls. 4–9.
- Edwards, F.W., 1913. Notes on British Mycetophilidae. *Trans. ent. Soc. Lond.* 1913: 334–382.
- Edwards, F.W., 1925. British fungus gnats (Diptera, Mycetophilidae) with a revised generic classification of the family. *Trans. ent. Soc. Lond.* 1924: 505–670.
- Edwards, F.W., 1941. Notes on British fungus gnats (Diptera, Mycetophilidae). *Entomologist's mon. Mag.* 77: 21–32, 67–82.
- Freeman, P., 1983. Sciarid Flies (Diptera, Sciaridae). *Handb. Ident. Brit. Insects* Vol. 9(6) pp. 68.
- Haliday, A.H., 1839. New British insects indicated in Mr. Curtis' Guide. *Ann. Nat. Hist.* 22: 183–189.
- Hutson, A.M., Ackland, D.M. and Kidd, L.N., 1980. Mycetophilidae (Bolitophilinae, Ditomyiinae, Diadocidiinae, Keroplatinae, Sciophilinae and Manotinae). *Handb. Ident. Brit. Insects* Vol. 9(3) pp. 111.
- Hutson, A.M. and Kidd, L.N., 1971. Notes on British Bolitophilinae, including three species new to Britain (Diptera, Mycetophilidae). *Entomologist* 104: 219–226.
- Hutson, A.M. and Kidd, L.N., 1975. Two Mycetophilidae (Diptera) new to Britain. *Entomologist's mon. Mag* 110 (1974): 236.
- Kloet, G.S. and Hincks, W.D., 1976. A Check List of British Insects (2nd edn.): Diptera and Siphonaptera. *Handb. Ident. Brit. Insects* Vol. 11(5) pp. 139.
- Lackschewitz, P., 1937. Die Fungivoriden des Ostbaltischen Gebietes. *Arb. Naturforsch. Ver. Riga* 21: 1–47.
- Landrock, K., 1916. Die Pilzmücken Gattungen *Phthinia* Winn. und *Bolitophila* Meig. *Wiener Entomol. Zeitung* 35: 219–285.
- Landrock, K., 1940. Pilzmücken oder Fungivoridae. In Dahl, F. (Ed.), *Die Tierwelt Deutschlands* 38: 1–166. Jena.
- Lundström, C., 1912. Beiträge zur Kenntnis der Dipteren Finlands. VIII. Supplement 2. *Acta Soc. Fauna Fl. Fennica* 36: 1–70, pls. i–vii.
- Matile, L., 1963. Diptères Fungivoridae récoltés à Richelieu (Indre-et-Loire) et aux environs. *Cahiers des Naturalistes, Bull. N. P.*, n.s. 19: 75–79.
- Matile, L., 1977. Catalogue provisoire des Diptères Mycetophilidae de la Faune de France. *Bull. Mus. nat. hist. Nat* (3) 456: 621–655.
- Matile, L., 1979. Diptera Mycetophilidae de l'Archipel des Comores. *Mém. Mus. nat. hist. Nat. n.s. (A)* 109: 247–306.
- Matile, L., 1981. Description d'un Keroplatidae du Crétacé moyen et données morphologiques et taxinomiques sur les Mycetophiloidea (Diptera). *Ann. Soc. ent. Fr. (N.S.)* 17(1): 99–123.
- Matile, L., 1983. Notes taxinomiques et chorologiques sur les Gnoristini Paléarctiques (Diptera, Mycetophilidae). *Ann. Soc. ent. Fr. (N.S.)* 19(4): 427–432.
- Mik, J., 1884. Fünf neue österreichischen Dipteren. *Verh. z. b. Ges. Wien* 33: 251.
- Ostroverkhova, G. P., 1977. New and little known species of fungus gnats (Diptera, Mycetophiloidea) of the north Tomsk district. (in Russian). *Tr. Nauchro-Insled. Inst. Biol. Biofiz. Tomsk Gos. Univ.* 8: 23–27.
- Ostroverkhova G.P., 1979. Fungus gnats (Diptera, Mycetophiloidea) of Siberia. (in Russian). *Izd. Tomsk Univ.* pp. 307.
- Plassmann, E., 1975. Revision der europäischen Arten der Pilzmückengattung *Bolitophila* Meigen. (Diptera, Mycetophilidae). *Ent. Scand.* 6: 145–157.
- Plassmann, E., 1977. Eine erste Bestandsaufnahme der Pilzmücken aus der Allgäu. *Mitt. Naturw. Arb. dr. Kempten* 21(1): 7–15.
- Plassmann, E., 1979. Pilzmücken aus Messaure in Schweden. II. Luftström-Fallenfänge (Insecta: Diptera: Mycetophilidae) *Senckenbergiana biol.* 59: 371–388.
- Plassmann, E., 1980a. Neue Pilzmückenfänge aus dem Allgäu (Diptera, Mycetophilidae). *Mit. Münch. Ent. Ges.* 70: 15–34.
- Plassmann, E., 1980b. Pilzmücken aus Messaure in Schweden. III. Lichtfallenfänge (Insecta: Diptera: Mycetophilidae). *Senckenbergiana biol.* 60: 175–189.

- Saigusa, T., 1968. The genus *Boletina* Staeger from Taiwan (Diptera, Mycetophilidae). *Sieboldia* 4: 1–24.
- Say, T., 1823. Descriptions of Dipterous insects of the United States. *J. Acad. Nat. Sci. Phila.* 3: 9–54, 73–104.
- Väisänen, R., 1982. Genus *Neoempheria* (Diptera, Mycetophilidae) in Finland, with a description of a new species. *Notulae Entomol.* 62: 1–7.
- Väisänen, R., 1984. A monograph of the genus *Mycomya* Rondani in the Holarctic region (Diptera, Mycetophilidae). *Acta Zool. Fennica* 177: 1–346.
- Väisänen, R., 1986. The delimitation of the Gnoristini: criteria for the classification of recent European genera (Diptera, Mycetophilidae). *Ann. Zool. Fennica* 23: 197–206.
- Vockeroth, J.R., 1980. New genera and species of Mycetophilidae (Diptera) from the Holarctic region, with notes on other species. *Canad. Entomol.* 112(6): 529–544.
- Zaitzev, A.I., 1982. Holarctic fungus-gnats of the genus *Sciophila* Meig. (Diptera, Mycetophilidae) *Akad. Nauk. SSSR*. pp. 76.
- Zaitzev, A.I., 1984. Holarctic species of the genus *Phthinia* Winn. (Diptera, Mycetophilidae). *Entomol. Obozr.* 63: 830–839.
- Zetterstedt, J.W., 1838. Section 3: Diptera. pp. 477–868. In his *Insecta Lapponica* vi + 1140 pp. Lipsiae (= Leipzig).
- Zetterstedt, J.W., 1852. Diptera Scandinaviae disposita et descripta. XI: 4091–4546. Lundae (= Lund).

BOOK REVIEWS

Collins Guide to the Insects of Britain and Western Europe. Michael Chinnery. 320 pp. Collins, London, 1986, £6.95.

This attractively produced volume opens with a brief introduction to insect anatomy, life cycles, collecting, studying and conservation. This is followed by a key to the main groupings, where line drawings and a succinct text will allow many insects to be identified to their order. The 282 pages, slightly more than half of which are coloured illustrations and line drawings, detail some 2000 of the 100 000 or so species which occur in the British Isles and the more contiguous parts of Western Europe. A further 10 pages are devoted to other arthropods – centipedes, millipedes, woodlice and spiders.

Though parts of the text are significant the value of this book as a guide must depend on the quality of the illustrations. These, though often useful, frequently exhibit certain deficiencies. Most portraits include a dimensional reference and where this is missing a full scale representation must be assumed. If this is done, a false impression of the size of certain Lepidoptera will be obtained. The morphology depicted is generally quite accurate but there is a tendency to over-emphasise and distort fine detail and colour. This latter effect, though particularly marked in the lepidoptera, is also evident in several other orders.

Inevitably, the two percent sample referenced has led to the omission of many species which are to be found commonly, both casually and by the dedicated field worker. This deficiency is increased by the tendency to select examples for their photogenic qualities or striking appearance – very, very, few of those dark or dun-coloured denizens of our environment are figured. The British contingent of certain orders is possibly also over emphasised. However, it is within the text itself that is mentioned the most serious criticism of this book as an identification guide ' . . . there are a number of similar species . . . '.

Typographical errors are not infrequent and the glossary and index can be a source of frustration. In spite of this the book will be enjoyed by the tyro naturalist and found

interesting by the devotee of other open air pursuits who wants to explore a little beyond these more regular interests.

P.J. BAKER

The Aurelian or Natural History of English Insects: Namely Moths and Butterflies together with the plants on which they feed. Moses Harris. Newnes/Country Life Books, 1986, £15.00 hardback.

Two hundred and twenty years after its first issue, Moses Harris's 'Aurelian' is back in print. And in those years it has lost none of its literary charm or entomological accuracy. It makes entertaining and informative reading as must have done the first fascicle when it arrived to the first subscribers in 1758. There are three small additions since the book was last published – a preface by J.M. Chalmers-Hunt and an introduction and running commentary by Robert Mays. Apart from these, the book contains the whole and complete contents of the second issue (published in 1773 with the additional three plates), comprising 44 full colour plates and accompanying explanatory text.

The full page colour plates (no longer hand coloured) show mainly butterflies and moths, but I am pleased to note that a few other 'flies' are also included (the odd ichneumon, a dragonfly and a few beetles). The plates are facsimile copies from the coloured originals and when compared to those delicately painted plates do great justice to the work of the 18th century colourists. The text on the other hand has been typeset anew – a mistake in my view given the clarity and good design of the original typeface. I cannot understand why the publishers should have wished to do so much work, resetting the entire text. The original would have suffered quite some photographic reduction in size to fit the new format of the book which is slightly smaller than the folio of the first editions. In setting the text again the 'long s' has been dipenfed with (except peculiarly enough in the 'Pfalm' at the end – a typographical error?). A 'typo' also creeps into the very first paragraph of the new text when the words suddenly burst into a block of italic.

Despite this 'modernization' of the book, it is still a superb volume. The pictures are clear, accurate and artistic. Harris's text is apt, true to life and with great literary character. I found the description of antique equipment particularly interesting and the archaisms (such as 'hen' and 'cock' for the sexes and the much wider use of the word 'fly') give the book a charming flavour. The Aurelian cannot but enthral all those who don't have the original upstairs in the library.

R.A. JONES

Insects in Camera, by Christopher O'Toole with photographs by Ken Preston-Mafham. Oxford University Press, May 1985. £14.95.

The value of this publication lies in the behaviour depicted in the photographs and its interpretation in biological terms. The seven chapters describe aspects of behaviour: thus 'Success in Diversity' illustrates a short range of insect orders and life-histories, and 'The Social Option' some of the more recent evolutionary stages of Hymenoptera. Each chapter has a concise introduction which includes relating that particular aspect of behaviour to the theory of evolution.

Sometimes the 'New Anthropomorphism' mentioned in the author's preface seems somewhat simplistic: a male mantid mates with a female of a different family but of physically similar appearance "because his own females are difficult to catch". A majority of the insects illustrated are of tropical or sub-tropical origin so that much of

the book is not directly relevant to the British fauna. Nevertheless it is full of interesting background information and acute photographic observations such as the attempted interrupted mating by a second male beetle which resulted in the permanent maiming of the reproductive parts of the original pair (photos 94,95), and muscid fly *Stomoxys ochrosoma* 'laying' her eggs on a column of army ants (179).

Some of the pictures are reproduced at such small scale that their value is to illustrate a text-book point rather than as a significant observation; in some the details are difficult to distinguish. Others would have benefitted from greater enlargement.

The pictures themselves are almost all taken using a single electronic flash giving a standard near-frontal lighting. Where the subjects are, as here, of such novelty and interest this is satisfactory. However, the obvious shadows cast by a single source of light can be a distraction particularly where the subject itself is black or fairly dark (e.g. in 45 where the butterfly is difficult to distinguish from its shadow). Where natural daylight or flash overspill has been allowed to fall on the background (65, 69, 119, 159) the effect is better: the subject is well illuminated but there is enough background to give some idea of the habitat. The use of two flashes is illustrated in photo 1 where a small fill-in flash has picked out some of the details on the shadow side of the subject. Greater use of fill-in-flash in other pictures would have lightened the shadows cast by the main flash (34, 79, 155) and improved the detail in some of the others (57, 79, 155). A few pictures suggest nocturnal activity due to inadequate lighting (103).

In spite of these shortcomings there are many pictures where the single-flash technique suits the subject, i.e. the colour form and texture of subject and its background are well shown (31, 32, 39, 198). Two pictures should be mentioned: in photo 8 the use of ringflash has produced white rings in the simple eyes of the bees (an effect not seen in nature) and some strange reflections from their bodies. In photo 131 the novel use of 'ghost image' (a secondary image from daylight in addition to the sharp flash image) illustrates the tamping action of a female wasp as she firms down the soil over the exit to her nest.

Overall, the combination of perceptive photography and informed commentary are commended as a useful essay in practical entomology.

N. A. CALLOW

Odonata book review. 1986 has seen the publication of three new illustrated books on the Odonata – the Dragonflies. All are aimed at the growing popular natural history market, but all three are specialised and advanced enough to find a place on members' shelves. They each have things to recommend them, and they each have drawbacks. Rather than review them individually, I have given in the table opposite, their main features together with some comments on their contents. On the whole I am rather disappointed with all three of them, not really suffering comparison with the other recent publication *The Dragonflies of Great Britain and Ireland* by C.O. Hammond. In any insect book, my preference would always be for drawings rather than photographs to give clarity of detail. Nevertheless, they would all make a good companion volume, and almost the only thing to choose between them is the fauna which they cover, their comprehensiveness being more or less inversely proportional to their literary style. It is interesting to note that 1986 also sees the publication of a paperback version of Cyril Hammond's book. Another reissue is the paperback version (with all black and white instead of some colour plates) of *Dragonflies* by P.S. Corbet, Cynthia Longfield and N.W. Moore: the New Naturalist title first published in 1960. Next year sees the publication of yet another Odonata book: *The Dragonflies of Europe* by R.R. Askew, not many details are available, but it will have 40 colour plates, 100 maps and 25 pages of figures. Watch this space!

R. A. JONES

Title	<i>A Field Guide to the Dragonflies of Britain, Europe and North Africa</i>	<i>Country Life Guide to the Dragonflies and Damselflies of Britain and Northern Europe</i>	<i>A Complete Guide to British Dragonflies</i>
Authors	J. d'Aguiar, J.-L. Dommangeat & R. Prechac (Consult. Ed. S. Brooks)	Bob Gibbons	Andrew McGeeney
Pages	336 + plates	144	144
Size (mm)	200 × 130	190 × 115	255 × 195
Plates: colour	13 = 55 photos	117 photos (2-3 per page)	208 photos (2-3 per page)
b/w	27 = paintings	Some text figs	Some in keys
No. of spp. covered	131	76	41 (55 mentioned)
Amount per sp. (approx.)	1 page (350 words)	½ page (300 words)	1-2 pages (1000 words)
Keys	Adults to genus	Adults to family (some genera to sp.)	Adults to sp. (41)
Publisher	Larvae to family	Larvae to family	Larvae to sp. (41)
Price	Collins	Newnes (Country Life)	Jonathan Cape
Comments	£14.95 (cased) Comprehensive, but being a translation of a French book, contains little new information. Colour plates rather small and indistinct. General information bland. Binding unaesthetic in plastic-style covering.	£7.95 (paper) Concise, but well written and nicely produced. Photos good, clear and crisp. Information interesting and well selected. Binding a little tight (on paperback at least).	£12.95 (cased) Well written and very readable. Photos good, some excellent. Keys to species very clear and well arranged, even if the line figures are slightly amateur. General information interesting and well presented. Binding good with jacket. Limited in scope, but very good text to make up for it.
Recommendation	Good reference book but rather dull. Too many subheadings and too little text.	Excellent compromise of space and style - my personal favourite	

***Ptenidium gressneri* Erichson (Coleoptera, Ptiliidae) in Surrey.** — On a walk with some friends during the January snowy weather along the bridle path from Mickleham in Surrey to Ashstead, I stopped and collected a few handfuls of rotten wood from an elm stump by the side of the path. When I got home, I found the debris contained numerous examples of the Ptilid, *P. gressneri*, a species usually restricted to old woodland areas. Harding & Rose (1986 *Pasture-woodlands in lowland Britain*) have classified the beetle as a grade 2 indicator of ancient pasture woodlands.

This section of the path runs across the chalklands of the North Downs and, although there are trees about, the land on either side is long-established farmland with little to suggest that it has been old woodland for very many years. According to the Ordinance Survey map, however, the path was once the Roman Stane Street and it has apparently been a trackway since Roman times. For most of this time, it would almost certainly have been bordered by a hedge, of which the elm while alive would, more recently, have formed part. This suggests the possibility that *P. gressneri*, and perhaps other 'ancient woodland' indicators may also serve as indicators of ancient hedgerows. — J. A. Owen, 8 Kingsdown Rd, Epsom, Surrey KT17 3PU.

First host record for the genus *Hyboteles* van Achterberg (Hymenoptera, Braconidae). — During a recent visit to the British Museum (Natural History) I found a specimen of *Hyboteles toxopeusi* van Achterberg (1984) which had associated host data. The specimen (CIE accession number A 1320) was reared from the pupa of the lycaenid butterfly *Narathura micale micale* at Sapphire Creek, C. District, Papua and is dated (emergence date?) 2.xi.66. This host record is the first for the genus *Hyboteles*.

Hyboteles belongs to an interesting subtribe of Braconinae, the Aspidobraconina van Achterberg, which are characterised principally by having the first and second metasomal tergites fused. Of the eight genera of Aspidobraconina known to date (Quicke, 1987) host data has previously been available for two only. Various species of *Aspidobracon* van Achterberg are gregarious pupal endoparasitoids of the Acraeidae and Hesperidae, while members of *Philomacroploea* Cameron are gregarious pupal endoparasitoids of Nymphalidae Danaiinae. (Quicke, 1983; van Achterberg, 1984); records of *Philomacroploea* from other hosts (Shenefelt, 1978) result from misidentifications of the parasitoid. The above new host record for *Hyboteles* thus lends strong support for a monophyletic origin of the Aspidobraconina, all other Braconinae being ectoparasitoids principally of concealed Lepidoptera and Coleoptera larvae. From the available data it seems likely, however, that only the single individual of *Hyboteles* referred to above was reared from its host pupa and in this way *Hyboteles* appears to differ from *Aspidobracon* and *Philomacroploea*. — Donald L. J. Quicke, Department of Zoology, University of Sheffield, Sheffield S10 2TN.

References

- Quicke, D. L. J., 1983. Some new host records for genera and species of Braconinae (Hym., Braconidae) including economically important species. *Entomologist's mon. Mag.* **119**:91-93.
- Quicke, D. L. J., 1987. The Old World genera of braconine wasps (Hymenoptera: Braconidae). *J. nat. Hist.* **21**:41-157.
- Shenefelt, R. D., 1978. *Hymenopterorum Catalogus (nov. ed.) Part 15. Braconidae*, vol. 10. The Hague: Junk, pp. 1425-1865.
- van Achterberg, C., 1984. Revision of the genera of Braconini with first and second metasomal tergites immovably joined (Hymenoptera, Braconidae, Braconinae). *Tijdschr. Ent.* **127**:137-164.

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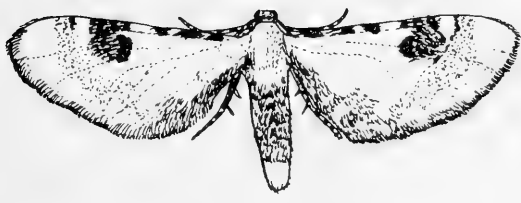
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BUTTERFLY COLLECTING—WHAT FUTURE?

Alan Stubbs' discussion meeting on this subject held on 25 April 1985 gave rise to a lively debate on a subject of importance to all entomologists. The subsequent report in this journal (Vol. 18 pp. 65–73) summarized many of the arguments and gave much food for thought on the future of butterfly collecting in this country. The following two items from members come in direct response to that report. They represent the personal opinions of the authors, and although they do not necessarily represent the views of the Editor, the Editorial Panel or the Council of the Society, they are published here in full to add to the debate and to provoke further correspondence.

BUTTERFLY COLLECTING

by RUPERT BARRINGTON

Old College Arms, Stour Row, Near Shaftsbury, Dorset SP7 0QF.

Rather belatedly I would like to add some thoughts to Alan Stubbs' appraisal of the butterfly collecting controversy. This was as clear and as unbiased an argument as one could wish to see and certainly left one with the feeling that there is no overt justification for collecting butterflies and for this reason only a small push is needed to ban it. The following personal contribution to this argument, whilst being expressed from a collector's point of view, is intended to be as amotive and as objective as possible.

EFFECTS OF COLLECTING

My first thought is that there rarely appears to be any direct justification for collecting British butterflies (nor is there for fishing, or wearing leather shoes, or setting up a business and building your offices on waste ground, or indeed for most things we do) but that equally this alone is no justification for banning it. The question that should be in the balance is whether collecting is harmful and thus whether legislation to ban it would be beneficial.

I believe that most members would agree that collecting is not, in most cases, harmful to a butterfly population. Obviously there are cases where collecting could be disastrous (rare species or excesses by collectors; the latter nowadays more or less totally related to commercial entomology and I will deal with this later) and for the species concerned a whole-sale ban on collecting is entirely to be welcomed as a logical safety measure. The clearest and most objective discussion on the effects of collecting that I have come across was that given by Dr Jeremy Thomas in chapter 33 of *The biology of butterflies* (1984, Academic Press, London). (Dr Thomas is no collector—indeed he has elsewhere stated that he finds the procedure obnoxious—this is his subjective view of proceedings and as such is fair enough, but it is one we must try to avoid in an objective argument.) He is probably the most knowledgeable and clear-sighted of all scientists working today on butterfly conservation and I would suggest that his chapter is *absolutely essential reading* for anyone who wishes to discuss seriously the topic of butterfly conservation, the chapter covering all aspects of the subject. Whilst quoting in full is impossible, I think a few of his words bear repeating.

. . . most detached reviewers have concluded that collectors have had little if any effect on UK butterfly populations, though all believe that heavy collecting might tip the balance against a small colony that was at a low ebb for other reasons. . . . nearly all extinctions have occurred at sites where collecting has not occurred.

The first quote is the overall message of the passage and the second highlights what I hope most people now realize—that it is habitat management, or lack of it, that has brought our butterflies down to their present levels.

THE IMPORTANCE OF COLLECTING

The advantages of collecting are often rather more spin-offs from collecting than the direct aims, but this must in no way reduce their importance.

Many collectors would not deny that they collect to some extent for the simple thrill of discovering a rarity, the pleasure of breeding and of possession and the enjoyment of the pursuit of these ends. However, as such a pursuit demands very close attention to the butterflies, it leads to a collector building up a considerable bank of knowledge regarding distribution, habits and habitats, parasites and predators, and genetics—knowledge that may be secondarily, but nonetheless inevitably, accrued. (Some collectors are expert naturalists who go out of their way intentionally to build up such knowledge.) This knowledge has been of great importance. For example, it has provided a vast amount of information to help build up distribution maps, and Sir Cyril Clarke's breeding experiments with a polymorphic butterfly were used as a tool to study the genetics of the rhesus baby syndrome. Thus collectors have something of scientific importance to offer, and a ban on collecting may well lead to a drain of practical effort put in by collectors denied the pleasure of their pastime and a consequent drain in the fund of knowledge available. This is not intended as a blackmail statement, merely a point of fact. The search for and breeding of aberrations (which occupies many collectors) and the study of early stages requires intense concentration and single-mindedness and I feel that few observers would match this if they were not driven by the 'collecting instinct'. The amount one learns is related to the effort one puts in.

Levelled against this may be the argument that considering collectors are supposed to know so much, there is remarkably little written by them in the scientific journals. It does appear to be true that butterfly collectors are particularly reticent about publishing interesting details from their pastime. It is absolutely vital that butterfly collectors begin to contribute more to journals not just for the self-centred reason that it may convince others that they are not simply magpies but have something real to contribute, but because I think that if (dare I say it) collectors 'move with the times' and take a more keen and direct interest in all aspects of butterfly biology (which may be fired and maintained by writings from colleagues in journals), then the collection and breeding of butterflies would become a more fulfilling and satisfying hobby. If not, then magpies we will remain, forever rueing a lost opportunity. This is no sententious diatribe for I fully realize my own short-comings in this department and intend to try and follow my own advice.

A SCENARIO

If legislation were introduced to ban butterfly collecting altogether I would welcome it, but only if it were part of a set of equally draconian measures designed to deal with our absurd and tragic agricultural policy (and we do not want to see farmers encouraged to stop farming some of their land only to see it covered in ecologically

dead conifer plantations or 'recreational areas'). In itself banning collecting is a fairly meaningless act which would be a means of finding a scapegoat for the ravages inflicted on our countryside. Collectors now are usually responsible people who appreciate the need for conservation as keenly as anyone and who realize that conservation and collecting can exist side by side only if the latter is carried out with the most severe moderation.

The major evil in our midst is the increasing commercialization of entomology. Entomological dealers have a role to play, not least in stoking the enthusiasm for nature fired in youngsters from breeding of stock acquired from dealers, but the situation is in danger of getting seriously out of hand. I would like to see considerable restrictive measures put on trading to reduce the great 'sales' that go under the guise of exhibitions and to discourage the 'cowboys' who can make a quick profit out of such events by collecting large quantities of scarce species for sale. Perhaps the best move would be to ban the nationwide sale of butterflies altogether, except through a few reliable, licensed breeders. If this were applied to foreign butterflies also, it might help to slow down the devastating levels of commercial collecting, carried out in such countries as Taiwan. The temptation to collect large numbers of butterflies with the intention of selling them would be gone and the gaps in the collection could be filled from the dealers. Maybe further legislation to ensure that dealers sold only *bred* stock (the difference is usually clear) would also be of advantage, thereby outlawing the sale of any wild-caught butterflies.

Action to restrict trading would serve a far greater purpose than banning the individual collector from his studies. Real field work for interest's sake by a collector will always be scientifically useful; it is the excessive trading that lacks purpose (except monetary) and poses the threat.

THE EFFECT OF COLLECTING ON THE SURVIVAL OF BUTTERFLIES AND IDEAS FOR THEIR PRESERVATION

by N. MALLETT

132 Quebec Road, Newbury Park, Ilford, Essex.

In the new Royal Society for Nature Conservation book *Guide to butterflies of the British Isles*, the presumed reasons for the decline of many of our species are given, these include: lack of rabbit grazing due to myxomatosis, draining of wetlands, intensification of agriculture, replacement of deciduous forests with conifers, the reclamation of grasslands, heaths and moors, the loss of hedgerows and the 'tidying up' of the countryside and the abandonment of coppicing (although this has helped some species).

The collecting of butterflies or any other insects will have very little effect on their population or hasten their demise when compared to the terrible declines caused by the above. The argument that protecting a butterfly from collectors when it is threatened with extinction because the taking of specimens can drive it to actual extinction, whilst being very laudable will not protect it from its real enemies which appear to be farmers and the Forestry Commission. It is surely pointless to wait until a surviving colony is restricted to a nature reserve before trying to protect it.

It must not be forgotten that most of our population lives in towns and sees few of

our more striking butterflies. Most children and many adults are captivated when they see a perfectly set collection of butterflies, often more so than if they see live ones fluttering about in their gardens or trapped in a room. Many would wish to actually possess something so beautiful, and in some cases (like mine) an enduring interest and concern is fostered, first to collect and then to learn more about the subject.

I am probably a typical collector and I freely admit I collect butterflies 'like stamps'. When I started collecting I caught common local species, killing more than was needed, e.g. 15 or 20 identical specimens of Small Heath. I then found caterpillars and reared them, after which I started breeding from captured females. I think that I, like most other collectors, have now put back more specimens into the wild than I have ever taken out of it. Most of my rarer specimens have been obtained by exchanging perfect bred examples with other collectors.

Our flora and fauna are being systematically and cynically destroyed to grow mountains of food that we cannot eat and conifers which we could buy from Scandinavia more cheaply than we can grow them here. If legislation is to be introduced to protect our insect life, it should be aimed at its real despoilers. Fixed quotas of crop protection should be introduced. Independent research should be carried out to find the optimum amounts of insecticides that can safely be used by farmers; who should then only be allowed to use that amount each year. Heavy penalties should be levied for their misuse. Our remaining hedgerows should be protected by law. In short our countryside, our wildlife and our natural heritage should be protected from the hedonistic greed and short-sighted stupidity of many of its owners and so-called managers. Why should the enthusiastic amateur naturalists be penalized by a ban on collecting when they are not responsible for the tragically misguided and destructive agricultural policies that have done more damage than they ever could?

It is food for thought that most species of British butterfly are at any one time being bred by collectors for collectors. There must exist a large amount of unrecorded practical knowledge of breeding methods, all of which could be of great value if any official recolonizing is undertaken. If collectors were allowed to breed and establish new colonies or rare and endangered species, there would be the source of British livestock to fall back on should a natural or manmade disaster kill the last surviving colony of a particular species.

A great deal could be done to increase butterfly populations on non-agricultural land. Whole networks of different colonies could be encouraged to establish themselves among motorways and railways, all it would need is imagination and forethought in the planting of nectar- and food-plants and the releasing of parent stock. There is probably a veritable army of willing unpaid workers to do it, all of them collectors who have learned to appreciate our countryside by collecting and who now seem powerless onlookers of what is not being done to protect it. Amateur entomologists could become one of our biggest assets to any conservation or environmentalist groups. I think it would be a tragedy if this interest were to be discouraged by law simply because it is easy to ban collecting and virtually impossible to change our agricultural policies. Too much money and too many votes are involved in farming for any quick changes to be made, and no politician will risk his seat for the sake of a few insects.

POST-SCRIPT

I would like to comment on Mr Stubbs' proposed policy on butterfly collecting.

Basically I agree with it, but I am puzzled by section 6 (trading) and disagree with section 8 (release).

I wholeheartedly concur that the use of butterflies for promotional purposes, i.e. mass releases in totally unsuitable areas is wrong. It is stupid, wasteful and completely pointless. However, I may be mistaken, but I doubt very much that any dealer of *British* butterflies would find it economically viable to go out and deliberately denude an area of butterflies, mount them and sell them. Common butterflies are so easily reared that they are very cheap to buy, and one encounters many more worn, damaged and therefore unsaleable specimens in the wild than perfect and therefore saleable ones. Again, rarer species are much easier to rear than they are to catch. A breeder can expect to raise 50 adult purple emperors from one female that they have either purchased themselves or they may have found in the wild (depending on their knowledge of an area and their luck) and it is easier to continue breeding from their existing stock than to catch new stock each year. A reputable dealer will sell a perfect male purple emperor for £12. A collector will only pay £12 if it is perfect. I defy anybody to go out and collect sufficient of this species in the condition required to make a profitable business of it. I am of the opinion that trading of the British Large Blue should be allowed. It is an extinct species here, but you can openly deal in European specimens. The lifestyle of this insect makes it virtually impossible to breed in captivity so the Continental specimens sold must be wild caught. I cannot comment on the sale of European or tropical butterflies in this country with any authority, but I would suggest that if they are easily bred, they can be sold. If they are not bred in captivity and are both threatened and ridiculously easy to catch (like the Apollos) then their sale should be prohibited or at least restricted to old specimens.

As for section 8, I think that any enthusiast should be encouraged to release butterflies and try to establish or restart colonies. Today's fragmented populations are more prone to extinction through bad weather, 'accidental' overspraying by crop dusters and even by their own parasites than when they were part of a linked chain of colonies. When a local extinction such as this occurs, the area is less likely to be recolonized than before because of its isolation from neighbouring sites. Most collectors and breeders are not 'cowboys' and I strongly object to the phrase 'cowboy releases'. Collectors generally have one or two favourite 'patches' that they know like the backs of their hands. They know that if they release bred butterflies in an unsuitable environment they will not breed. (Incidentally, if this does occur, no harm is done). If they release in a suitable environment where no competition is offered to existing species (either because they use a different food plant or are grass feeders) they may well, over a few seasons, establish a thriving and successful colony that would not otherwise have existed. The only harm that this can do is upset somebody's distribution record and I think that it is surely far better to see a country of living creatures than to merely record their shrinking numbers in a book.

EDITORIAL COMMENT

The future of butterfly collecting is an important and emotive subject and has implications for all entomologists regardless of their interests or fields of study. Although the authors do not raise any new issues, they add substance to a number of points and include some practical suggestions for the reader.

The trade-off: "we'll stop collecting if agriculturalists etc stop destroying the

countryside" is not practical as such (David and Goliath, without the sling!). It is now a question of entomologists getting 'in' with the decision makers—everything from County Naturalist's Trusts to Wildlife Link etc. This is especially important now that the possibilities of reducing the momentum towards agricultural overproduction and of removing land from food production is gaining ground.

There is support for the concern about trading. There is a chance that the revised schedules will control trading in rare species of British butterfly. Ideas on how to influence this are still needed.

BOOK REVIEW

The Natural History of Butterflies. By John Feltwell. Christopher Helm, 1986. 133 pages, 8 colour plates.

This title presents a series of essays which cover many aspects of the physiology and biology of the butterflies of Europe and North Africa. Each chapter is self contained and provides an up-to-date resumé on several particular aspects of the insect including structure, life cycle, food plants and migration. Possibly of greater interest, because many of the facts offered may be less widely known, are the discussions on butterfly history, colouration and camouflage, interaction with sunshine and population and territories.

Mr Feltwell's exposition is presented in a very readable style, reminiscent of the lecture hall rather than the scientific publication and a wealth of detail provides a good summary of current thinking on the matters described. Some of the statements made may not be generally agreed, though certain contentions might be the result of geographic limitation of the matter under discussion. For example, a European sample of three may well suggest a significant association between *Papilio* and *Umbelliferae* but this connection is not so universal if the larval pabulum of this genus is considered on a global scale.

Throughout, the discourse is enlivened with attractive line drawn vignettes which are generally illustrative of the adjacent text. Was it an eleventh hour decision to add colour plates, possibly to make this publication more saleable? For whatever reason, a block of attractive but irrelevant colour examples of Mr Feltwell's photographic expertise appears in the centre of the volume with the supporting captions right at the front. Assembled differently, captioned colour plates could have done much more to increase the visual appeal of the book.

In spite of these criticisms this book is an enjoyable read which will be much appreciated by all who share the Author's interest in these the most decorative of our native fauna.

P. J. BAKER

THE 'WINKLER EXTRACTOR'

by J. A. OWEN

8 Kingsdown Road, Epsom, Surrey KT17 3PU.

The Winkler extractor ('Winklersche Apparat'; Freude, Harde & Lohse, 1965 *Die Käfer Mitteleuropas* 1, 100) is a device for extracting invertebrates from moss, leaf litter, rotten wood or similar matter (Fig. 1). The debris is held in coarse net bags inside a sack made of light material (Fig. 2). The sack is kept in a box-shape by upper and lower wire frames and tapers below into a pouch which holds a glass jar. The bags of debris are suspended from the upper wire frame. As the debris dries out, invertebrates emerge, make their way downwards inside the sack and are trapped in the jar.

Winkler extractors are of particular value to coleopterists, for they are very efficient in extracting small beetles from various types of debris. They are, moreover, light enough to be easily transported and, unlike some types of extractor, they do not require a source of heat, so that they can be used almost anywhere. They can be obtained commercially but they can also be constructed at home. The following construction notes are based on the experience gained over several years in making and using several homemade versions.

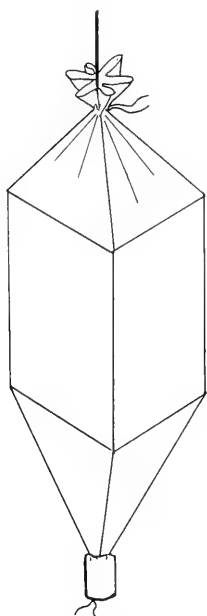


Fig. 1. Winkler extractor in use with top closed and jar in position.

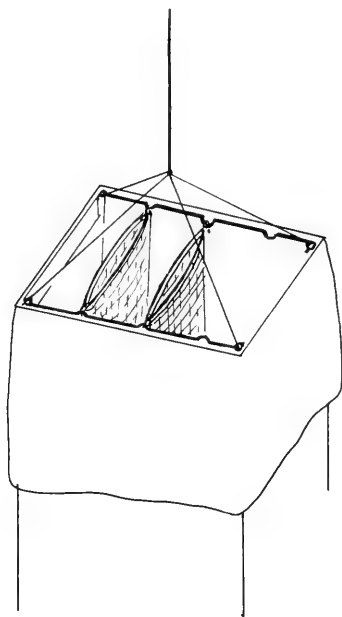


Fig. 2. Extractor with top folded down to show two net bags with debris in position.

MATERIALS

For the sack, unbleached calico is suitable material but the type of material is not critical so long as it is permeable to water vapour, so that the debris being extracted dries out reasonably fast. Likewise, the dimensions of the sack are not critical and the measurements given in this article are for guidance only. For the pattern given (Fig. 3), a square of material 140×140 cm is required but this can be in more than one piece. The facings which keep the frames in position (Fig. 4) are made of the same material as the sack.

The frames are made from 10 swg galvanized fencing wire (total length 280 cm). The lower frame is a simple square. The upper frame is also basically square but, on two opposite sides, the wire is bent at intervals to form three small projections inwards to take hooks attached to the net bags and there is a complete loop at each corner for the cords suspending the extractor in use (Fig. 2). Ideally, the ends of the wires forming the frames should overlap and be brazed together. Alternatively, the overlapping ends can be bound with thin wire and soft-soldered.

The net bags holding the debris are made from appropriate curtain material and are approximately 28 cm wide by 34 cm deep. A mesh of about 3×2 mm is generally suitable but for extracting fine material, a smaller mesh may be preferable in that it will hold the material more effectively. In sewing up the bags, it usually helps to incorporate a piece of tape in the seam and there should be a piece of tape sewn along the open (top) edges of the bag, with a loop at each end to take a hook for its suspension from the upper wire frame within the sack. The brass hooks formerly

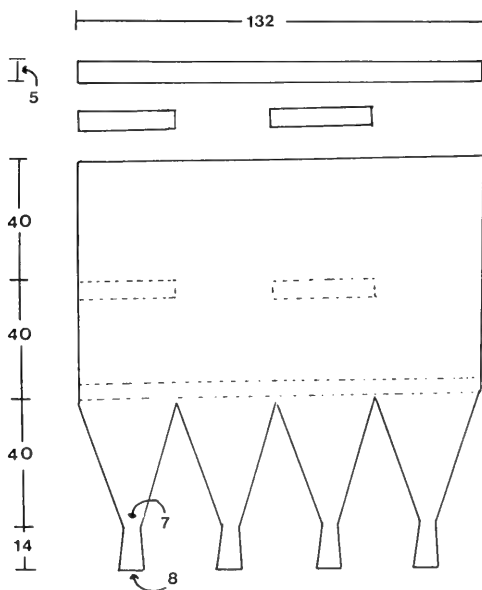


Fig. 3. Pattern of material to make a sack 32×32 cm across. Dimensions are in cm. At each vertical edge 1 cm is allowed for seams. The bottom pocket takes a jar of diameter 8 cm and height 12 cm. Dotted lines show position of facings.

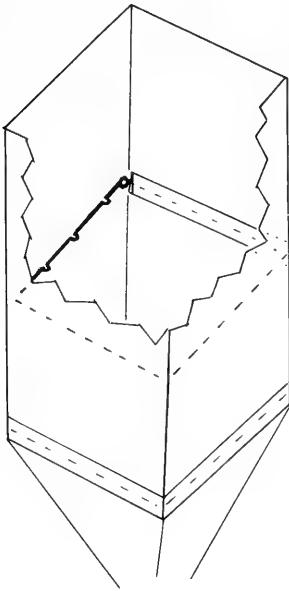


Fig. 4. Extractor with top half on two sides 'cut away'. This shows part of the upper wire frame and one of the facings attaching it to the sack. The position of the lower frame (inside its facing) is indicated by dotted lines below.

used to attach household curtains to curtain rings are very satisfactory for this purpose. When threaded through the tape loops, the base of each hook should be clamped; otherwise the hooks tend to fall out and get lost.

The only other materials required are a pair of shoe laces to fasten the sack top and bottom, about 1.5 m of light cord to suspend the extractor while in use and a jar to fit in the pocket below and collect whatever comes out of the debris. The total cost of materials should not exceed £5.

CONSTRUCTION

Sewing the sack requires an electric sewing machine. The coleopterist without one should borrow one or, better still, prevail upon an owner to do the sewing for him. (The owner may prefer this to lending the machine!) Whatever the arrangement is, the sewer should ensure that seams whenever possible are on the outside of the sack to leave the inside free from crevices in which invertebrates can lurk.

1. Cut out the material for the sack (Fig. 3), in one or more pieces according to the width of material. Cut out also material for the facings preferably with a selvedge.

2. Draw lines on the material to show the position of the lower edges of the facings (Fig. 3). The lower facing goes round the sack outside (Fig. 4). The upper facings go inside the sack on two opposite sides.

3. Sew the free (non-selvedge) edge of the upper facings flat on the *inside* of the sack hanging down from the line. Then fold the facing back up and sew the bottom edge again to provide a strong seam to take the weight of the debris which will hang from the upper wire.

4. If the sack is to be formed from two or more pieces, sew them together along their vertical edges but do not sew the last join. Thus the material remains flat. Make a hem at the top edge if it is not a selvedge.

5. Next, sew the lower edge of the lower facing into position on the *outside* of the sack.

6. Join the edges of the cut out lower sections of the sack next except for the final join. Where adjacent walls of the sack are formed from continuous material, make a vertical fold down the edge and hem the fold so that there is a seam from the level of the top facing to the bottom of the sack.

7. With the material for the sack now in one piece (but without the final edges joined i.e. still flat), make a hem along the lower edge of sufficient width to take a shoe lace which will form a purse-string to retain the glass jar in position.

8. Complete the sack by joining the remaining free vertical edges and the cut out edges below.

9. Test the fit of the jar by inserting it and closing the purse-string cord. The rim of the jar should be pressed tightly upwards when the purse-string is tied so that creatures from the debris passing downwards inside the sack cannot escape outside the neck of the jar. If necessary, sew an extra line of stitches on one or more vertical seams to reduce the width of the pocket into which the jar is pressed upwards.

10. Now sew the lower wire frame into position by hemming along the top of the bottom facing. The sewing machine is positioned with the sewing platform projecting over the edge of the table and the wire frame hanging downwards. As the sewing proceeds, the hemmed material is pushed round the wire so that the same side of the frame remains uppermost while it is being sewn in.

11. Then sew in the upper wire frame, working with one side of the frame held up and sewing the other into the facing on the inside of the sack.

12. Fasten cords across the corners of the upper frame with a little slack and attached to these a vertical cord by which to hang the extractor while in use (Fig. 2). Finally sew the other shoe lace on to the outside near the top of the sack to allow the top of the sack to be closed.

OPERATION

Once the extractor is loaded with debris, it should be hung up in an airy position preferably with a temperature above 10°C. If the debris starts relatively dry, most of the creatures in it will have been extracted in 2 to 4 days but insects living in habitats exposed to air e.g. squirrel's dreys may take longer to forsake their homes. Complete extraction of wet debris such as flood rubbish can take 1 or 2 weeks or longer depending on the dryness and temperature of the environment.

Some users put a preserving fluid (such as 70 per cent alcohol) in the jar which kills the creatures falling in but this may be undesirable if very small insects, e.g. Ptilids, are sought. It is often difficult to prevent fine particles of debris falling into the jar and very small insects are more easily detected among debris when they are alive than when they are dead.

ACKNOWLEDGMENTS

I thank Mr P. M. Hammond for drawing my attention to the use of Winkler extractors and my wife for her long patience in constructing various forms of the apparatus and for ensuring that the instructions given here are reasonably easy to follow.

**MALE SWARMING BY A
MICROGASTRINE BRACONID,
APANTELES CONIFERAE (HALIDAY)
(HYMENOPTERA)**

by JAMES B. WHITFIELD

Department of Zoology, University of Manchester, Manchester M13 9PL, England.

On 25 July 1985, while collecting in the late afternoon from a *Crataegus monogyna/Prunus spinosa/Rubus* hedgerow at Woodford, Cheshire, I noticed two small swarms of insects dancing some 8 inches to 2 feet away from the top of the hedge. The flight patterns of the insects resembled the rapid figure-eight motions of microgastrine braconids, but about 50–75 individuals were confining their motions to each of two vertical, elongate clusters less than 2 feet high and a foot across, above a predominantly *Crataegus* section of the hedge.

I collected both of the swarms in their entirety, keeping them separate, using a fine-meshed aerial net and pooter. After collecting the swarms, I examined the hedge for signs of any unusual concentrations of host insects, cocoons or honeydew sources for parasitic wasps, or of any possible perched female wasps. Only six microgastrine cocoons were found in this section of hedge amidst frass-encrusted and webbed foliage, and few available potential hosts for Microgastrinae (predominantly *Parornix anglicella* (Stt.) (Gracillariidae) and an undetermined coleophorid species). A sweep of the hedge produced 36 smaller Hymenoptera, including some microgastrines.

An hour later (7:15 p.m., still at least an hour before sunset), I returned to the hedge to find more microgastrines dancing above the hedge but not forming tight clusters as before. All the observed flying Hymenoptera were collected and preserved for identification.

Just under 1 month later (23 August), I returned again to the hedge site and made another collection of flying braconids (not forming swarms this time either).

When all of the collected specimens had been identified and tabulated, the results were as in Table 1. A total of 237 insects were included in the samples, 121 of which were from the two swarms.

Clearly, the dominant insects in the two swarms were males of *Apanteles coniferae* (Haliday)—composing 83.7 per cent of the smaller swarm and 91.7 per cent of the larger. The other species represented are probably either fortuitously included in the samples or are joiners of the swarm, perhaps having been attracted by the concentration of insects. I suspect the predominance of males may have a mating significance similar to that in *Blacus* spp. (Hymenoptera: Braconidae). The low proportion of females even in the hedge sweep and later collections may suggest, however, that adult females had not yet emerged or were elsewhere, especially since the sample taken a month later had a much higher proportion of females.

To my knowledge, no swarms such as those reported here have ever been reported among the Microgastrinae, although they have been repeatedly observed in another braconid genus from a different subfamily, the helconine *Blacus* (van Achterberg,

Table 1. Taxonomic and sexual composition of swarm and non-swarm samples from hedge in Cheshire. Non-Hymenoptera omitted.

Species	Swarm 1		Swarm 2		Hedge		In flight 1 h later		In flight 1 mth later	
	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂	♀♀	♂♂
Braconidae										
Microgastrinae										
<i>Apanteles coniferæ</i> (Hal.)	2	41	4	66	2	7	—	25	13	27
<i>A. xanthostigmus</i> (Hal.)	2	—	1	—	3	—	—	—	1	—
<i>Cotesia ?glomerata</i> (L.)	—	—	—	—	—	—	—	—	—	1
<i>Dolichogenidea lacteicolor</i> (Viereck)	—	—	—	—	—	—	—	—	1	—
<i>D. sp. (laevigatus-group)</i>	—	—	—	—	—	—	—	—	1	—
<i>Microgaster alebion</i> Nixon	—	—	—	—	—	—	—	—	—	3
<i>Sathon falcatus</i> (Nees)	—	—	—	—	—	—	—	—	2	—
Adeliinae										
<i>Adelius subfasciatus</i> Hal.	1	—	—	—	—	—	—	—	—	1
Cheloninae										
<i>Ascogaster sp.</i>	—	—	—	—	1	—	—	—	—	—
<i>Chelonus sp.</i>	—	3	—	—	—	—	—	—	—	—
Helconinae										
<i>Blacus sp.</i>	—	—	—	—	—	—	—	—	1	—
Homolobinae										
<i>Charmon sp.</i>	—	—	—	—	1	—	—	—	—	—
Macrocentrinae										
<i>Macrocentrus sp.</i>	—	—	—	—	—	1	—	—	—	—
Euphorinae										
<i>Meteorus sp. 1</i>	—	—	—	—	1	—	—	—	—	—
<i>Meteorus sp. 2</i>	—	—	—	—	—	—	1	—	—	—
Braconinae										
<i>Bracon sp. 1</i>	—	—	1	—	—	—	—	—	2	—
<i>Bracon sp. 2</i>	—	—	—	—	—	1	—	—	—	—
Alysiinae										
<i>Aspilota sp.</i>	—	—	—	—	—	—	—	1	—	—
Aphidiinae										
<i>Aphidius sp.</i>	—	—	—	—	—	1	—	—	—	—
Misc. Ichneumonidae (10 spp.)	—	—	—	—	5	12	—	—	—	—
Tenthredinidae (undet.)	—	—	—	—	1	—	—	—	—	—
Total	5	44	6	66	14	22	1	26	21	32

1976, 1977; Benson, 1944; Donisthorpe, 1944; Haliday, 1836; König, 1967; Marshall, 1889; Southwood, 1957; Stelfox, 1944; Syrjämäki, 1976). Such swarming of males also occurs in at least two subfamilies of Ichneumonidae, Diplazontinae and Orthocentrinae (Fitton & Rotheray, 1982; Gauld, 1984; Rotheray, 1981). As the mating behaviour of relatively few braconids is known from actual field studies, it is possible that male swarming is more common and widespread than is currently realized.

It is possible, however, that male swarming occurs only rarely in braconids, in conditions of extreme abundance of a given species and where the males would ordinarily tend to congregate near female emergence sites, plants harbouring potential host insects or adult food sources (honeydew, nectar). It remains for further studies to determine whether this habit is normal even for *Apanteles*

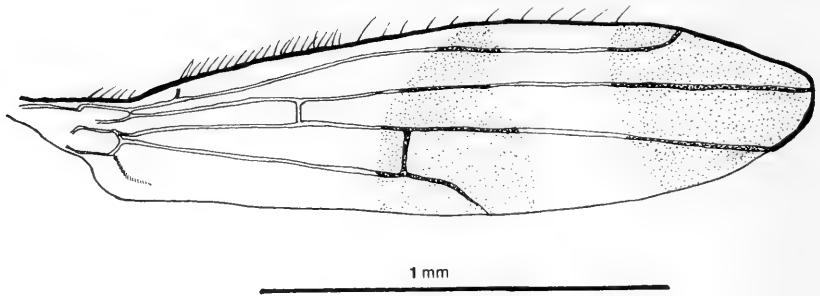
coniferae. If male swarming is found to be common among at least some members of the Microgastrinae, it would have interesting implications for the population biology of these insects.

REFERENCES

- Benson, R. B. 1944. Swarming flight of *Blacus tripudians* Haliday. *Ent. mon. Mag.* **80**: 21.
 Donisthorpe, H. 1944. The dancing habits of some Braconidae. *Ent. mon. Mag.* **80**: 72.
 Fitton, M. G. & Rotheray, G. E. 1982. A key to the European genera of diplazontine ichneumon-flies, with notes on the British fauna. *Syst. Ent.* **7**: 311–320.
 Gauld, I. D. 1984. An introduction to the Ichneumonidae of Australia. *Br. Mus. (Nat. Hist.) Publ.* **895**, 413 pp.
 Haliday, A. H. 1836. Essay on parasitic Hymenoptera. *Ent. Mag.* **3**: 20–45.
 König, R. 1967. Ein Beitrag zur Kenntnis einiger Braconidarten in Schleswig-Holstein (Hymenoptera: Braconidae, Blacinae). *Faun.-Ökol. Mitt.* **3**: 112–121.
 Marshall, T. A. 1889. A monograph of British Braconidae. Part III. *Trans. ent. Soc. Lond.* 1889: 149–211.
 Rotheray, G. E. 1981. Courtship, male swarms and a sex pheromone of *Diplazon pectoratorius* (Grav.). *Ent. Gaz.* **32**: 193–196.
 Southwood, T. R. E. 1957. Observations on swarming in Braconidae and Coniopterygidae. *Proc. R. ent. Soc. Lond.* **32**: 80–82.
 Stelfox, A. W. 1944. The swarming flights of *Blacus* (Hym., Braconidae). *Ent. mon. Mag.* **80**: 208.
 Syrjämäki, J. 1976. The mystery of the missing females in connexion with male swarming of *Blacus ruficornis* Nees (Hym., Braconidae). *Ent. Fenn.* **42**: 66–68.
 van Achterberg, C. 1976. A revision of the tribus Blacini (Hymenoptera, Braconidae, Helconinae). *Tijdschr. Ent.* **118**: 159–322.
 van Achterberg, C. 1977. The function of swarming in *Blacus* species (Hymenoptera, Braconidae, Helconinae). *Ent. Ber.* **37**: 151–152.

***Anthomyza bifasciata* Wood (Diptera Anthomyzidae) discovered in an actively worked aggregate pit.** — The Anthomyzids are a distinctive acalyptrate family with characteristic strap-like wings. When working an area of an aggregate pit in Homersfield, Suffolk (TM 2885) on 13.viii.86 I was surprised to sweep a small fly with all the appearance of an Anthomyzid, but with distinctly banded wings—not a feature I had previously recalled as having prominence in Collin's 1944 key to this family. When I checked more thoroughly, this feature *is* mentioned, as diagnostic of *Anthomyza bifasciata* Wood, but not until couplet 11! Strange that so clear a feature, not shared by any other species in this family, is not used much earlier, but it is perhaps a typical Collin idiosyncrasy. The specimen, a female, was quite obviously this species, and in view of its apparent scarcity, I returned the following day to acquire more. The area worked was a dried pond dominated by *Typha* and *Equisetum*. After one and a half hours sweeping I procured just one further specimen, a male. Clearly despite local (and national) abundance of *Typha*, the supposed breeding site, the species occurs in very low numbers.

Collin (1944) states that this species was unknown to him outside Wood's original locality in Herefordshire, and it is accorded category 2 (vulnerable) status in the Provisional Nature Conservancy Council Diptera Invertebrate Site Register. The



collections of the British Museum (Natural History) contain 11 specimens from Wood's collection, dated 1910, two specimens from the Verrall collection, also 1910 and quite likely a gift from Wood, as they are mounted in an identical way, and a further nine specimens, from the collection of R. L. E. Ford from Sussex, which are undated.

The area at Homersfield is part of an actively worked pit which has produced a number of exceptional coleoptera, and it is to be hoped that a management agreement can be reached with the owners at some early stage. — P. Withers, 27 Beech Way, Dickleburgh, Diss, Norfolk.

Reference

Collin, J. E., 1944. The British species of Anthomyzidae (Diptera). *Entomologist's mon. Mag.* **80**: 265–272.

***Anthomyza bifasciata* Wood (Diptera: Anthomyzidae) recorded from East Sussex and Norfolk.** — *Anthomyza bifasciata* Wood is unique among the British species of *Anthomyza* by virtue of possessing a pair of distinctive transverse dark wing bands. The remaining species of this genus having clear wings. It is apparently a scarce species in Britain, the only recent published record that I am aware of is Ismay (1981), who found it in association with *Typha latifolia* L. Collin (1944) recorded *A. bifasciata* only from Hertfordshire. I found it at three sites on the Lewes Levels, East Sussex, by sweeping stands of *Typha angustifolia* L. at dyke margins: at grid ref. TQ 424 085 on 26, 27.vii.1983; and at TQ 427 051 and TQ 429 053 both on 28.vii.1983. My only other encounter with this species has been at Sutton Broad, Norfolk, grid ref. TG 372 235 where on 20.viii.1985 in company with Dr A. G. Irwin, two females were swept from beside a mown path through *Phragmites* fen which included a scattering of *Typha angustifolia*. I am grateful to Mr N. Halfhead the owner of Sutton Broad, for granting access permission to Dr Irwin and myself to record insects from this site. — I. F. G. McLean, Nature Conservancy Council, Northminster House, Peterborough, PE1 1UA.

References

Collin, J. E. 1944. The British species of Anthomyzidae (Diptera). *Ent. mon. Mag.* **80**: 265–272.
 Ismay, J. W. 1981. Some Diptera from Wytham Wood. *Ent. mon. Mag.* **117**:26

THE CEREALS AND GAMEBIRDS RESEARCH PROJECT 1984-1987 A BRIEF RESUME*

by N. W. SOTHERTON

The Game Conservancy Trust, Fordingbridge, Hampshire SP6 1EF.

BACKGROUND

Shooting sportsmen in Britain continue to be greatly concerned about the major decline of the grey partridge over the last 30 years. Research work carried out by The Game Conservancy, showed that the intensification of farming, especially the increased use of pesticides was implicated in this decline. The Game Conservancy is a privately funded research organization working predominantly on the ecology of wild populations of many quarry species. In many previous studies, it has become very obvious that providing the requirements for game was also of great benefit for other species of farmland wildlife. Very little ecological research has been carried out on land that is being intensively farmed. Up until recently, research in agriculture has concentrated on pest suppression and production, whilst research into the conservation of species has been carried out on non-arable land. It was in this context that the Cereals and Gamebirds Research Project was conceived to examine the effects of modern farming practices on non-target flora and fauna, on a farm scale and to devise methods of alleviating the adverse effects of pesticides on farmland wildlife in ways compatible with efficient modern farming and with minimum cost to the farmer.

AIMS

The project has two aims. (1) To advise farmers of the spectrum of activity of the pesticides they use on their farms against non-target insects; this advice being based on laboratory screenings and large-scale replicated field trials. (2) To provide practical management plans for the conservation of gamebirds and other wildlife on arable farms in such a way as not to compromise standards of cereal production.

PROJECT PROGRESS TO 1986

So far in laboratory screenings, of the 30 or so foliar fungicides screened for their insecticidal activities against non-target insects, only one chemical (pyrazophos) has been found to have a significantly high insecticidal action. This property being confirmed under rigorous large-scale replicated field trials; this compound was manufactured and sold as a fungicide, so users of this compound would have had no way of knowing of its insecticidal side-effects had it not been for the work of the Project. Work in this field continues to screen the compounds being used by farmers not only for their direct toxic effects but also for more subtle sub-lethal effects that these compounds may be having when used under field conditions to ensure their safety to wildlife. Work has also begun on the spectrum of activity of the insecticides used in cereal fields to quantify the environmental effects of their use. This will enable the Project to offer farmers information and to guarantee environmentally sound advice which they can then consider before choosing to use a particular product. Hence, when farmers select a pesticide to use in their cereal fields, they will

* Summary of the lecture given before the Society on 28 May 1987.

have a third criterion to hand before making that decision: not only the price and the efficacy of the compound but now information on the environmental side-effects of the use of these compounds. This information is not currently available from any other source.

Research that provides farmers with management strategies to alleviate the harmful consequences of pesticide use has centred on the concept of 'unsprayed' or 'conservation headland'. This involves the selective use of certain pesticides on a 6-m band of cereals around the edge of the field. By using only certain chemicals at certain times at the crop margin, it is thought that some of the resources necessary for farmland wildlife can be provided that would otherwise have been removed following complete treatment of the entire field. Results have shown that by adopting the use of 'conservation headlands', wild gamebird production can be greatly increased not only in the short term (Table 1) but also in the long term, for example on a 1200-ha farm in southern England, the average spring pair density of grey partridges in the early 1980s was around five pairs per km². After three successive years of adopting 'conservation headlands' on only half the total cereal acreage, the average spring pair density in 1985 had risen to 11 pairs per km².

Table 1. The effects of selectively sprayed headlands in cereal fields on wild gamebirds chick production in United Kingdom cereal fields, 1983–1985.

	Sprayed headlands			Selectively sprayed headlands		
	Mean brood size	No. broods counted	Chick survival rate (%)	Mean brood size	No. broods counted	Chick survival rate (%)
Grey partridge						
a) Hampshire						
1983	4.7	18	19	8.4	21	47
1984	7.4	34	37	10.0	34	67
1985	3.3	9	12	5.7	14	31
b) East Anglia						
1984	4.7	71	20	7.8	57	40
1985	2.7	19	9	4.0	19	15
Pheasant						
a) Hampshire						
1984	3.2	18	—	6.9	29	—
1985	3.0	3	—	4.6	8	—
b) East Anglia						
1985	2.6	30	—	3.7	35	—

As a consequence of this reduced use of pesticides at the crop margin, other forms of farmland wildlife have been observed to benefit. Our work has now expanded to quantify the benefits of pesticide manipulation for gamebirds to these of other forms of farmland wildlife. Currently, projects are under way to study the interactions of butterflies, small mammals and wild flowers with the resources found within selectively sprayed headlands relative to other areas of farmland. For example, many more butterflies have been observed over 'conservation headlands' than on those areas of the farm fully sprayed (Table 2). Many rare species of arable weeds have been observed in these 'unsprayed areas', and work continues using radio telemetry to quantify the benefits of these practices to small mammals (shrews, mice and

voles). However, much of our work still requires funding to quantify and explain some of these observed increases in the numbers of farmland wildlife found in 'conservation headlands'. Also, little work has so far been carried out to investigate the effects of these techniques on farmland species of songbird. Throughout this research, any management practice put forward as a method to alleviate the effects of pesticides on farmland wildlife has led to additional research to quantify the agronomic consequences of these practices. Therefore, an agronomist (Dr Nigel Boatman) has been employed to quantify the farming costs of these new techniques in terms of their direct effects such as the loss of grain quality and quantity and the indirect effects such as weed seed contamination, weed encroachment, grain contamination, difficulty in harvesting, etc.

Table 2. The numbers of different butterflies seen in sprayed and 'conservation' headlands, north-east Hampshire, 1984 and 1985.

	1984		1985	
	'Conservation'	Sprayed	'Conservation'	Sprayed
Brimstone	52	10	17	5
Common Blue	18	1	0	0
Green-veined White	140	21	196	176
Gatekeeper	93	59	134	32
Holly Blue	29	13	3	2
Large Skipper	17	1	10	4
Large White	56	38	13	20
Meadow Brown	123	46	109	32
Orange Tip	11	0	1	1
Peacock	39	19	29	2
Ringlet	52	23	17	6
Small Heath	11	0	0	0
Small Skipper	41	2	6	1
Small Tortoiseshell	95	42	131	77
Small White	19	14	1	3
Speckled Wood	10	2	3	2
Wall	9	4	0	0
Transect length (km)	3.6	3.2	2.1	2.3
Total	815	295	670	373

In conclusion, this privately funded research project has had access to sufficient funds to continue work at the current level. However, in view of the increasing environmental pressure and the necessity to decrease production in environmentally sound ways, there is an urgent need to accelerate this work. Alternatives to our approach such as a fallow or 'set aside' policy would be, we believe, ecologically disastrous. However, our approach to the more precise use of existing pesticides or other techniques such as a switch to more spring-sown cereals would, we believe, be ecologically more sound. This would also have the added benefit of reducing pesticide inputs and increasing grain quality. This Project has a great bearing on current problems because it *has demonstrated conservation on intensively farmed land*. It is the only research project in the United Kingdom that is combining conservation research with quantification of the costs both financial and environmental of our farming systems.

BOOK REVIEW

The RSNC Guide to Butterflies of the British Isles. J. A. Thomas. 160 pages, Country Life (Newnes), Middlesex, 1986, £4.95 paperback.

An introductory section deals with the differences between a moth and a butterfly then describes the structure and life cycle of a typical example. Details of biology and ecological requirements lead into the description of various habitat types and the associated butterflies. This section is illustrated by good artist impressions of many species as are the charts which follow. These indicate the salient features of each species within a group and include diagrams showing the period of emergence and relative abundance.

The main section of the book covers in great detail each of the 58 species resident or regularly occurring in Britain. Adult identification, young stages, habitat and behaviour, distribution and status are supported by good drawings and photographs from the wild. Each description includes a simple distribution map and a very clear multi-coloured bar chart which indicates the timing of various stages of the life cycle. Following a brief summary of extinct species, rare migrants and accidentals there is a further reading recommendation, a list of societies to join and an index.

In a book of this size there must be errors of omission which in this instance are made more inevitable by the duplication of information in the overall introduction and the main text matter. In addition the treatment afforded to the regular migrants and the Large Tortoiseshell leaves much to be desired. Annoyingly, the Holly Blue is described on several occasions as a woodland butterfly. Whilst it certainly occurs in woodlands, it is equally or even more characteristic of those larger mature gardens, parks and fairly open estates where the holly and ivy thrive.

The biggest criticism however, must be levelled at much of the text, which is couched in that peculiarly pessimistic vein well known to regular readers of RSNC publications. This has reduced the potential value of this volume in two respects. The distribution and status of many species is suggested to be much more parlous than is the case. A couple of examples will illustrate this. No mention is made of the Grayling on the Surrey Heaths, where it is common. The Lulworth Skipper and Small Blue are regarded as rare. This is to some extent because insufficient attention is given to the distinction between abundance within and localisation of a habitat.

On many occasions the destruction of habitat is cited, often in some detail. This has indeed taken place and none will doubt the seriousness of the situation. However, how much more useful this book would be if the space so used had been given over to provide more information as to the site management required to further the survival of various butterfly species. Once or twice there are tantalising snippets but much more is known which could have been imparted to the growing number of field naturalists who are actively involved with site and reserve management.

Apart from the fact that the BENHS is not listed as an organisation the butterfly savant may care to join, this book may be a useful identification guide for the general naturalist.

P. J. BAKER

THE DISTRIBUTION OF THE FLY *XYLOPHAGUS ATER* MEIGEN (DIPTERA: XYLOPHAGIDAE) IN THE BRITISH ISLES, WITH SOME NOTES ON ITS BIOLOGY

by D. K. CLEMENTS and K. N. A. ALEXANDER

National Trust Biological Survey, Spitalgate Lane, Cirencester, Gloucestershire GL7 2DE.

INTRODUCTION

Xylophagus ater Meigen is a member of a small and distinctive family within the Diptera Brachycera. Three species of *Xylophagus* have been recorded in Britain, and of these, *X. ater* is the commonest and most widespread. The others are *X. cinctus* Degeer, a species apparently restricted to the Caledonian pine forests of Scotland, and *X. junki* Szilady, known in Britain from a single female taken at Aviemore in 1913 (Collin, 1962). The larva of this last species is unknown. Oldroyd (1969) suggested that a fourth species, *kowarzi* Pleske might also occur in Britain, but this has subsequently been synonymized with *ater* Meigen (Krivosheina and Mamayev, 1972).

Large numbers of adult *X. ater* have been taken using water traps at Malham Tarn, in Yorkshire (R. H. L. Disney, pers. comm.), but generally speaking adults of *X. ater* are seldom encountered in the field, which has led to an impression of rarity that is for the most part unwarranted. The easiest method of finding *Xylophagus* is to seek the highly distinctive larvae beneath the bark of dead trees. A *Xylophagus* larva is illustrated in Chinery (1986, p. 294—the caption ascribes it to the snipefly *Rhagio scolopacea* (L.), Diptera: Rhagionidae), and the illustrated key by Brindle and Smith (1975) will allow identification to the family level. In Britain, such larvae are virtually certain to be either *X. ater* or *X. cinctus*, and these are easily separated, even in the field, using the features described by Brindle (1961).

There has been considerable confusion in the past concerning the distribution, life history and biology of *X. ater*. The present survey is an attempt to draw together published, unpublished and new material in order to present an overview of what is currently known about this species.

BACKGROUND TO THE PRESENT STUDY

Previously-published accounts of *X. ater* have incorporated localities in the British Isles. However, such records are few, tending to be rather old and only approximately located. When, in 1979, the National Trust began a biological survey of open-space properties in England and Wales, two characteristics concerning *X. ater* began to emerge: (i) whilst the adult was seldom encountered, the larvae were found with some frequency, and (ii) the larvae always occurred on sites which have had a long and unbroken continuity of woodland cover, and were never found on sites where the woodland was of recent (or 'secondary') origin. This survey has so far generated over 80 new localities for *X. ater*, which have been supplemented by many previously-unpublished records made by other entomologists. The resulting map (Fig. 1) gives a very much more realistic picture of the range and distribution of this species in the British Isles.

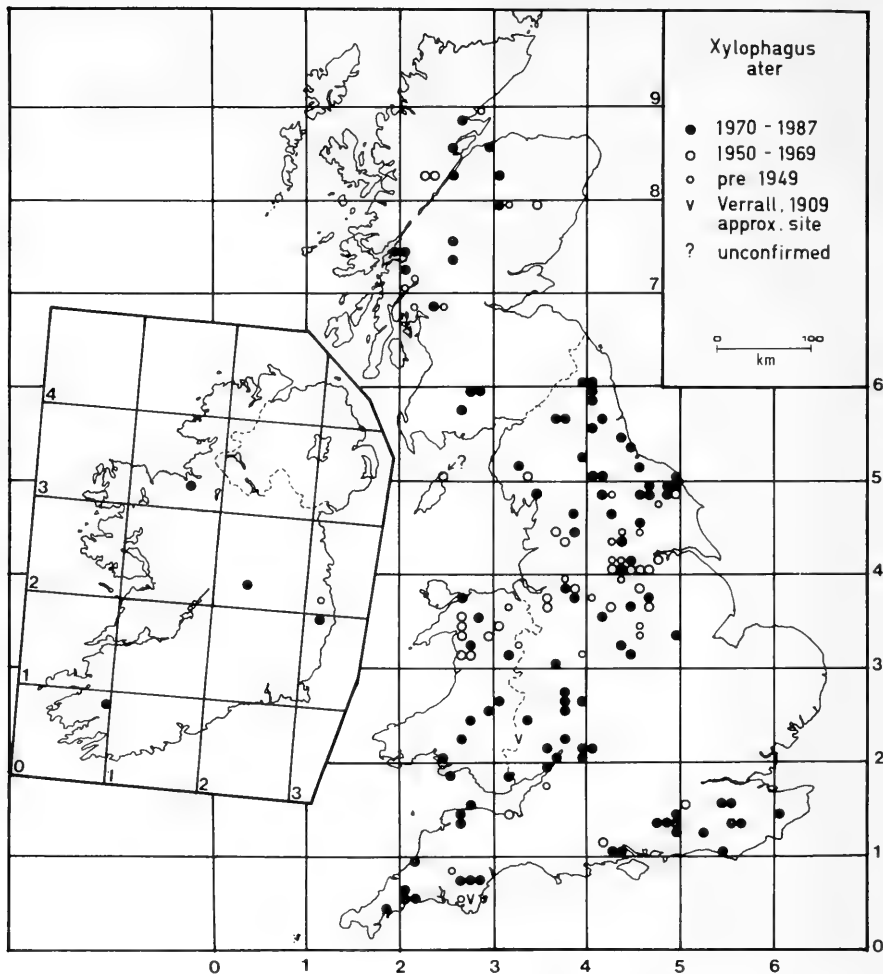


Fig. 1. Map showing the distribution of *Xylophagus ater* Meigen in the British Isles, prepared September, 1987.

DISTRIBUTION

The main concentration of records is seen to lie in the north and west of the country. This is a well-known pattern, exhibited by many other organisms, usually indicating an intolerance of the more extreme climatic conditions of the south east. However, an interesting feature of the *X. ater* distribution is the presence of two south-eastern concentrations of records corresponding to the New Forest and Weald areas. The species appears to be completely absent elsewhere in the south east, or at

the very least extremely rare, despite the presence of seemingly suitable habitat, such as the Windsor, Epping and Hatfield Forests for example. The reason for this is not immediately clear. The possibility that the underlying cause is geological was investigated, but seems unlikely despite initial appearances. The distribution does not strictly conform to the Palaeozoic strata of the north and west, nor to the calcifuge pattern shown by some other organisms. The most likely explanation would seem to be climatic. Annual rainfall is higher in the north and west of the country, but there is an additional belt of relatively higher rainfall extending across the southern counties as far as Kent. Humidity levels also show a superficially similar pattern (Perring and Walters, 1976). Climate-regulated distribution patterns tend to reflect a complex interaction of temperature, humidity and rainfall factors, and this is most probably the case with *X. ater*. The *X. ater* distribution is not unique: organisms such as the snails *Leiostyla anglica* (Wood) (Mollusca: Pupillidae) and *Zenobiella subrufescens* (Miller) (Mollusca: Helicidae), Beech Fern *Phegopteris connectilis* (Michx) Watt and various lichens also seem to show this pattern. Several of these species are also typical of ancient woodland sites. (Kerney and Stubbs, 1980; Seaward and Hitch, 1982). The apparent paucity of records from Ireland is difficult to explain if rainfall and humidity are the only factors involved. Speight (1980) suggested that *X. ater* and other deadwood-inhabiting species may have been widespread in Ireland, but became extinct as a result of the huge loss of indigenous woodlands over the last century. However, Chandler (1982) and Speight (pers. comm.) have reported several recent records, and it is likely that efforts directed at finding the larva rather than the adult will reveal that the species is under-recorded in Ireland, as was the case in Britain.

The European range of *X. ater* is given as northern and central Europe, extending from Lapland to northern France (Seguy, 1926; Lundbeck, 1907). This would suggest that temperature, particularly in winter, is not an important limiting factor (P. T. Harding, pers. comm.).

HABITAT

It is apparent that *X. ater* is far more widely distributed in Britain than was previously suspected, and that it occurs with some frequency in suitable habitats, particularly in the north and west. With regard to habitat, an association with ancient woodland sites has emerged that is much closer than has been suggested elsewhere. 'Ancient woodland site' is taken in this context to mean a site which has had an unbroken continuity of tree cover of some kind, stretching back at least to the Middle Ages, and usually far beyond. Such sites evidently retain some elements of the characteristic fauna and flora of the post-glacial wildwood which once covered virtually the whole of the British Isles (Harding and Rose, 1986). These 'ancient woodland species' are not, or seldom, found in woodlands that are of secondary origin, despite the presence of suitable mature timber habitats.

Of the total site data for *X. ater*, 63 per cent are known to be ancient woodland sites, with a further 9 per cent very probably so. The remaining sites are either too approximately located, or their characteristics are unknown to the authors. An examination of the larval and pupal records alone probably gives an even more reliable indication, since these are non-dispersive phases. Of these, 80 per cent are known to be ancient sites with a further 4 per cent probably so. All of the sites known personally by the authors are ancient ones, and we are not aware of any records from a site which is unequivocally secondary, although we have examined many such sites during the present study. Ancient woodland sites are not always immediately

obvious, and it would seem that *X. ater* is able to withstand considerable modification of the woodland habitat. It has been found on sites where few large old trees persist, or where a large proportion of the native trees have been replaced by exotic species. The larvae can utilize quite small timbers, and are not restricted to particular host tree species. Many of the sites fall into the categories described by Harding and Rose (1986) as 'pasture woodlands', including a number of commons and parklands. *X. ater* is a fairly persistent species, remaining on sites where other, more sensitive ancient woodland species have been lost. However, it is our experience that it does not persist where the tree-cover has been interrupted for any length of time. It can, in fact, reliably be considered as an 'indicator species' of ancient woodland sites.

X. ATER AS AN INDICATOR SPECIES

The value of certain invertebrates as ancient woodland indicators has been realized for some time. The body of work by Harding (1976-1978) and others has established the reliability of certain beetles particularly in this respect. These indicators are very useful in the evaluation of woodland sites for conservation and management purposes. The Diptera have received rather less attention, although provisional lists (e.g. Harding, 1977; Stubbs, 1982) have been prepared. *X. ater* has not previously featured on such lists.

In Harding and Rose (1986), the most recent work, a graded indicator system is proposed for the Coleoptera considered indicative of ancient woodland sites, based on the extent to which they have been consistently recorded from such areas. These are virtually all saproxylic species, associated with mature, dead or decayed timber, or with xylophilous fungi. Using the criteria in this report, *X. ater* would qualify as a grade 2 ('good') indicator, on a scale of 1 ('strong') to 3 ('weak'). This puts it on a par with indicator beetles such as *Plegaderus dissectus* Erichson (Histeridae), *Dienerella separanda* (Reitter) (Lathridiidae) and *Dorcatoma chrysomelina* Sturm (Anobiidae).

SITUATION

The larvae and pupae of *X. ater* are found beneath the bark of dead trees. These may be standing or fallen, in deep shade or full sunlight. The larvae may occur under the bark of the trunk or the boughs, which may vary in size from very large to about 20 cm in diameter. The host tree is almost invariably a broadleaf, but may be one of a number of species. We have records of larvae from the following (with frequencies): oak (49), beech (27), birch (16), ash (13), elm (4), sycamore (3), willow spp. (3), lime (2), Sweet Chestnut (2), rowan (2), aspen (1), hornbeam (1), alder (1) and hawthorn (1). The record from elder, cited in Oldroyd (1969), is apparently a misprint of alder (Brindle, 1961). Records from conifers are very rare. Verrall (1909) relates that larvae occurred in *Pinus* sp. in the New Forest (a record which is challenged by Brindle, 1961), and Chandler (1967) reported capturing females 'flying up and down the trunk of a partly dead pine', on Thursley Common in Surrey. However, the only unequivocal record known to us is that of Cooter (1977), who hatched *X. ater* from pupae taken from a decaying Scots Pine in the Linn of Dee. All three localities are ancient woodland sites, the latter being ancient Caledonian pine forest. Habitat details are lacking for a number of the known Scottish sites, but many are thought to fall into this last category, a situation which is shared with the rarer and more-restricted *X. cinctus* Degeer. The records of *X. ater* larvae from non-native trees such as sycamore and Sweet Chestnut would suggest that it is the physical condition of the timber which is important, rather than the host species, as would appear to be the

case amongst certain Longhorn beetles (Duffy, 1952). This is apparently not so for *X. cinctus*, which is confined to conifer species, and which shows a very different range and distribution pattern, both in Britain and the rest of the world. *X. ater* larvae usually occur singly, or in small numbers, beneath bark which is still adhering to the sapwood, although this state may vary from the condition at perhaps 1–2 years after death, to the stage where the larger woodlice and millipedes begin to appear.

LIFE HISTORY

The life cycle and habits of this species have been speculated upon by many authors, but the true situation remains unclear at the time of writing. The life cycle probably takes 3 years, overwintering three times. Downes (1953) considered that there was a minimum of five instars involved, based on head capsule measurements. However, our experiments have shown this criterion to be very unreliable. Reared final-instar larvae become dormant in early to mid November, and overwinter with the temperature falling to a nightly average of 10°C, and occasionally as low as 5°C. Activity recommences in late April with pupation in mid to late May. Pupation lasts about 11 days. From the records known to relate to adults, the emergence period extends from the 1st of May to the 23rd of August. However, the great majority fall between the 15th of May and the 21st of June. Emergence appears to occur slightly later in Scotland and the north of England.

The larval feeding habits are likewise unclear at present. Rearing experiments by the authors suggest that the larva is a polyphagous scavenger, capable of surviving (in the final instar at least) without recourse to predation or the consumption of dead invertebrate remains. However, a wealth of published and personal observations indicate that both of the latter occur. In captivity, *Xylophagus* larvae have been known to show cannibalistic tendencies. It is hoped that further rearing experiments will ultimately clarify these aspects of the life history, at which time the authors intend to publish a fuller account.

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REFERENCES

- Brindle, A. 1961. Taxonomic notes on the larvae of British Diptera, pt. 2. The genus *Xylophagus* Meigen. *Entomologist* **94**: 144–148.
- Brindle, A. & Smith, K. G. V. 1978. Key to the families of Diptera larvae. In Stubbs, A. E. and Chandler, P. J. (eds.). *A Dipterist's Handbook*. *Amat. Ent.* **15**: 38–64.
- Chandler, P. J. 1967. Diptera on Thursley Common, Surrey, in 1966. *Entomologist's Rec. J. Var.* **79**: 19–21.
- Chandler, P. J. 1982. Some Diptera of the Killarney area May 1981, including five species new to Ireland. *Ir. Nat. J.* **20**: 555–558.

- Chinery, M. 1986. *Collins Guide to the Insects of Britain and Western Europe*. 319 pp. Collins, London.
- Collin, J. E. 1962. A species of *Xylophagus* (Diptera, Xylophagidae) new to Britain. *Entomologist* **95**: 272–274.
- Cooter, J. 1977. Some uncommon insects captured on Deeside, 1977. *Entomologist's mon. Mag.* **113**: 202.
- Downes, J. A. 1953. Notes on the life-cycle of *Xylophagus ater* Mg. (Dipt., Rhagionidae). *Entomologist's mon. Mag.* **89**: 136–137.
- Duffy, E. A. J. 1952. Coleoptera: Cerambycidae. *R. Ent. Soc. Lond. Handbk. Ident. Br. Ins.* **5** (12): 18 pp.
- Harding, P. T. 1976–1978. [Series of reports concerning the fauna of the mature timber habitat]. *C.S.T. Reports* **65**, **103**, **159–164**. Nature Conservancy Council, Banbury.
- Harding, P. T. 1977. Fauna of the mature timber habitat: 2nd. Report. *C.S.T. Report* **103**. Nature Conservancy Council, Banbury.
- Harding, P. T. & Rose, F. 1986. *Pasture-Woodlands in Lowland Britain*. 89 pp. Institute of Terrestrial Ecology, Abbots Ripton.
- Kerney, M. P. & Stubbs, A. E. 1980. *The Conservation of Snails, Slugs and Freshwater Mussels*. 22 pp. Nature Conservancy Council, London.
- Krivosheina, N. P. & Mamayev, B. M. 1972. A review of Palearctic species of the genus *Xylophagus* Meig. (Diptera, Xylophagidae). *Ent. Rev. Wash.* **51**: 258–267.
- Lundbeck, W. 1907. *Diptera Danica*. 1. Stratiomyidae etc. 166 pp. Copenhagen.
- Oldroyd, H. 1969. Diptera: Brachycera. (a). Tabanoidea and Asiloidea. *R. Ent. Soc. Lond. Handbk. Ident. Br. Ins.* **9** (4): 132 pp.
- Perring, F. H. & Walters, S. M. (eds) 1976. *Atlas of the British Flora*. 2nd. Edn. Botanical Society of the British Isles. xxvi + 1–432. E.P. Publishing, Wakefield.
- Seaward, M. R. D. & Hitch, C. J. B. (eds) 1982. *Atlas of the Lichens of the British Isles*. 1. Institute of Terrestrial Ecology, Cambridge.
- Seguy, E. 1926. Diptera (Brachycères). Stratiomyidae etc. *Faune de France*. **13**: 308 pp. Lechevalier, Paris.
- Speight, M. C. D. 1980. *Brachypalpus laphriformis* (Diptera: Syrphidae) in Ireland and its probable demise. *Ir. Nat. J.* **20**: 70–72.
- Stubbs, A. E. 1982. Hoverflies as primary woodland indicators with reference to Wharncliffe Wood. *Sorby Record* **20**: 62–67.
- Verall, G. H. 1909. Stratiomyidae etc. *British Flies*. **5**: 780 pp. London.

ADDITIONAL SOURCES OF RECORDS

- Audcent, H. L. F. 1948. Bristol Insect Fauna: Diptera Orthorrhapha. *Proc. Bristol Naturalist's Soc.* **27**: 409–470.
- Carr, J. W. 1916. *The Invertebrate Fauna of Nottinghamshire*. vii + 1–618. J. and H. Bell, Nottingham.
- Christie, I. C. 1985. Two insects from the Loch Lomond N.N.R. *Glasg. Nat.* **21**: 113.
- Cowley, J. (Recorder) 1953. Entomological report. *Proc. Somerset arch. nat. Hist. Soc.* **98**: 152–153.
- Hammond, C. O. 1970. [Exhibition notice]. *Proc. Trans. Br. ent. nat. Hist. Soc.* **3**: 124.
- Luff, M. & Selman, B. J. 1977. The Diptera of Castle Eden Dene. *Vasculum*. **62**: 32–40.
- South West Yorkshire Entomological Society. 1920. The 18th Annual General Meeting. *The Naturalist*. **759** (533): 122.
- Stubbs, A. E. 1980. [Exhibition notice] *Proc. Trans. Br. ent. nat. Hist. Soc.* **13**: 12.
- Walsh, G. B. & Rimmington, F. C. (eds.) 1956. *The Natural History of the Scarborough District*. vol. 2. Scarborough Field Naturalist's Society, Scarborough.
- Yorkshire Naturalist's Union. 1917. Entomological Section Annual Report for 1916. *The Naturalist*. **720** (496): 42.

THE 1986 PRESIDENTIAL ADDRESS PART I: REPORT

by J. M. CHALMERS-HUNT

Ladies and Gentlemen—You will have gathered from the reports of the Council, of the Hon. Treasurer and other officers that the Society continues to flourish and that the membership now stands at 708.

I wish to say how very much I have enjoyed the privilege of once again being your President. My term of office has been particularly pleasant owing to the help and support given me by our Hon. Secretary Dr Muggleton, our Hon. Treasurer Col. Sterling and other members of Council, and I now express my personal thanks to them all.

It is my sad duty to refer to the loss we have suffered by the death of four of our members.

Mr LESLIE FREDERICK CRICK who was elected in 1967, was born on 25th August 1908 and died on 2nd September 1985. He was employed in the overseas department of the Bank of England, and during his extensive travels, collected butterflies in the Americas, in Europe and in Africa.

Mr W. LEWIS RUDLAND, F.R.E.S., who was interested in micro- and macro-lepidoptera, was born on 27th April 1908 and died on 23rd February 1986. A native of Reading, he worked there until 1952 when he moved to Willesborough, Kent, being in the Entomology Section of the Ministry of Agriculture at Wye. He retired in 1970 to West Wales, and on leaving Kent, gave his collection partly to Wye College and partly to Maidstone Museum. His Pembrokeshire records on cards and in exercise books which he kept meticulously up until his death, are at Scolton Manor Museum, Spittle near Haverfordwest. Rudland joined the Society in 1932 and was thus one of its oldest members.

Mr HUGH SUTHERLAND ROBINSON, F.R.E.S., who was elected in 1949, was born on the 19th February 1907 and died on 10th April 1986. Many will be aware of the significance to British entomology, of his and his brother's development of the 'Robinson trap' and the active part played by numerous members of this society in its utilization in the early 1950s resulting in many discoveries¹.

The Reverend JOHN NEVILLE MARCON, a member since 1932, died on the 16th June last. His chief interest lay in British butterfly varieties, and his magnificent collection of these, many of them taken by himself, was one of the richest ever assembled by a private individual. It was sold by auction in 1942, 1947 and 1948, the sale lasting 6 days^{2,3}. Since then, he formed a second collection which he gave to his nephew Mr J. N. D'Arcy, a member of this society. John Marcon was born on 26th May 1903, and was thus in his 84th year at the time of his death.

We have already stood as a tribute to the memory of our lost friends, and I shall not ask you to do so again.

I now propose briefly to review the past year in regard to some of the more interesting Lepidoptera that have been noted, as well as to mention those species of all insect orders that have been added to the British List in 1986.

Generally speaking, 1986 seems to have been a disappointing year entomologically, though there have been a number of interesting species noted, including the following migrant or suspected migrant lepidoptera: *Colias hyale* L. (or *C. australis* Verity, since the observer C. J. Luckens was unable to net it), one in Hants. *Chrysodeixis chalcites* Esp. (Golden Twin-spot), taken by J. R. Langmaid and new to Kent. *C. acuta* Walker (Tunbridge Wells Gem), one in Kent, one in Suffolk. *Actinotis polyodon* Clerck (Purple Cloud), one by A. J. Dewick, Bradwell-on-Sea,

Essex. *Trachea atriplicis* L. (Orache Moth), Kent (one, new to the County); Essex (2); Suffolk (1); last seen in Britain in 1915. *Agrotis crassa* Hübn. (Great Dart), Sussex, one by M. W. F. Tweedie; the first English occurrence. *Deltoie deceptor* Scop. (Pretty Marbled), Norfolk, (1). *Semiothisa signaria* Hübn. (Dusky Peacock), Sussex (2); Kent (2). Details of all these together with those of many other migrant lepidoptera in 1986, will shortly appear in an account in the *Entomologist's Record* by R. F. Bretherton and myself.

There have also been some remarkable microlepidoptera noted in 1986, including *Acrolepiopsis marcidella* Curt., taken at Wickham, Hants., by J. R. Langmaid, the first of the species since 1892. *Aplota palpella* Haw., Savernake Forest, Wilts., by D. H. Sterling, apparently the first for many years. *Parornix carpinella* Frey, by A. M. Emmet⁴; confused in the past with *P. fagivora* Frey. *Cydia corollana* Hübn., one by P. J. Jewess, Orlestone, Kent, 26.v.1982, but only lately determined by genitalia dissection; the only other British *corollana* was taken in Hunts. about 1850; the larva feeds in galls of the cerambycid beetle *Saperda populnea* (L.) in aspen twigs, and is a suspected resident moth in Kent. All these and many other interesting micros noted in 1986 are expected to appear in a paper by D. J. L. Agassiz in the *Entomologist's Record*.

Two microlepidoptera and one macrolepidopteron were added to the British List. These are:

(1) *Syncopacma suecicella* Wolff (Gelechiidae), reared by R. J. Heckford⁵ from larvae found in Cornwall in spun leaves of *Genista pilosa* L.

(2) *Scrobipalpa klimeschi* Povolny (Gelechiidae), Chippenham Fen, Cambs., two taken by D. J. L. Agassiz⁶, 22.vi.1972, but not determined until 1985 and published in 1986. The larva is suspected of mining the leaves of *Centaurea nigra* L.

(3) *Mesapamea remmi* Rezbanyei-Reser⁷ (Noctuidae), two taken at Weyhill, Hants. by our member M. Jordan and exhibited by him at the 1986 Annual Exhibition. In appearance *M. remmi* is similar to *M. secalis* L., and so may be present as yet unrecognized in series of *secalis* in collections. The species was described as new to science as recently as December 1985.

DIPTERA. Twelve species, of which three are especially noteworthy as being new to science: a phorid *Obscuriphora sheppardi* Disney, collected in a malaise trap at Stoneleigh, Warwickshire⁸. A tephritid *Paroxyna solidaginis* White⁹, recognized as distinct from *P. loewiana* Hendel, with which it had been confused; both species develop in the flower heads of *Solidago virgaurea* L. (Golden Rod). And a new grass midge, cecidomyiid *Sitodiplosis phalaridis* Abbass, from material reared from inflorescences of *Phalaris arundinacea* L. at Fletcher's Moss, Manchester¹⁰. The other new species are: *Sepsis nigripes* Meig. and *Themira biloba* Andersson (both Sepsidae)¹¹; *Thecocarcelia acutangulata* Macquart (Tachinidae), recognized in the BMNH collection, a known parasite of the Essex Skipper in Austria¹²; *Platypalpus articulatoidea* Frey (Empididae) from E. Anglia^{13,14}; *Medetera striata* Parent (Dolichopodidae)¹⁵; *Cecidomyia magna* Mohn (Cecidomyiidae), larvae feeding on resin from Norway Spruce¹⁶; *Diastata ornata* Meig. (Diastatidae), previously confused with *D. nebulosa* Fall.¹⁷; *Bryophaenocladus muscicola* Kieffer (Chironomidae), re-described from a pair *in cop.* taken Axmouth/Lyme Regis NNR¹⁸; and *Cheilosia argentifrons* Hellen. (Syrphidae), from carr woodland in two Irish localities¹⁹.

COLLEMBOLA. Three species new to Britain. *Proisotoma filifera* Denis; *P. fitchi* Denis; and *Yaukianura aphoruroidea* Yosii, all in earthworm rearing beds at Rothamsted, Herts²⁰.

ACARINA. One species new to Britain. A bat mite *Macronyssus diversipilis*

Vitzthum (Mesostigma: Macronyssidae)²¹.

HEMIPTERA-HOMOPTERA. One species, *Cicadella lasiocarpa* Ossiannilsson (Auchenorrhyncha), Cors Erddreiniog, Anglesey, on *Carex lasiocarpa* Ehrh.²².

COLEOPTERA. Seventeen species added to the list. *Asaphidion curtum* Heyd. and *A. stierlinii* Heyd. (Carabidae), both species lately split off from *A. flavipes* (L.)²³. *Oreodytes alpinus* (Payk.) (Dytiscidae) discovered in Caithness²⁴. *Euplectus bonvouloiroirosae* (Raff.) (Pselaphidae), in a Liverpool park (T. Eccles and S. Bowstead per A. A. Allen). *Atrotrichis sanctaehelena* Johnson (Ptiliidae), one example (C. Johnson per A. A. Allen). *Choleva elongata* (Payk.) (Cholevidae), from mole nests, Chedgrave and Billingford, Norfolk (M. Collier per A. A. Allen). *Selatosomus melancholicus* (Fab.) (Elateridae), Co. Mayo²⁵. *Corticaria abietorum* (Mots.), reared from spruce cones, Loch Garten NNR (J. A. Owen). *Melanophthalma curticollis* (Mannerh.); *M. suturalis* (Mannerh.) (all three Lathridiidae); the last two species having been confused under *M. transversalis* (Woll.)²⁶. *Mordella leucaspis* (Küst.), Sussex, Wilts, confused with *M. holomelaena* Apf.²⁷; *Mordellistena pseudopumila* Erm., *M. parvuloides* Erm., *M. acuticollis* Schil., *M. nanuloides* Erm. confused with *M. parvula* (Gyll.)²⁸ (all seven Mordellidae). *Bruchela rufipes* (Ol.) (Anthribidae), on *Reseda* (P. Hyman per A. A. Allen).

HYMENOPTERA. Eighteen species, of which two are particularly noteworthy as being new to science, *Gonatocerus minor* Matthews, widely distributed in S. England; and *G. rogersi* Matthews known only from a single specimen in a Malaise trap, Awbridge, Hants. The *Gonatocerus* species are egg parasitoids of Homoptera. The other species new to Britain are: *G. longior* Soyka; *G. thyrides* Debauche²⁹; *Microdus lugubator* Ratz., a parasite of *Coleophora lutipennella* (Zell.); *Agathis artemisiana* Fischer; *A. assimilis* Kokujev; *A. glabricula* Thomson, a parasite of *C. troglodytella* (Dup); *A. meridionella* Fischer, a parasite of *Chrysoesthia drurella* (F.) and *C. sexguttella* (Thunb.); *A. minuta* Niezabitowski, a parasite of *Coleophora glaucicolella* Wood; *A. tibialis* Nees, a parasite of *Apoda bifractella* (Dup.) and *Ptocheuusa paupella* (Zell.); *A. rostrata* Tobias and *A. varipes* Thomson are parasites of *Eurhodope cirrigerella* (Zinck.) and *Metzneria lappella* (L.)³⁰. *Coleocentrus exitator* Poda (Ichneumonidae), Rannoch, Perthshire³¹; *Opius phytobiae* Fischer; *O. filicornis* Thomson; *O. curvatus* Fischer; *O. fulvicollis* Thomson (all four Braconidae)³².

ACKNOWLEDGEMENTS

For most species of 'other' insect orders added to the British List in 1986, I am indebted to Mr A. A. Allen, Mr P. J. Chandler, Mr W. R. Dolling, Professor J. A. Owen and Mr K. G. V. Smith, for kindly drawing my attention to them and in some cases supplying particulars.

REFERENCES

1. Robinson, H. S. & P. J. M. 1950. Some notes on the observed behaviour of Lepidoptera in flight in the vicinity of light-sources together with a description of a light-trap designed to take entomological samples. *Entomologist's Gaz.* **1**: 3-20.
2. [Marcon, J. N.] 1942. *Catalogue of sale of British butterflies*, 3. xii. 1942. Debenham & Storr.
3. Marcon, J. N. 1947-48. *Catalogue of sale of British butterflies*. Parts 1-4, 22. x. 1947, 19. xi. 1947, 21. i. 1948, 18. ii. 1948. Debenham & Storr.
4. Emmet, A. M. 1986. *Parornix carpinella* (Frey, 1863) a distinct species from *P. fagivora* (Frey, 1861) (Lep.: Gracillariidae). *Entomologist's Rec. J. Var.* **98**: 144-146.
5. Heckford, R. J. 1986. *Syncopacma suecicella* (Wolff) (Lep.: Gelechiidae) new to the British Isles. *Entomologist's Gaz.* **37**: 87-89, pl. 2.
6. Agassiz, D. J. L. 1986. *Scrobipalpa klimeschi* Povolny (Lep.: Gelechiidae) new to Britain.

- Entomologist's Gaz.* **37**: 33–35.
7. Rezbanyei-Reser, L. 1985. *Mesapamea* – studien II *Mesapamea remmi* sp.n. aus de Sch sowie Beitrage zur Kenntnis der Westpalaearktischen Arten der Gattung *Mesapamea* Heinicke 1959 (Lep.: Noctuidae). *Ent. Bericht (Luzern)* **14**: 127–148.
 8. Disney, R. H. L. 1986. A new genus of scuttle-fly (Diptera: Phoridae) from England. *Zool. J. Linn. Soc.* **87**: 85–89.
 9. White, I. M. 1986. A new species of *Paroxyna* Hendel and notes on the nomenclature of other British Tephritidae (Diptera). *Entomologist's mon. Mag.* **122**: 153–156.
 10. Abbass, A. K. 1986. A new species of grass midge (Dipt.: Cecidomyiidae) infesting the inflorescences of *Phalaris arundinacea* L. in Britain. *Entomologist's mon. Mag.* **122**: 65–71.
 11. Pont, A. C. 1986. Two additions to the list of British Sepsidae (Diptera) *Entomologist's mon. Mag.* **122**: 91–92.
 12. Wyatt, N. P. 1986. *Thecocarcelia acutangulata* (Macquart) (Dipt.: Tachinidae) new to Britain. *Entomologist's mon. Mag.* **122**: 203–204.
 13. Allen A. A. 1986. *Platypalpus articulatooides* (Frey) (Dipt.: Empididae) new to Britain. *Entomologist's Rec. J. Var.* **98**: 177–179.
 14. Perry, I. 1986. The flies of Quy Fen. *Nat. Cambs.* **28**: 57.
 15. Dyte, C. E. 1986. [Exhibit of *Medetera striata* Parent (Dipt.: Dolichopidae)]. *Proc. Trans. Br. ent. nat. Hist. Soc.* **19**: 74.
 16. Martin, A. F. 1986. *Cecidomyia magna* (Möhn) (Dipt.: Cecidomyiidae) new to Britain. *Entomologist's mon. Mag.* **122**: 253.
 17. Chandler, P. J. 1986. The British species of *Diastata* Meigen and *Campichoeta* Macquart (Dipt.: Drosophiloidea). *Proc. Trans. Br. ent. nat. Hist. Soc.* **19**: 9–16.
 18. Pinder, L. C. V. & Armitage, P. D. 1986. The male and female of *Bryophaenocladus muscicola* (Kieffer), based on new material from England (Dipt.: Chironomidae). *Ent. Scand.* **17**: 137–142.
 19. Speight, M. C. D. 1986. *Cheilosia argentifrons* (Dipt.: Syrphidae) new to Ireland; *Donacia cinerea* (Col.: Chrysomelidae) and *Palloptera muliebris* (Dipt.: Pallopteridae) presence in Ireland confirmed. *Ir. Nat. J.* **22**: 159–160.
 20. Greenslade P. & Fletcher, K. E. 1986. Collembola from earthworm rearing beds at Rothamsted, including three new records from Britain. *Entomologist's mon. Mag.* **122**: 143–144.
 21. Martyn, K. P. 1986. *Macronyssus diversipilis* (Vitzthum) (Mesostigmata: Macronyssidae), a bat mite new to the British Isles. *Entomologist's mon. Mag.* **122**: 137–143.
 22. [LeQuesne, W. J.], 1986. An addition to the British list. *Auchenorhyncha Recording Scheme Newsletter* **6**: 1.
 23. Speight, M. C. D., Martinez, M. & Luff, M. L. 1986. The *Asaphidion* (Col.: Carabidae) species occurring in Great Britain and Ireland. *Proc. Trans. Br. ent. nat. Hist. Soc.* **19**: 17–21.
 24. Foster, G. & Spirit, M. 1986. *Oreodytes alpinus* Payk. *Balfour-Brown Club Newsletter* **36**: 1.
 25. Speight, M. C. D. 1986. *Asaphidion curtum*, *Dorylomorpha maculata*, *Selatosomus melancholicus* and *Syntormon miki*: insects new to Ireland. *Ir. Nat. J.* **22**: 20–23.
 26. Johnson, C. 1986. Notes on some Palaearctic *Melanophthalma* Motschulsky (Col.: Latridiidae), with special reference to *transversalis* auctt. *Entomologist's Gaz.* **37**: 117–126.
 27. Batten, R. 1986. A review of the British Mordellidae (Col.). *Entomologist's Gaz.* **37**: 225–235.
 28. Allen, A. A. 1986. On the British species of *Mordellistena* Costa (Col: Mordellidae) resembling *parvula* Gyll. *Entomologist's Rec. J. Var.* **98**: 47–50.
 29. Matthews, M. J. 1986. The British species of *Gonatocerus* Nees (Hym.: Mymaridae), egg parasitoids of Homoptera. *Sys. Ent.* **11**: 213–219.
 30. Nixon, G. E. J. 1986. A revision of the European Agathinae (Hym.: Braconidae). *Bull. Br. Mus. (Nat. Hist.) (Entomology)* **52** (3): 183–242.
 31. Shaw, M. R. 1986. *Coleocentrus excitator* (Poda) (Hym.: Ichneumonidae) new to Britain. *Entomologist's Gaz.* **37**: 221–224.
 32. Godfray, H. C. J. 1986. Four species of *Opius* (Hym.: Braconidae) new to Britain. *Entomologist's mon. Mag.* **122**: 127.

THE 1986 PRESIDENTIAL ADDRESS PART II MORE NOTES ON THE COLEOPHORIDAE

by J. M. CHALMERS-HUNT

These notes supplement those in my address to the Society 12 years ago (Chalmers-Hunt, 1975a). Since then there have been some signal discoveries among the Coleophoridae, notably the addition of six species new to the British List, and including one new to science. Furthermore, another six species that had not been seen for many years, were rediscovered during the same period. I intend talking about all these and others in due course, but first wish to say a few words on perhaps the most remarkable feature concerning the Coleophoridae.

The Coleophoridae are particularly interesting because of their portable habitations or larval cases, which owing to their characteristic shape usually provide the easiest and most ready means of identification. In general, there are six different sorts of case among the Coleophoridae, based on the materials used in their construction.

1. The tubular case: pipe or roller-shaped. Usually made of parchment-like material, sometimes covered with grains of detritus (e.g. *C. inulae* and *C. atriplicis*).

2. The lobe case: covered with pieces of leaves which stick out on all sides. Larger in front and sometimes coil-shaped at the back (e.g. *C. saturatella*).

3. The sheath case: straight or slightly curved with the sides flattened and having a distinct abdominal edge (e.g. *C. vibicigerella*.)

4. The pistol case: pistol-shaped, made of silk, blackened by a glandular secretion of cement and having a markedly wrinkled appearance (e.g. *C. currucipennella*).

5. The leaf case: made of leaves closely woven together (e.g. *C. alnifoliae*).

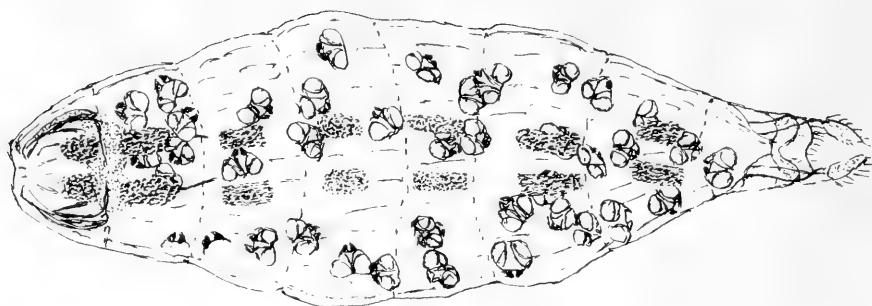
6. The seed case: irregular in shape. Made of a hollowed seed capsule of the foodplant (e.g. *C. tricolor*).

As many of the following records are for Kent, only extra-Kentish localities have the name of the county added. The nomenclature is based on that of Bradley & Fletcher (1986), with the addition of the occasional synonym.

Augasma aeratella Zell. The late Dr D. A. B. Macnicol took a specimen of this rare moth at Wimborne, Dorset on 24.vii.1956 (Macnicol, 1958), since when there has been no other record of its occurrence. The curious blackish pod-like galls are made by the larva from its foodplant knotgrass (*Polygonum aviculare* L.).

Metriotes lutarea Haw. (*modestella* Dup.). This is one of the most curious and mystifying of all the Coleophoridae. It seems we still have no reliable knowledge of the larva, case or foodplant of this locally common moth, despite enquiries of microlepidopterists both here and abroad. The description by Meyrick and others, of the larva, and that it occurs in the seed capsules of *Stellaria holostea* L. and later in a portable case made from a seed capsule, remains unconfirmed. Uffen (1979) makes the intriguing observation that if *S. holostea* is the foodplant, the pabulum could be fallen seeds or even running stems in leaf-litter. Clearly more research is needed while bearing the latter suggestion in mind.

Goniodoma limoniella Stt. An interesting feature of this saltmarsh species, whose larva feeds on the flowers of Sea Lavender (*Limonium vulgare* Mill.), and whose case is made from a floret of the foodplant, is that when full grown it bores into the stem making a short tunnel wherein it hibernates, leaving the case sticking out from it. Occasionally several affect the same stem, as here illustrated.



C. albella. Female abdomen showing living larvae. (After Toll, 1962.)

Coleophora albella Thunb. (*leucapennella* Hb.). This extremely local and rare moth has long been known as *leucapennella* Hb. On 14.vii.1986, I visited the marshy spot near Wickwar, Glos. where I took the species in 1970 and 1973, but was dismayed on seeing that the vegetation there had been cut and the cuttings removed. However, in 1985, Raymond Uffen (pers. comm.) found larvae nearby and so it is hoped the species still survives in what may be its only locality in Britain (Uffen, 1985). The moth is viviparous, and Toll (1962; pl. 1W, Fig. 5) shows diagrammatically the female abdomen containing living larvae.

C. coracipennella Hb. This species was rediscovered in 1975 by S.E. Whitebread (1975, 1976, 1977), to whom I am indebted for introducing me to the locality in West Kent where he found it. As a result, from cases I collected on apple on 17.v.1976, moths were reared 18–22.vi.1976.

C. prunifoliae Doets. Robert Heckford, who in 1980 added this species to the British List (Heckford, 1980), kindly gave me five cases from S. Devon, 6.vi.1980, which produced moths 15–22.vi.1980. Since then the species has been found in Cornwall, Essex, Sussex, Wilts., Somerset, Hants. and quite likely elsewhere.

C. adjectella H.-S. A species newly recognized as British by Emmet (1980), having previously been confused with *C. badiipennella* Dup. and *C. milvipennis* Zell. The cases can either be collected in the autumn or spring, but in my experience they are more easily found after hibernation shortly before the sloe comes into bloom. Dartford Heath, cases on sloe 12.x.1979 and 4.v.1980, moths reared 1–4.vii.1980.

C. alnifoliae Bar. Until recently there appeared to be doubt as to whether this and *C. milvipennis* Zell. were distinct. However, Uffen (1979) gave a readily identifiable distinguishing character in that the final (spring) case of *alnifoliae* is 10–11 mm. long, whereas that of *milvipennis* is only 8–9 mm.

C. hydrolapathella Hering. First taken by T. N. D. Peet at Hickling, Norfolk, in 1975 and new to Britain (Peet, 1978). I am indebted to Tim Peet for showing me the locality, and on 3.vii.1976 I disturbed several moths from amongst the foodplant, and on 3.x.1976 collected cases on seeds of *Rumex hydrolapathum* Huds. (Great Water Dock) or fixed to the stem of the plant, from which moths emerged 4.vii.1977. The species has since been found at Thorpness, Suffolk by Uffen (1984) and at Catfield, Norfolk by Langmaid (1980).

C. trigeminella Fuchs. This species was rediscovered in 1974 by S. E. Whitebread (1975, 1976, 1977), who kindly took me to his locality in W. Kent on 25.iv.1976. There I collected a number of cases on hawthorn and one on apple; all of these fixed for pupation by 10.v.1976, and from them in due course moths appeared 8–11.vi.1976, also a small hymenopterous parasite. The apple case was well camouflaged being placed vertically and pressed against the length of the shoot upon which the larva was feeding; the hawthorn cases were also well concealed, the larvae feeding on the unopened flower buds. The larva is reddish-brown, head and plate very dark brown. The species has since been noted in Surrey, East Kent, Yorkshire (Beaumont, 1982) and Essex (Emmet, 1981).

C. binderella Koll. Up until 1978, I had only succeeded in finding three cases of this local species, all on *Alnus glutinosa* (L.). However, on 4.vi.1978, J. R. Langmaid kindly took me to a locality at Havant, Hants where the cases were plentiful on *A. incana* (L.), from which I reared a series 7–16.vii.1978.

C. frischella L. I have never taken this species, but possess two specimens captured by the late D. W. H. Ffennell at Martyr Worthy near Winchester, Hants, a female on 22.v.1964 and a male on 21.v.1971 (Ffennell, 1976). A. M. Emmet reared a single *frischella* on 23.vi.1986 from a *Centaurea nigra* L. seedhead he collected at Lewes, Sussex on 27.xii.1985, which he exhibited at the Society on 1.xi.1986. This is the only instance to my knowledge of the finding of any of the early stages in Britain. Although *Trifolium repens* L. has been repeatedly cited as a foodplant in the British literature, all the references were based upon extra-British occurrence.

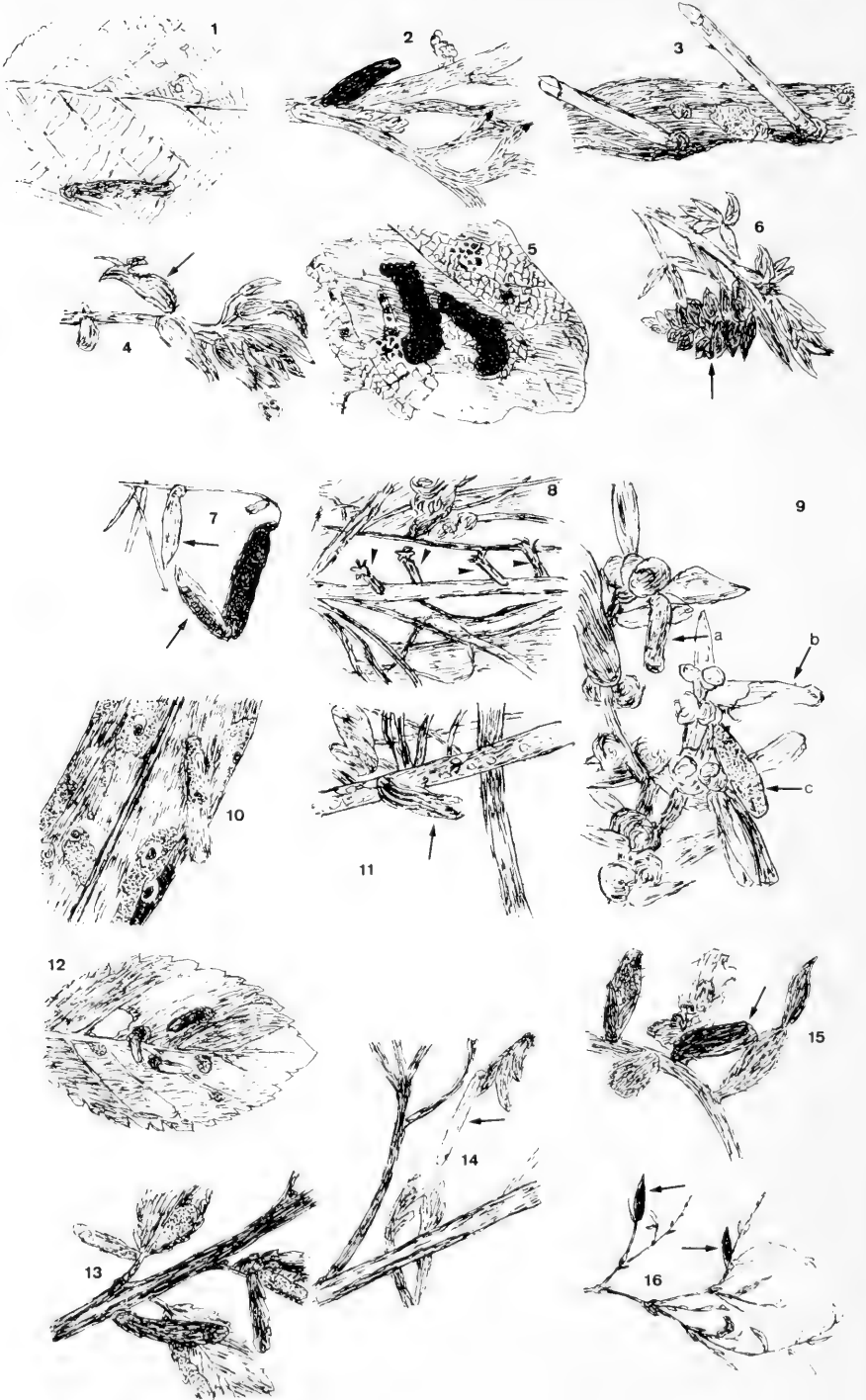
C. fuscicornis Zell. This species was discovered at Fingringhoe, Essex, as new to Britain on 26.v.1973, by A. M. Emmet (Emmet & Uffen, 1975), who kindly gave me details of the locality. On 3.vi.1974 I saw 15 moths there of which I kept four. From the few cases I collected on *Vicia tetrasperma* (L.) on 9.vii.1974, I reared a single specimen 3.vi.1975 and several hymenopterous parasites (Chalmers-Hunt, 1975*b*). *Fuscicornis* has since been found at Little Oakley, Essex by R. W. J. Uffen, but to my knowledge nowhere else.

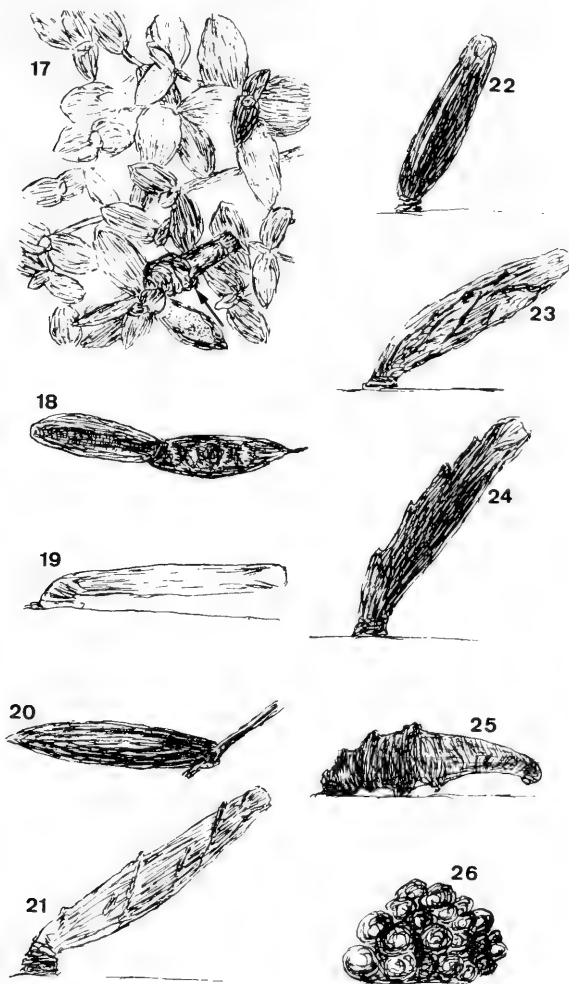
C. tricolor Walsingham. After some clever detective work, this exceedingly local species was rediscovered in Norfolk by R. W. J. Uffen on 23.vii.1963 (Uffen, 1963). In 1983, J. R. Langmaid found it at Barton Mills, Suffolk (Langmaid, 1984).

C. ochrea Haw. Punfield Cove near Swanage, Dorset. On 6.vi.1976, S. C. S. Brown and I collected for the first time in our experience, a number of the distinctly shaped pale greyish-ochreous cases on *Helianthemum chamaecistus* Mill. From those that I took, I reared four moths, the first emerging on 26.vii.1976 and the last on 8.viii.1976. In 1982 and 1983, Heal (1984*a*) discovered two colonies near Chatham; in 1983 it was found by Simpson (1984) in Glamorgan; and in 1984 by Newton (1985) at Stroud, Glos.

C. currucipennella Zell. Hoads Wood, five moths were taken at light by N. F. Heal and P. J. Jewess, 13.vii.1979 (Heal, 1980). Long Rope, Orlestone, at light 9.vii.1982(1), 16.vii.1983(1), both by me, and others since by various people. I have no records of the species from elsewhere during the past decade or so, and no record of the larva despite close search for the case in both Hoads Wood and Long Rope. Possibly the larva is a high canopy feeder, and if so this could account for our lack of success.

C. vibicella Hbn. Goss & Bower (1908) give Chattenden as a Kent locality, and I possess five of A. B. Farn's 'Kent, 1883' specimens, but know of no other records for Kent. This is the biggest British Coleophorid and has a large and handsome case.





1: *C. alnifoliae*. 2: *C. vibicigerella*. 3: *C. inulae*. 4: *C. tricolor*. 5: *C. currucipennella*. 6: *C. saturatella*. 7: *C. fuscicornis*. 8: *G. limoniella*. 9: *C. aestuariella* (a), *C. deviellea* (b) and *C. atriplicis* (c). 10: *C. linosyridella*. 11: *C. tricolor* on grass. 12: *C. prunifoliae* small and full-grown cases. 13: *C. adjectella*. 14: *C. gardesanella*. 15: *C. vulnerariae*. 16: *A. aeratella* galls. 17: *C. serpylletorum*. 18: *C. fuscicornis*. 19: *C. linosyridella*. 20: *A. aeratella*. 21: *C. gardesanella*. 22: *C. coracipennella*. 23: *C. prunifoliae*. 24: *C. adjectella*. 25: *C. serpylletorum*. 26: *C. clypeiferella*.

According to Philp (1982), the foodplant *Genista tinctoria* L. (Dyer's Greenweed) occurs at Chattenden, so it would be interesting to know if *vibicella* still exists there.

C. vibicigerella Zell. This is one of the rarest and most local of all the Coleophoridae. It was rediscovered in Britain by R. W. J. Uffen at Shellness on 24.v.1980, while in the company of N. F. Heal and myself, both of whom on that date also took a few larvae there on *Artemisia maritima* L. My emergence dates are: 9-13.vii.1980.

C. serpylletorum Her. Since last writing on this species (Chalmers-Hunt, 1975a), there has been a remarkable extension of its known range. Thus, on 3.viii.1982, a female was taken at light by N. F. Heal (Heal, 1984b) at Sandwich; and in 1976, it occurred to A. N. B. Simpson at Cadgwith in West Cornwall (Simpson, 1981). At the Annual Exhibition of the Society on 1.xi.1986, J. R. Langmaid stated the N. Wales form differs from the Cornish one.

C. vulnerariae Zell. Slides were shown of the cases on *Anthyllis vulneraria* L. (Kidney Vetch), together with the moth, all collected by G. W. Bird at St Margaret's Bay about 1890. This species has not been seen for about a century.

C. saturatella Stt. Having never before found this attractive case, I was delighted when at Dartford Heath on 5.vii.1977, John Roche showed me where and how to locate them. They were numerous, all fixed fairly high up on broom and quite conspicuous. From those collected, moths started emerging 10.vii.1977.

C. lassella Stdgr. Although constantly on the look out for it, I have never had the good fortune to take this curiously unpredictable species. Most of the records are of singletons widely scattered, though with indications of a maritime or sub-maritime distribution. The early stages and foodplant are as yet unknown. The following are the only British records of its occurrence known to me: Burren, Clare, vi.1951; new to Britain (Bradley, 1952). Glengarriff area, W. Cork, vi.1952 (Bradley, 1953). Near Cloonkeen and Lauragh, Kerry, 29.v.-2.vi.1962 (Mere, Bradley & Pelham-Clinton, 1964). Southampton, Hants., 19.vi.1968 (D. J. L. Agassiz; Goater, 1974). Arne, Dorset, six males, two females at light, 6-12.vi.1970 (E. S. Bradford *in litt.*). Predannack, Cornwall, 15.vi.1977 (Heckford, 1981). Thornden Wood, Blean, 9.vi.1979, (Bradford, 1980). Axminster, Devon, 1983 (Pelham-Clinton, 1984). Kynance, Cornwall, 13.vi.1986 (J. R. Langmaid, exhibited at Society on 1.xi.1986). A total of some 18 specimens.

C. inulae Wocke. The known range of this exceedingly local species has been greatly extended of late. Herne Bay, a single case on *Pulicaria dysenterica* (L.) found by E. S. Bradford (Agassiz, 1985), moth emerged 2.vii.1983. Carnarvonshire (1974), Michaelis (1975, 1976).

C. linosyridella Fuchs. Sheppey, 18.vi.1978, discovered by N. F. Heal as new to Britain (Heal & Uffen, 1981). From larvae I took there on *Aster tripolium* L., 24.v.1980, moths emerged 23.vii-7.viii.1980. Besides Kent, *linosyridella* also occurs in Essex (Agassiz, 1981), but has not been found elsewhere to my knowledge.

C. gardesanella Toll (*machinella* Bradl.: *maritimella* Machin). Rediscovered in Britain by J. R. Langmaid, who took cases at Botley Wood, Hants, on *Achillea ptarmica* L. in 1977 (Langmaid, 1982). In 1978, Langmaid also found the larva on *Artemisia vulgaris* (L.) Langmaid (1985). From cases I collected at Botley Wood, on *A. ptarmica* 3.vi.1978, moths emerged late vii.1978; and from cases I collected on Sheppey on *Artemisia maritima* L., 7.x.1984, moths emerged from 30.vi.1985.

C. ramosella Zell. Up until 1982, this species was only known in the British Isles

from the west coast of Ireland, but on 23.v.1982, N. F. Heal and P. J. Jewess discovered cases on *Solidago virgaurea* L. (Golden Rod) some 500 miles away in Thornden Wood, Blean, Kent, from which moths were reared 26.vi–10.viii.1982 (Heal, 1983a).

Poulsallah, Clare, on 9.vi.1977, I found cases on *S. virgaurea* L., together with two moths, one of which was worn—a very early date it seems (but are there two generations per annum?). In 1981, I took two moths at Fanore, Clare on 28.viii; and found cases at Rinnamona, Clare on 8.vi.1977, moths reared 25–30.vii.1977.

C. therinella Tengst. The case and foodplant of this rare species appear still to be unknown, at least in Britain, and since I last took the moth in 1965, I have seen no others myself. However, E. C. Pelham-Clinton (1984) records one at Williton, Somerset in 1983; Goater (1974) cites a number from Hants; also from Hants. (a favoured county for *therinella* it seems), J. R. Langmaid took it at Southsea in 1986 (exhibited 1.xi.1986); D. H. Sterling (*in litt.*) at Winchester, Hants the same year; and M. Corley (exhibited 1.xi.1986) took it also in 1986 at Buckland Warren near Faringdon, Oxfordshire. Toll (1962: pl. 4S, fig. 55) claims to illustrate the case. Patzak (1974) gives *Carduus* and *Cirsium* as foodplants on the continent.

C. deviella Zell. (*suaedivora* Meyr.; *moeniacella* auct.). On 9.x.1982, R. & A. Fairclough rediscovered this species when they took cases on the 'Essex saltings' on *Suaeda* (Fairclough, 1984). Sheppey, I took cases on *Suaeda maritima* (L.), 7.x.1984, from which I reared the moths 30.vi.–10.vii.1985.

C. aestuariella Bradl. This species was described as new to science on the basis of its discovery by N. F. Heal in Kent in 1981 (Bradley, 1984). I am indebted to Norman Heal for showing me where and how to find the cases. Sheppey, on 7.x.1985, I found cases plentifully on *Suaeda maritima* (L.), moth emerged 31.vii.1986.

C. murinipennella Dup. Mitcham Common, Surrey, 27.vii.1975, cases on *Luzula campestris* (L.); cases abundant on soil and detritus around the base of *L. campestris* plants, larvae also feeding on fallen seeds, 17.vii.1977, from which the first moth emerged 22.v.1978 (Chalmers-Hunt, 1978). I am not aware of any previous rearing of this species.

C. caespitella Zell. (*agrammella* Wood). Ashtead, Surrey, a single case on *Juncus effusus* L., 13.ix.1978, is the only one of this small coleophorid that I have found so far.

C. salicorniae Wocke. This and the next species have subterranean pupae. Stonelees, one at mercury vapour light 26.viii.1984. Stoke Saltings, 16.x.1984, abundant signs of feeding on *Salicornia*, but I was clearly too late for the larvae, most having already entered the mud. N. F. Heal (pers. comm.) identified its foodplants in Kent as *Salicornia fragilis*, *S. europaea* L. and *S. ramosissima* Woods (Heal, 1983b).

C. clypeiferella Hofm. The first knowledge of its occurrence in Britain was due to L. T. Ford, who misidentified a moth he took at Dymchurch on 6.viii.1934 as *C. salicorniae* (Chalmers-Hunt, 1981). West Wickham, one at light 2.viii.1977.

ACKNOWLEDGEMENTS

I am most grateful to Mr R. W. J. Uffen for the loan of slides to accompany this paper, and to Mr S. N. A. Jacobs, for the drawings. I also thank Miss Carol Breadmore (Library, Department of Entomology, British Museum (Natural History)) for bibliographical assistance; Mr M. J. Simmons, the Society's lanternist; and Mr E. S. Bradford, for the loan of *Coleophora lassella* for exhibition.

REFERENCES

- Agassiz, D. J. L. 1981. Microlepidoptera: a review for the year 1980. *Entomologist's Rec. J. Var.* **93**: 92.
- Agassiz, D. J. L. 1985. Microlepidoptera—a review of the year 1984. *Entomologist's Rec. J. Var.* **97**: 209.
- Beaumont, H. E. 1982. *Coleophora trigeminella* Fuchs and *C. coracipennella* in South Yorkshire. *Entomologist's Rec. J. Var.* **94**: 108.
- Bradford, E. S. 1980. *Coleophora lassella* Stdgr. in Kent. *Entomologist's Rec. J. Var.* **92**: 121.
- Bradley, J. D. 1952. Microlepidoptera collected in the Burren, Co. Clare, Ireland in 1951, including two species new to the British List. *Entomologist's Gaz.* **3**: 185–191, 2 pls.
- Bradley, J. D. 1953. Microlepidoptera from Bantry—Glengarriff area, W. Cork. *Ir. Nat. J.* **11**: 16–18.
- Bradley, J. D. 1984. *Coleophora aestuariella* sp.n. (Lepidoptera: Coleophoridae) from south-east England. *Entomologist's Gaz.* **35**: 137–140.
- Bradley, J. D. & Fletcher, D. S. 1986. *An indexed list of British Butterflies and moths: scientific and English names*. Kedleston Press.
- Chalmers-Hunt, J. M. 1975a. The 1974 Presidential Address: Notes on the Coleophoridae. *Proc. Trans. Br. ent. nat. Hist. Soc.* **7**: 74–87, pls. 5–8.
- Chalmers-Hunt, J. M. 1975b. Breeding *Coleophora fuscicornis* Zell. *Entomologist's Rec. J. Var.* **87**: 267.
- Chalmers-Hunt, J. M. 1978. *Coleophora murinipennella* Duponchel bred. *Entomologist's Rec. J. Var.* **90**: 250–251.
- Chalmers-Hunt, J. M. 1981. The probable first record of occurrence in Britain of *Coleophora clypeiferella* Hofmann. *Entomologist's Rec. J. Var.* **93**: 239.
- Emmet, A. M. 1980. *Coleophora adjectella* Herrich-Schaffer, 1861 (Lep.: Coleophoridae)—a species newly recognised as British. *Entomologist's Rec. J. Var.* **92**: 129–138, plt. xi.
- Emmet, A. M., 1981. *The smaller moths of Essex*. Essex Naturalist No. 6, 65.
- Emmet, A. M. & Uffen, R. W. J. 1975. *Coleophora fuscicornis* Zeller, 1847 (Lep.: Coleophoridae), a species new to Britain, with an account of its life cycle. *Entomologist's Rec. J. Var.* **87**: 259–266.
- Fairclough, R. 1984. *Coleophora deviellea* Zell. (*suaedivora* Meyrick) rediscovered. *Entomologist's Rec. J. Var.* **96**: 164.
- Ffennell, D. W. H. 1976. Confirmation of *Coleophora frischella* (Linnaeus) (Lep.: Coleophoridae) as a resident species. *Entomologist's Gaz.* **27**: 145–147.
- Goater, B. 1974. *The butterflies and moths of Hampshire and the Isle of Wight*, Faringdon.
- Goss, H. & Bower, B. A. 1908. *Lepidoptera*. In Page, W. (Ed.) *The Victoria History of the County of Kent*, **1**: 178–208.
- Heal, N. F. 1980. *Coleophora currucipennella* (Zeller) in Kent. *Entomologist's Rec. J. Var.* **92**: 142.
- Heal, N. F. 1983a. *Coleophora ramosella* Zeller in Kent. *Entomologist's Rec. J. Var.* **95**: 84.
- Heal, N. F. 1983b. Further notes upon the foodplant [in Kent] of *Coleophora salicorniae* Wocke. *Entomologist's Rec. J. Var.* **95**: 64.
- Heal, N. F. 1984a. [*Coleophora ochrea* etc. discovered at Gillingham and Stockbury]. *Proc. Trans. Br. ent. nat. Hist. Soc.* **17**: 10; *Entomologist's Rec. J. Var.* **96**: 132–133.
- Heal, N. F. 1984b. *Coleophora serpylletorum* Hering in Kent. *Entomologist's Rec. J. Var.* **96**: 107.
- Heal, N. F. & Uffen, R. W. J. 1981. *Coleophora linosyridella* Fuchs new to Britain. *Proc. Trans. Br. ent. nat. Hist. Soc.* **14**: 98–100.
- Heckford, R. 1980. *Coleophora prunifoliae* Doets (Lep.: Coleophoridae), a species new to Britain and a consideration of *C. cerasivorella* Packard and *C. coracipennella* (Huebner). *Entomologist's Rec. J. Var.* **92**: 201–204, plt. xvii.
- Heckford, R. J. 1981. *Coleophora lassella* Stdgr. in Cornwall. *Entomologist's Rec. J. Var.* **93**: 21.
- Langmaid, J. R. 1982. *Coleophora machinella* Bradley: its rediscovery in England, and description. *Entomologist's Rec. J. Var.* **94**: 109–110.
- Langmaid, J. R. 1984. [*Coleophora hydrolapathella* and *C. tricolor* exhibited]. *Proc. Trans. Br.*

- ent. nat. Hist. Soc.* **17**: 12.
- Langmaid, J. R. 1985. *Coleophora gardesanella* Toll (Lep.: Coleophoridae) feeding on *Artemisia vulgaris*, a previously unrecorded foodplant. *Entomologist's Gaz.* **36**: 46.
- MacNicol, D. A. B. 1958. *Pammene aurantiana* Stdgr. and *Augasma aeratellum* Zell. in Dorset. *Entomologist's Rec. J. Var.* **70**: 86.
- Mere, R. M., Bradley, J. D. & Pelham-Clinton, E. C. 1964. Lepidoptera in Ireland, May–June 1962. *Entomologist's Gaz.* **15**: 66–92.
- Michaelis, H. N. 1975, 1976. [*C. inulae* etc. exhibited]. *Proc. Trans. Br. ent. nat. Hist. Soc.* **8**: 17; **9**: 8.
- Newton, J. 1985. *Supplement to Clutterbuck and Bainbrigge-Fletcher's Microlepidoptera of Gloucestershire*. 29 pp. Gloucestershire Naturalist.
- Patzak, H. 1974. Beiträge zur Insektenfauna der DDR: Lepidoptera—Coleophoridae. *Beitr. ent. Berlin* **24**: (1974) 5/8 S.153–278.
- Peet, T. N. D. 1978. *Coleophora hydrolapathella* Hering (Lep.: Coleophoridae): a species new to the British Isles. *Entomologist's Rec. J. Var.* **90**: 15–17.
- Pelham-Clinton, E. C. 1984. [*C. lassella* and other species exhibited]. *Proc. Trans. Br. ent. nat. Hist. Soc.* **17**: 12.
- Philp, E. G. 1982. *Atlas of the Kent flora*, p. 68. The Kent Field Club.
- Simpson, A. N. B. 1981. *Coleophora serpylletorum* Hering in Cornwall. *Proc. Trans. Br. ent. nat. Hist. Soc.* **14**: 28.
- Simpson, A. N. B. 1984. *Coleophora ochrea* Haw. and *Epischnia banksiella* Rich. in South Wales. *Entomologist's Rec. J. Var.* **96**: 31.
- Toll, S. 1962. Materialien zur Kenntnis der palaarktischen Arten Familie Coleophoridae. *Acta Zoologica Cracoviensia* **7**: 577–719.
- Uffen, R. W. J. 1963. 'What cost discovery?' *Bull. amat. ent. Soc.* **22**: 91–92.
- Uffen, R. W. J. 1979. *Coleophoridae*. In: Emmet, A. M. (Ed.). *Field guide to the smaller British Lepidoptera*, 78–96. London: BENHS.
- Uffen, R. W. J. 1984. [*Coleophora hydrolapathella* in Suffolk]. *Proc. Trans. Br. ent. nat. Hist. Soc.* **17**: 15.
- Uffen, R. W. J. 1985. [*C. leucapennella* Hbn. larvae exhibited 11.vii.1985.] *Proc. Trans. Br. ent. nat. Hist. Soc.* **18**: 81.
- Whitebread, S. E. 1975. *Coleophora trigeminella* (Fuchs) and *C. coracipennella* (Hüb.) in W. Kent. *Entomologist's Rec. J. Var.* **87**: 300.
- Whitebread, S. E. 1976. [*Coleophora* species exhibited] *Proc. Trans. Br. ent. nat. Hist. Soc.* **8**: 116.
- Whitebread, S. E. 1977. A further note on *Coleophora trigeminella* Fuchs and *C. coracipennella* (Hüb.) *Entomologist's Rec. J. Var.* **89**: 16–17.

ANNOUNCEMENT

A Field Guide to the Smaller British Lepidoptera. — Existing stocks are almost exhausted and the British Entomological and Natural History Society proposes to publish a new and expanded edition in 1988. This will include the species added to the British list since the publication of the present edition in 1979 and additional information on those already included. Many microlepidopterists will have annotated their copies with addenda and corrigenda regarding habits, foodplants and the timing of the stages. If you would like your notes to be incorporated, please send them to A. M. Emmet, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF before the 30th November 1987. Please submit by families written on one side of the paper. Your contribution will be acknowledged in the new edition.

BOOK REVIEW

Sphingidae Mundi—Hawk Moths of the World. By Bernard D'Abbrera, E. W. Classey Ltd, 1986 [1987]. 235 pp, 80 pages of colour illustrations, 250 × 340 mm, Boards, Price £97.50.

In 1903, Rothschild and Jordan published their monumental work *A revision of the Lepidopterous family Sphingidae*. Since then, no single work has attempted to cover the world Sphingidae. Bernard D'Abbrera is a prolific author, who has established a firm reputation with his continuing series on the butterflies of the world, upon which the format of this book is based. The introduction paints a brief, but interesting mythological, taxonomic and biological background to the family. Two further pages introduce the reader to the use and conventions of the volume, and, after a systematic catalogue of genera, the main work begins.

In essence, this is an illustrated catalogue of the species in the British Museum (Natural History) curated by the late Alan Hayes, supplemented by material from other sources. The text is synoptic. Each genus is described in general terms, the type species identified, and outline details of larva, pupa and host plants are given (where these are known). The description for each species includes the reference for the original description, distribution, notes on sexual dimorphism and other points of interest.

The major focus of the work is the illustration, life size and in colour, of over 1000 species of hawk-moth, including many type specimens and a good number of undersides. Whilst one or two pages are a little on the dark side, the general standard of photography and reproduction must be amongst the best the reviewer has seen. The quality of specimens illustrated, and the setting style, vary considerably—only to be expected when so many rare and historic specimens are illustrated. The reviewer was, however, irritated by a number of cases where specimens had been pinned askew (or had slipped on their pins)—particularly noticeable on pages 121, 137 and 167. This carelessness detracts somewhat from the aesthetic quality of these pages. The work concludes with a 'select' (= brief) bibliography, and an index of genera and species.

Critical comment is somewhat disarmed by the author's statements: he stresses that the work is not intended as a classification or revision of the family, and deliberately chooses to ignore certain recommendations of the ICZN. Whilst it is strange to meet spelling errors in a work of this calibre (e.g. 'ommissions' on page 6) the overall standard of production is very high, and the publishers can be justly proud of this book. The reviewer feels that, whilst it is a major landmark for publications on the Lepidoptera, it is also a significant missed opportunity. Apart from general statements in the introduction to each genus, no information is provided on the known biology of the species—even a note of recorded foodplants of individual species would have added much to the value, and little to the cost of the work. The author clearly states '. . . sometime later, I will publish a companion volume, dealing with all the known early stages and associated botany of these creatures . . .', but a work combining these illustrations with biological details would have been a formidable authority.

The price is not cheap, but we understand that the edition is limited to 2000 copies worldwide, so purchasers are likely to have a sound investment here. On a bibliographic note, the book states 'first published 1986' whereas the publishers literature quotes 'publication date: April 1987'.

INDOOR MEETINGS

11 December 1986

EXHIBITS

Mr P. J. JEWESS showed on behalf of Mr J. S. Badmin two microlepidoptera taken recently in Perry Wood, Faversham, Kent. The tortricid *Epiphyas postvittana* (Walker) was taken in a Rothamsted light trap on 2.xii.86. This is probably the first record for East Kent and is also a very late date for this species. *Zelleria hepariella* Staint. (Lep: Yponomeutidae) was beaten from Rhodendron on 23.xi.86. It has a habit of standing on its head like an *Argyresthia* sp. but superficially resembles a member of the Gracillariidae family, although it does lack maxillary palps. The larvae of this species feed on ash and it overwinters as the adult.

MEMBERSHIP

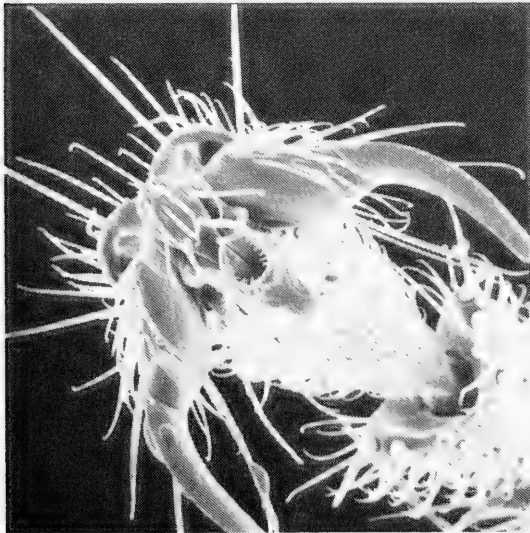
The names of Gregory Reginald Houghton, David Charles Boyce, A. Watchman, Diana Harrison-Murray, Terence S. Hollingworth, Jason Carthew Waine, Albert Edward Watson, Ian Brydon, John Turner, Robert Stephen George and David Victor Manning were read for the second time and were duly elected as members.

ANNOUNCEMENTS

The Secretary announced that Council now has a nomination for the office of editor and would be proposing Richard Jones for this post at the AGM. He would be relinquishing his duties as laternist and Council will propose Michael Simmons as his replacement. This will leave a vacancy amongs the ordinary members of Council which will be filled by the nomination of David Young.

LECTURE

Mr D. CLAUGHER preceded his talk on the hidden world of the electron microscope



Scanning electron micrograph of the foot of *Lasius niger*, magnification $\times 275$.

by outlining the history of microscopy from its beginnings in the 17th century. During the last 20 years electron scanning microscopes have become increasingly sophisticated and powerful. The high powered three dimensional images produced by such microscopes allow detailed study of both external and internal features and are an invaluable aid in understanding their functions. Mr Claugher illustrated his talk with a large selection of slides showing the fine detail of insects, mites, diatoms, pollen grains and other subjects.

8 January 1987

EXHIBITS

The President Mr J. M. CHALMERS-HUNT exhibited a set of three zinc cylindrical larvae collecting boxes, believed to date from the turn of the century. The boxes, which stack inside each other, had perforated hinged lids.

Mr R. JONES showed a single specimen of a staphylinid beetle *Encephalus complicans* Steph. found at Hampstead Heath on 25.i.81 in a tussock of tufted hair grass, *Deschampsia cespitosa* L. It is widely distributed but is regarded as rare, although this may be due to its elusive habits. When disturbed, it feigns death and takes on the appearance of a grass seed by tucking its head into the thorax and curling the abdomen over the thorax.

Prof. J. OWEN exhibited the head of a floor broom which had finally broken as a result of an infestation of furniture beetle, *Anobium punctatum* Deg. The trauma to the broom head from intermittent use had apparently not interfered with the development of generations of the beetle over at least 15 years.

MEMBERSHIP

The names of Peter Francis Walley, Nicholas Paul Cousins, Anne Burton, G. Mark Burton, Howard Matthew Biley, Timothy Reginald Clapp and Graeme Mark Worsley were read for the second time and duly elected as members.

COMMUNICATIONS

Mr P. SOKOLOFF reported the first moth of 1987—a Mottled Umber moth seen at a house light on 4.i.87.

LECTURE

Mr I. BOWEN spoke on the subject of photographing freshwater wildlife. He showed a wide selection of slides of excellent quality of water bugs, beetles, dragonflies, damselflies, the water spider and tadpoles taken at various sites in South Wales. Many hours of patient observation had enabled the speaker to photograph aspects of behaviour such as feeding, mating and ecdysis. These included a unique series of photographs of the water stick insect, *Ranatra linearis* L. taking to the wing.

22 January 1987

EXHIBITS

Mr A. J. HALSTEAD showed a male and female of the wood-boring beetle, *Hadrobregmus denticollis* Creutz. (Coleoptera: Anobiidae). They were found in pupal cavities in red-rotten wood of *Salix fragilis* L. at Mayford, near Woking, Surrey, on 13.xii.86. This uncommon beetle has previously been recorded from the wood of oak and hawthorn.

Mr R. JONES exhibited two insects associated with land snails. These were the glow-worm, *Lampyrus noctiluca* L. (Coleoptera: Lampyridae) and a fly, *Dicheto-*

phora obliterata F. (Diptera: Sciomyzidae). Male glow-worms often fly to light but the females, being wingless, are less frequently taken in that way. The female specimen shown, however, was seen crawling directly to a light in Plashett Wood, Sussex. The sciomyzid fly was taken at South Heighton, East Sussex, a dry chalk downland area where it is very common, as are various 'sheep' snails such as *Helicella* spp, *Helix* spp and *Cochlicella acuta* which are possible hosts of the fly.

ANNOUNCEMENTS

Mr R. JONES gave details of the 18th International Congress of Entomology to be held in Canada in July 1988. He also displayed a notice from Eric Philp giving details of meetings of the Kent Lepidoptera Group and the Kent Coleoptera Group to be held at Maidstone Museum on 14th February and 14th March, 1987, respectively.

The Librarian, Mr S. MILES, announced that he had received the NCC publication listing the terrestrial and freshwater invertebrates with Red Data Book notable or habitat indicator status. He had also received a brochure from the Field Studies Council giving details of the courses offered in 1987.

The President displayed a letter from Penny Evans of the Kent Trust for Nature Conservation in which she asked for any further records from the sites likely to be affected by development of the Channel Tunnel.

LECTURE

Dr J. CHATFIELD of the Gilbert White Museum gave an illustrated talk on some of the land snails and slugs of Britain. Details of their habits and habitats were given, particularly of those snails which are old woodland or grassland indicator species. She concluded her talk by displaying some books and leaflets on mollusc identification and conservation.

12 February 1987

EXHIBITS

Prof. J. A. OWEN showed four insects found in moles' nests. These were live examples of the mole flea, *Hystrichopsylla talpae* Curt., and three beetles; *Oxyptoda longipes* Muls. & Rey and *Quedius puncticollis* Thom., both of the family Staphylinidae, and *Ptinella britannica* Matth. of the family Ptillidae. There are about 12 species of beetle in Britain which live more or less exclusively in moles' nests. They feed on moulds, mites and mole flea larvae. These beetles were rarely found until their association with moles was discovered.

The President Mr J. M. CHALMERS-HUNT showed an antique brass bottle for dispensing drops of chloroform for killing insects. This device was apparently invented independently by Dr Madden of Brighton and Dr Allchin of Bayswater in about 1855. It was available from Mrs Foxcroft, the entomological dealer, shortly afterwards. Brass chloroform bottles seem to have gone out of use about 50 years ago.

Mr R. A. JONES exhibited five beetles capable of making various types of sound. These were: 1. The screech beetle, *Hygrobia hermanni* F., which produces a loud squeak by rubbing the abdominal tergites against the underside of the elytra. 2. A longhorn beetle, *Strangalia maculata* Poda which makes a similar sound by rubbing together the bases of the thorax and elytra. 3. A click beetle, *Melanotus erythropus* Gmel., which makes a clearly audible click as it moves the joint between the abdomen and thorax during its skipping escape strategy. 4. The deathwatch beetle, *Xestobium rufovillosum* Deg. makes a tapping sound by knocking against the walls of its tunnel. 5. The bombardier beetle, *Brachinus crepitans* L., defends itself by ejecting an explosive and noxious liquid through a combustion chamber, producing an audible 'pft' sound.

LECTURE

Dr W. J. REYNOLDS spoke on the subject of insect sound and taxonomy. Insects are capable of making a wide range of sounds but it is those involved in courtship behaviour which are specific and therefore useful in taxonomy. In his work at the British Museum (Natural History), Dr Reynolds has been particularly concerned with recording the stridulations of crickets and grasshoppers of Western Europe, both in the laboratory and in the field. The analysis of these sound recordings, some of which were played during the lecture, has enabled some species complexes to be readily separated and the distribution of the species to be mapped. This technique has also led to the discovery of a new species of mole cricket.

26 February 1987

Minutes of a Special Meeting of the Society held at the Alpine Club at 6.30 p.m.

Chairman: The President, Mr J. M. CHALMERS-HUNT. *Present:* 36 members.

The Secretary Dr. J. MUGGLETON read motion (i) to accept the resignation of Mr S. N. A. Jacobs as Trustee and to appoint Mr C. B. Ashby in his stead. The President then asked if any members wished to discuss the motion, none did. The President then called for a vote and the motion was agreed unanimously. The Secretary then announced the result of the postal ballot which was 16 for the motion and none against.

The Secretary Dr J. MUGGLETON read motion (ii) to amend Bye-law 7(a) to read: 'The Council shall annually prepare a list containing the names of such members as they shall recommend to fill the offices specified in Bye-law 6 and to be Ordinary Members of Council for the succeeding period. The list shall be sent with the notice of the next Annual Meeting and a copy of paragraphs (c) and (d) of this Bye-law to every member recorded as resident in the British Isles, not later than 6 weeks before the date of the Annual Meeting.' The President then asked if any members wished to discuss the motion, none did. The President then called for a vote and the motion was agreed unanimously. The Secretary then announced the result of the postal ballot which was 16 for the motion and none against.

The President declared that both motions were passed and the meeting closed, to be followed by the ordinary meeting.

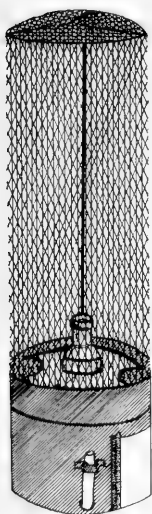
Ordinary Meeting

EXHIBITS

The President Mr J. M. CHALMERS-HUNT exhibited an old cylindrical metal larva rearing cage, given to the exhibitor by Mr E. Janmoulle of Brussels. It was intended for rearing microlepidoptera and has an ingenious system for humidifying the interior by means of a glass tube, without the need to remove the top or disturb the contents.

Mr P. J. JEWESS showed a male specimen of the tortricid moth, *Cydia corollana* Hübn., taken at a mercury vapour light at Burnt Oak Wood, Orlestone, Kent, on 26.v.82. Its identity was confirmed recently by Mr K. R. Tuck of the British Museum (Natural History). The only other known British specimen was taken in about 1850 by P. Bouchard near Whittlesey Mere, Hunts. The larva feeds in galls on aspen caused by a longhorn beetle, *Saperda populnea* L.

Mr A. J. HALSTEAD showed some live examples of *Callosobruchus chinensis* L. (Coleoptera: Bruchidae) which has emerged from some adzuki beans (*Vigna angularis*) bought from a 'health food' shop. This beetle has a cosmopolitan distri-



Old cylindrical metal larva rearing cage, showing glass tube by which the interior of the cage could be humidified without need to remove the top. Exhibited by Mr J. M. Chalmers-Hunt. Illustration drawn by J. Goode and kindly supplied by P. Gilbert, Librarian of the Entomology Department, British Museum (Natural History).

bution and has also been found breeding in chick pea, cow pea, mung bean, urd bean and lentils. It is sexually dimorphic, with the females having subserrate antennae, while the males' antennae are pectinate.

Prof. J. A. OWEN showed an example of the clerid beetle *Paratillus carus* Newm. and the wood boring beetle *Lyctus brunneus* Steph., the larvae of which form the prey of the clerid beetle. This clerid is an introduction from Australia which was first recorded in Britain in 1933. It is usually found in timber yards and other premises with a *Lyctus* spp. infestation but occasionally both species can occur in the open. The *Lyctus* specimen shown came from a colony on the south side of a moribund oak in Richmond Park, Surrey, in August 1982. The specimen of *Paratillus carus* was taken on an oak log in Windsor Great Park in July 1986.

MEMBERSHIP

The names of Michael Henson, Richard Allan Cottle, Janice Mary Iliffe, George William Beccaloni, Aubrey Charles Wood and Peter Charles Follett were read for the second time and elected as members.

ANNOUNCEMENTS

Mr A. CALLOW announced that the reprinted Hoverfly book, with the supplement, was now available. The supplement was also available on its own at a cost of £1. Some supplements with faulty pagination were sold at the Annual Exhibition and these can be exchanged for correct versions.

Mr J. M. CHALMERS-HUNT welcomed Stanley Jacobs to the meeting and thanked him for his work for the Society, particularly in his role as Trustee from which he was retiring, as he had now reached his ninety-first year.

COMMENTS ON EXHIBITS

Mr P. A. SOKOLOFF confirmed the destructive power of bruchid beetles by relating how some seeds of *Dolichos biflorus* imported from India had been reduced to dust and husks in about 4-5 months.

The Ordinary meeting was then followed by the Annual General Meeting and the President's Address.

Annual General Meeting

Minutes of the Annual General Meeting of the Society held at the Alpine Club at 6.40 p.m. Chairman: The President Mr. J. M. CHALMERS-HUNT. *Present:* 38 members.

Minutes of the last Annual General Meeting were read and signed.

The Secretary read the Council's report, followed by the Treasurer who read his report. The Librarian and Curator read their reports. The Secretary then read the report of the Hering Memorial Research Fund for Dr Scoble who was unable to be present. [These reports are published on pages 179-185.]

The President read the names of the Officers and Members of Council recommended by Council for 1987-8 and as no other names had been submitted, he declared the following duly elected:

President: Prof. J. A. Owen. Vice-presidents: J. M. Chalmers-Hunt, Dr I. F. G. McLean. Treasurer: Col. D. H. Sterling. Secretary: Dr J. Muggleton. Editor: R. A. Jones. Curator: P. J. Chandler. Librarian: S. R. Miles. Lanternist: M. J. Simmons. Ordinary Members of Council: E. Bradford, G. N. Burton, P. A. Sokoloff, P. J. Baker, K. G. W. Evans, C. Hart, P. J. Johnson, Mrs F. M. Murphy, R. W. J. Uffen, D. Young.

The Secretary then read Bye-law 22d and invited motions or questions, there were none.

The President read his report and gave his address. [These are published on pages 147-150 and 151-159.]

The President installed the new President, Prof. J. A. Owen.

Prof. OWEN proposed a vote of thanks to the retiring President and asked for permission to print the Presidential Address. Permission was given.

Col. A. M. EMMET proposed a vote of thanks to the retiring Officers and Council, this was seconded by Mr E. S. Bradford.

The re-election of the Society's auditors Messrs A. J. Pickles, F. C. A. and R. A. Bell was proposed by the President, seconded by Mr Penney and Mr Ferguson and passed unopposed.

12 March 1987

EXHIBITS

Mr R. A. JONES showed a holly leaf bearing the mummified corpse of a winged aphid, beneath which had been spun the cocoon of a parasitic wasp *Praon* sp. (Hymenoptera: Aphidiidae). The leaf, which had been collected in Nunhead Cemetery, London, SE15, had also been attacked by a leaf-mining fly, *Phytomyza ilicis* Curt. (Diptera: Agromyzidae).

ANNOUNCEMENTS

Mr A. J. HALSTEAD distributed some preliminary notices of the 1987 Field Meeting dates and sites. A copy of the list has been placed on the notice board in the collections room.

LECTURE

Mrs L. M. PITKIN gave a talk on the Red Sea corals and some of the marine life associated with them. The talk was illustrated with some of the best, and certainly the most colourful, slides seen at our meetings for many years. The speaker had taken part in a number of diving expeditions in the Gulf of Aqaba, which has about 200 species of coral of diverse form, size and colour. The coral reefs also support many other animals, such as sea slugs, starfish, sea urchins, jellyfish and many fish which make butterflies seem drab by comparison.

26 March 1987

EXHIBITS

The President Prof. J. A. OWEN showed examples of five beetle species showing a remarkable range in size. These were, *Mesites tardii* Curt., *Lyctus brunneus* Steph., *Synchita humeralis* F., *Aleochara curtula* Goeze and *Hylocoetes dermestoides* L.

Mr A. J. E. HARMAN showed examples of the Hippoboscid fly *Ornithomya chloropus* Berg. collected in Fair Isle, August 1986, from a female starling *Sturnus vulgaris* L., these showed examples of phoretically attached lice *Sturnidoecus sturni* Schr. Also, live examples of the bat tick *Argas (Carios) vespertilionis* Lat. collected from a bat roost in Yorkshire in January 1987. He said that this tick has a worldwide distribution and parasitizes virtually any bat species.

MEMBERSHIP

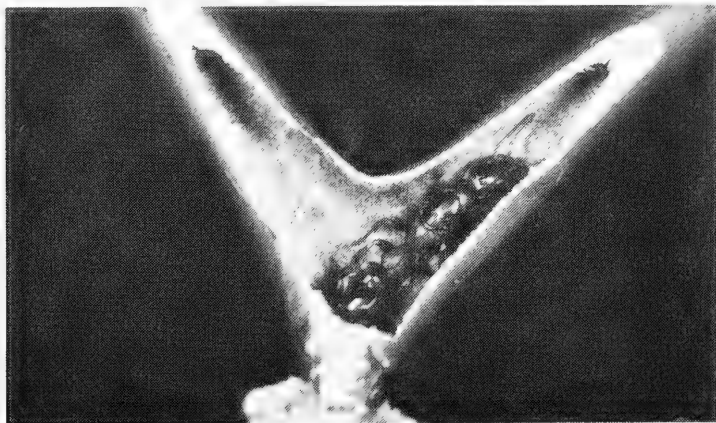
Mr RICHARD COTTLE signed the Obligations Book and was duly welcomed as a member.

COMMUNICATIONS

Prof. J. A. OWEN advised that under the bark of an old oak tree in Richmond Park he had recently found four examples of hibernating queens of the hornet *Vespa crabro* L. He enquired if this find represented an extension in the range of this insect.

LECTURE

A Member, Mr DAVID YENDALL, demonstrated his photographic technique with superb slides which covered a wide range of British natural history subjects, some as small as a collembolon. He followed this with a fascinating photographic wildlife study of the lush Smokey Mountains National Park, the Desert of Sonora National Park and the Suagarro National Monument. From North America he then took us on a brief excursion into the Mexican jungle near Yucatan. This lecture was widely appreciated and a lively discussion followed.



A young queen Bull's ant (*Pseudomyrmex* sp.) in a hollow acacia thorn. When her eggs have hatched, and the colony becomes established, the highly aggressive ants will provide a superb system of defence. Patrolling the leaves non-stop, the ants remove any insects that attempt to feed, deter browsing cattle and even savage encroaching tendrils or leaves of other plants. In return the acacia offers shelter and food—'Beltian bodies' grow on each leaf and are a source of protein and fat whilst nectaries at the base of each leaf stalk secrete sugars.

9 April 1987

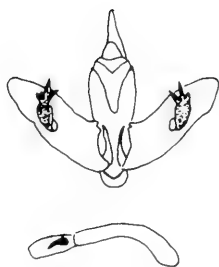
EXHIBITS

Mr G. PRIOR showed some overwintered larvae of the spruce carpet, *Thera britannica* Turner, collected on 2.iv.87 from the tops of spruce trees blown down in the recent gales at Bladon Heath, near Woodstock, Oxon. The larvae were of various ages, ranging from second to final instar.

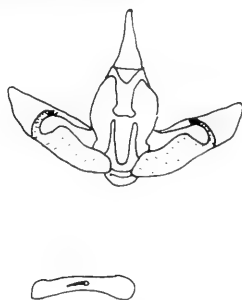
Dr M. HULL showed some specimens of the oecophorid moth *Alabonia chapmanii* Wals. and a drawing comparing the male genitalia of this species and *A. staintoniella* Zell. The moths exhibited were collected at Hoyos del Espino in the province of Avilla in Spain on 18.vii.84. This species was first described by Lord Walsingham from two specimens caught at Behar in June and July 1902 by Chapman. Although the exhibitor's moths were taken in a different province they were all caught in the Sierra de Gredos. The moths were seen flying in numbers close to the ground at dusk but none was attracted to a 125-W mercury vapour light run nearby. This may mean that the moth is more common than the records might suggest. Dr Hull also displayed a colour photograph of a possible new species of pyralid moth *Chrysocrambus* sp. taken at Antequera, Malaga, Spain, on 31.v.82.



Alabonia chapmanii Wals.



Alabonia staintoniella (Z.)



Alabonia geoffrella (L.)

Male genitalia of *Alabonia chapmanii*, *A. staintoniella* and *A. geoffrella*. Exhibited by Dr M. Hull.

The President Prof. J. A. OWEN showed a male and female of a minute staphylinid beetle *Meotica exillima* Sharp taken with others from grass tussocks around a pond on Wisley Common, Surrey, on 21.iii.87. He had not previously taken this species, which appears to be much rarer than indicated in the literature.

ANNOUNCEMENTS

The Secretary Dr J. MUGGLETON announced that the new programme card should be available at the end of the month. Details of two field meetings, Roger Key's weekend meeting at Ravenglass and Wasdale, Cumbria, on 26–28.vi.87, and Prof. J. A. Owen's meeting in the Speyside area, Scotland, on 11–17.vii.87, were given.

COMMUNICATIONS

Mr G. PRIOR recommended members to visit an exhibition on 'Insects in art' at the Ashmolean Museum, Oxford, before it closed on Easter Monday. Mr Prior had helped to compile the catalogue by identifying the insects depicted in the exhibits, which included a scarab ring on a mummified hand.

The Secretary Dr J. MUGGLETON stated that there would soon be two vacancies for entomologists at M.A.F.F., Slough. One post would be permanent, the other a 1-year temporary post, both appointments at the Assistant Scientific Officer grade. Anyone interested should contact Dr Muggleton.

SLIDE EVENING

Four members showed slides covering a wide range of subjects photographed at home and abroad. MARTIN HENDERSON showed a selection of transparencies taken in South Georgia by his brother while working with the British Antarctic Survey. These showed the rich wildlife of the South Atlantic island, particularly the seals, penguins and other birds. ANDY CALLOW showed slides of moths and caterpillars taken in the field, many of which had cryptic colouration. He also showed a series of slides taken during a 1986 walking holiday along the Baltoro glacier in the Karakoram mountains in Pakistan. Insects and other wildlife were scarce but the dramatic mountain scenery, lichens on rocks and wild flowers provided plenty of subjects for the camera. IAN FERGUSON showed some leaf mines, microlepidoptera and their larvae, and beetles photographed in Kent. RAYMOND UFFEN showed slides on the theme of entomological disasters which included garden pests, lost habitats and entomologizing thwarted by adverse weather.

COMMENTS ON EXHIBITS

Mr G. PRIOR noted that the display box used by Dr Hull contained a Vapona insecticidal strip and that the quantity used might be hazardous to health.

Mr A. HARMAN asked the President what staphylinid beetles in moles' nests would feed on. He was told that the larger species are thought to prey on the mole flea and its larvae, while the smaller species might feed on fungal spores or mites. Mr Harman said that when examining sand martin nests he sometimes found staphylinid beetles and wondered whether they might be feeding on fleas in that situation. Prof. Owen said that there was a staphylinid, *Haploglossa nidicola* Fairm., which was closely associated with sand martin nests and it may be a predator of the species of flea which is specific to sand martin nests.

23 April 1987

EXHIBITS

Mr M. HENDERSON showed some beetles associated with carrion that were captured in Glamorgan and Monmouthshire. These were *Nicrophorus vespilloides* Herbst, *Oiceoptoma thoracicum* L., *Thanotophilus sinuatus* F., *Silpha atratus* L. and *S. tristis* Illiger. A bibliography relating to carrion beetles was donated to the library.

Col. A. M. EMMET showed two specimens of the gracillarid moth *Parornix carpinella* Frey which were bred on 10.ii.87 from larvae collected in October 1986 at Chalkney Wood, Essex. Also shown for comparison was an example of *P. fagivora*

Frey bred on 11.iii.87 from a larva collected on beech at Ellenden Wood, Kent, in September 1986. Until 1986 it was thought only one species was involved, as described in *Moths and Butterflies of Great Britain and Ireland* Vol. 2, but following comments made by the Swedish entomologist, Ingvar Svensson, further study has shown them to be distinct. The adult moths are very similar although in the specimens exhibited the terminal segment of the labial palpus of *P. carpinella* is strongly black-banded whereas that of *P. fagivora* is almost immaculate. Longer series of both species will be needed to see if this is a reliable difference. The larva of *P. carpinella* has four black spots on the head, four on the prothoracic plate and has black legs; that of *P. fagivora* has two black spots on its head, four on the prothoracic plate and has green legs. The shape of the early mine and the position of the folded leaf used for later feeding differs between the species. The pupa of *P. carpinella* has about 25 smaller spines in the anterior row on the dorsum of each abdominal segment; that of *P. fagivora* has about 12 larger spines in this position. Both species are rare. Sixteen man hours of searching in a known locality produced four *P. carpinella* larvae, which yielded two moths and one parasite; eight man hours produced a single *P. fagivora*. Col. Emmet asked members to look for these moths and let him have details of any observations that are made.

Mr A. J. E. HARMAN showed a cerambycid beetle of the genus *Batocera* taken in the Kinabalu National Park in Sabah, formerly North Borneo. Also shown was a male and female of the stick insect *Eurycantha calcarata* from Kimbe, New Britain, which is part of Papua New Guinea. Both stick insects were bred from eggs obtained in 1978. This species will eat almost any plant and is now being extensively bred in culture. Some cast skins of scorpions were also exhibited.

Mrs F. MURPHY showed a live chrysomelid beetle, *Chrysolina* sp. found feeding on *Rosmarinus officinalis* on 7.iv.87 near Nerta, Costa del Sol, Spain. She also exhibited a pendant consisting of a scorpion embedded in clear plastic. The species was *Centruroides sculpturatus* which lives in the Arizona desert.

Mr R. SOFTLY displayed some entomological publications he had obtained on recent visits to museums in Tokyo and Moscow. These were an illustrated list of Japanese butterflies, a leaflet on the butterflies of the Moscow region with distribution maps, and distribution maps of other lepidoptera, particularly Geometridae, in the USSR.

Mr P. SOKOLOFF showed live specimens of a tenebrionid beetle taken from a deep litter poultry house where they were present in large numbers in places inaccessible to the birds. They were thought to be an *Alphitobius* sp.

ANNOUNCEMENTS

The Secretary announced that the programme card had been printed and it was hoped that the Proceedings would be ready for distribution in about a week's time. The Field Meeting Secretary displayed a copy of the 1987 programme information sheet.

COMMUNICATIONS

Mr V. R. GOULDING reported seeing two bloody-nosed beetles at Les Platons, Jersey, an apparently non-chalky area, although there was a small chalk outcrop nearby. In the following discussion it was stated that of the two *Timarcha* spp, *T. goettingensis* L., which was probably the beetle seen by Mr. Goulding, was largely confined to chalk areas, while the larger *T. tenebricosa* F. is less restricted.

Mr M. BROWN described seeing a comma and a peacock butterfly 'fighting' over territory at Darenth Wood, Kent, on 17.iv.87. He wondered if such interspecific conflicts were usual. Several members said they had seen similar occurrences.

LECTURE

The scheduled speaker was unable to attend but his place was ably filled at very short notice by three members. Mr P. SOKOLOFF showed a selection of slides of mainly moths and larvae. Mr R. JONES' slides were mostly of beetles, particularly those associated with dead wood and fungi. Mrs F. MURPHY showed slides of spiders and insects taken on a recent visit to Malaga.

14 May 1987

The President, Prof. J. A. OWEN, announced the death of Mr D. W. Thorpe-Young.

EXHIBITS

Prof. J. A. OWEN showed live specimens of the larva, pupa and adult of the xylophagid fly *Xylophagus cinctus* Deg. collected in the Abernethy Forest, Invernesshire. The larvae are found under bark where they are predators of beetle larvae. They take 2 to 3 years to mature and probably pupate in April–May.

Mr G. W. DANAHAR exhibited a specimen of *Hylecoetus dermestoides* L. (Coleoptera: Lymexylidae) taken in a pit-fall trap 5–8.v.87 at the National Centre for Alternative Technology, Machynlleth, Powys. This local beetle is classified by the NCC as nationally notable, being found in less than 100 10-km squares. It is said to be found in and around dead and dying trees but this specimen was taken in a larch plantation with some recently uprooted trees.

Mr A. J. HALSTEAD showed some beetles, believed to be of the family Scolytidae, that had emerged in large numbers from some seeds of the olive (*Olea europea*) received at the RHS Garden, Wisley, from Portimao in Southern Portugal. The internal parts of the seeds had been extensively tunnelled, reducing them to dust filled husks.

ANNOUNCEMENTS

The Secretary, Dr J. MUGGLETON, drew attention to the need to fill the vacant position of Indoor Meetings Secretary.

Mr C. PLANT stated that the Sandwich Bay Bird Observatory, Kent, is keen to update their 1984 Lepidoptera list. Anyone wishing to run a light or record other orders of insects should contact Ian Hunter.

Prof. J. A. OWEN offered two tickets to the Chelsea Flower Show.

Mr M. BROWN said that he and Jim Platt were taking part in an NCC survey of Ham Street nature reserve and would be pleased to receive comparative lists of Lepidoptera and other orders from Orlestone Forest.

COMMUNICATIONS

Dr J. MUGGLETON reported that the tenebrionid beetles shown by Mr P. Sokoloff at the previous meeting had been identified by Dr D. G. H. Halstead as *Alphitobius diaperinus* Panz.

LECTURE

Mr R. A. JONES spoke on the subject of the natural history of a suburban cemetery — Nunhead. Nunhead Cemetery lies in the London Borough of Southwark, about three miles south-east of Charing Cross. And although some of it is still managed for burials, most of the area is overgrown to such an extent that it is now heavily wooded.

In 1840 about 75 acres were consecrated; the hill-top site (with a fine view of London) was landscaped, and grand gates and lodges were built. After commercial success in the 19th century, the cemetery fell into decline with the decreasing mortality and increasing costs of the 20th century. War damage, vandalism and

competition from other cemeteries finally forced its closure in 1969. In 1976 after a special Act of Parliament, Southwark Council bought the cemetery for the sum of £1. They now intend to manage some of the cemetery as burial ground, but the greater part as a nature reserve.

Within the cemetery there is a variety of habitats: open clearings, broad and narrow woodland rides, young woodland and mature woodland. The original planted ornamental trees like horse chestnut, holm oak and turkey oak have grown to maturity, as have the original natural broad-leaf trees like oak, beech, ash, birch etc. Although no 'ancient woodland' species have been found to date, numerous woodland insects occur freely. Butterflies like the Speckled Wood are common along the sun-dappled paths. The avenue of limes supports the Lime Hawk-moth. A rich woodland and clearing flora supports a wide variety of insects. Hoverflies are particularly diverse, including the relative newcomer to our fauna, *Volucella zonaria* (Poda), which is common on the ivy in autumn.

Some insects occur in special association with the man-made habitats of a cemetery. Mosquito larvae breed in water-filled vases on untended graves. Headstones provide hunting grounds for the zebra spider *Salticus scenicus* (L.), or when older, a rich moss flora. The 'graveyard beetle' *Rhizophagus parallellicollis* Gyll. has been found under bark. (This beetle derives its name from the fact that it has been found swarming on graves and on buried bodies, probably in association with fly larvae.)

Even in its heyday, the cemetery was never as grand as Highgate in fashionable North London; nevertheless, it is the final resting place of many wealthy and famous Victorians. These include such notables as Sir Frederick Abel, the inventor of cordite, Sir Ernest Wells Budge, the Egyptologist, Sir Charles Fox, the builder of the Crystal Palace and others. There are even a few naturalists buried there including Edward Newman.

It was at one of Newman's 'entomological evenings' in his house at 7 York Grove, Peckham that the idea of the British (then the South London) Entomological and Natural History Society was first proposed. Newman died in 1876 and was given a Quaker burial. His headstone, now hidden by ivy like those throughout the cemetery, has all but disappeared into the undergrowth of what could be a wild wood anywhere in the English countryside.

28 May 1987

EXHIBITS

Mr A. CALLOW passed round an envelope he had received from Sweden which bore stamps illustrating a chafer beetle *Osmoderma eremita*, a butterfly *Parnassius nemorosyne* and a gentian *Gentianella campestris*.

Mr A. J. HALSTEAD showed some live males and females of the common gooseberry sawfly, *Nematus ribesii* Scop. These had been reared from late instar larvae collected 6.v.87 on gooseberry at the RHS Garden, Wisley, Surrey. This pest species can have up to three generations a year and also attacks red currants.

Mr A. GODFREY exhibited a female *Brachyopa scutellaris* R.-D. (Diptera: Syrphidae). This uncommon hoverfly, which is usually associated with sap runs, was taken by sweeping in Darenth Wood, Kent, on 26.iv.87. Also shown was the local longhorn beetle *Phytoecia cylindrica* L. which was swept in Farningham Wood, Kent, on 5.v.87.

MEMBERSHIP

The names of Alistair Guy Goodall, Barry Perkins Kenwood, Nicholas Onslow, Simon Houghton and Kevin Hothi were read for the second time and elected as members.

ANNOUNCEMENTS

The Librarian, Mr S. MILES, announced that the six booklets in the Cambridge University Press's Naturalists Handbook series had been acquired. These are: *Insects on nettles*, *Grasshoppers*, *Solitary wasps*, *Insects on thistles*, *Hoverflies* and *Bumblebees*. The library had also received from Mr G. Blower a copy of his book on millipedes published by the Linnaean Society in the Synopsis of the British Fauna series.

Mr P. WARING, who is with the NCC at Peterborough, gave details of a project to investigate the habitat requirements of rare moths. This will initially involve the five moths protected by the Wildlife and Countryside Act, namely the Black-Veined Moth, the Reddish Buff, Essex Emerald, New Forest Burnet and the Barberry Carpet. He would like to hear from anyone who has knowledge of the habits of these moths or of successful management techniques. The NCC will also be carrying out habitat surveys of nationally notable species, starting with fenland habitats.

Dr D. LONSDALE gave advance notice of a one-day meeting on the subject of invertebrate recording for site evaluation and management. This will be held on 16th October, 1987, at the rooms of the Royal Entomological Society.

COMMUNICATIONS

Mr J. M. CHALMERS-HUNT reported taking a gravid female Oak Nycteoline moth at West Wickham, Kent at light but, apart from an Eyed and a Lime Hawk-moth, little else of interest had been noted.

Mr R. SOFTLY had seen an *Agrotis ipsilon* Hufn. on 23rd May, Mr P. WARING had recorded a red admiral at Woodwalton Fen on 5th May and Mr D. WILSON had taken two *Autographa gamma* L. at Much Hadham, Herts., on 26th May.

LECTURE

Dr N. W. SOTHERTON of the Game Conservancy Trust described his research into the decline in grey partridge numbers on farmland and the management techniques that were helping to restore their fortunes. Since 1950 grey partridges have become less common on intensively farmed arable land due to smaller broods of chicks being reared. Young chicks feed almost entirely on insects, especially chrysomelid beetles, sawfly larvae and heteroptera. The use of herbicides has reduced the floral diversity of crops and has eliminated many of the insects associated with weeds. Screening of insecticides and fungicides commonly used by farmers has shown that they vary in their effects on non-pest insects. One fungicide was found to have a pronounced effect on some insects, including beneficial species that prey on cereal aphids. By using the more selective chemicals farmers can achieve pest, disease and weed control without destroying the partridge chicks' food.

Another management technique is to leave an unsprayed 6-metre strip around the headlands. This allows weeds to grow, including some once common crop weeds that are rarely seen today, such as pheasant's eye. Insect numbers and diversity in these conservation headlands increases and they prove attractive to butterflies seeking nectar. Several farms have adopted these procedures and the numbers of partridges and their brood size have been monitored. In all cases the numbers of partridges have increased significantly and pheasant numbers have also improved. The unsprayed strips cause about a 6 per cent crop loss in the headlands but the loss for the whole field is less than 1 per cent. The speaker stressed the need for practical conservation

methods that farmers can adopt without having to make expensive or inconvenient changes in their farming practices.

COMMENTS ON EXHIBITS

Prof. J. A. OWEN said that while most cerambycid larvae spend years gnawing away at wood, the larvae of *Phytoecia cylindrica* feed on the juicy stems and roots of umbelliferous plants.

11 June 1987

The Vice President Mr J. M. CHALMERS-HUNT, in the chair.

EXHIBITS

Mr R. A. JONES showed two insects taken on 24.v.87 in Henfield Wood, Scaynes Hill, near Haywards Heath, Sussex. These were the cerambycid beetle *Stenostola ferrea* Schr. and a lacewing *Osmylus fulvicephalus* Scop. (Neuroptera: Osmylidae). The former is a very local beetle associated with lime trees, beneath which this specimen was swept. This is the second record for Sussex, the first being in Buxted Park by Mr P. Hodge. *Osmylus fulvicephalus* is the largest British lacewing. It is widespread but local and tends to occur in damp woodland. It is often found resting in large water culverts under roads and railways.

Mr A. J. HALSTEAD exhibited a melanic specimen of the common garden chafer beetle, *Phyllopertha horticola* L., together with a specimen with the normal brown elytra for comparison. Both were taken on wild rose flowers at the Sheepleas, near West Horsley, Surrey, on 30.v.87. Also shown was a live female of the social pear sawfly, *Neurotoma saltuum* L. (Hymenoptera: Pamphiliidae). This had been bred from larvae on a pear tree at Slough, Bucks, and had emerged on 11th June. This sawfly is of widespread but local occurrence and is more likely to be seen as larvae than adults in the field. The carrot-coloured larvae are gregarious and live amongst silk webbing on pear, hawthorn and *Prunus* spp.

Mrs F. MURPHY showed a spider in amber which came from the estate of the late Eric Gardner and was given to the exhibitor by Eric Classey. It was not a genuine fossil as close examination showed a layer in the amber where hairs from the spider had been rubbed off during manufacture of the amber spider. The spider was also neatly arranged with its legs extended, unlike spiders which have become entrapped naturally in resin.

COMMUNICATIONS

Mr R. A. JONES stated that although his house at Peckham had no cellar, he had discovered under the floorboards three specimens of the tenebrionid beetle *Blaps mucronata* Latr., one of which was alive. This beetle, commonly known as the churchyard beetle, is usually associated with outhouses, stables and cellars.

LECTURE

Dr P. A. SELDON spoke on fossil arachnids and showed how recent research had pushed back the earliest known dates for many arachnid groups. They were evidently well represented amongst the earliest land animals. Some extinct arachnids, such as the eurypterids, are so well preserved as fossils that it is possible to study the fine detail of their structure and deduce their three dimensional form and probable mode of locomotion.

25 June 1987

EXHIBITS

Mr M. HENDERSON displayed an album of colour photographs taken on a recent visit to the Charles Darwin Museum at Downe House, Downe, Kent. One of the exhibits photographed was Darwin's stone which he used in experiments to determine the rate at which earthworms bury objects by depositing worm casts on the soil surface.

Mr B. GOATER exhibited a male *Costaconvexa polygrammata* Borkh. (Lepidoptera: Geometridae) taken on 12.vi.73 at Hampton, Middx., by Eric Classey and given, unidentified, to the exhibitor. Its identity was established in June 1987 after an examination of the genitalia had been made. This species has apparently not been seen in Britain since the middle of the last century when it could be taken in some numbers at Burwell Fen before it was drained. This specimen may be a migrant but it is possible it has survived in what little remains of the marshy London basin in West Middlesex. In Europe it is known to be secretive and easily overlooked. According to Skou (1986, *The Geometroid Moths of North Europe*) it occurs in Denmark as a scarce migrant.

Mr Goater also showed two moths previously unrecorded in France. These were a geometrid *Lycia florentina italica* Harrisson and a noctuid *Evisa schawerdae* Reisser. The former was a male taken at light on the Col de Braus, Alpes Maritimes, on 12.iii.84. This specimen was shown at the 1984 Annual Exhibition. Another specimen had been taken in the same locality in April, 1976, by the late Francis Dujardin but this record was not published. The specimen of *E. schawerdae* was taken in the mountains of the Department of Drome near Crest on 21.viii.86. Although known from Sardinia and Corsica, this is the first record for mainland France.

Prof. J. A. OWEN showed a specimen of the staphylinid beetle *Atheta immigrans* Easton taken on the foreshore at Inverness on 12.vi.87. This was the exact spot where Dr A. Easton discovered the beetle 19 years previously. He collected 36 examples and sent them to authorities around the world who could not name it as it was not only new to Britain but also new to science. Since then it has been found at various coastal sites in Britain, including the south coast. Dr Easton and others believe the beetle to be a recent immigrant to Britain from a yet to be discovered location. Later in the evening Prof. Owen showed a recent slide of the stony, litter-strewn foreshore where Dr Easton had made his discovery—the moral being that even unimpressive sites are worthy of investigation.

Prof. Owen also circulated a computerized beetle list entitled 'A numerical list of British beetles' that had been produced by himself and Ian Carter. This updates the Kloet and Hincks list by R. D. Pope and includes about 100 species added to the British list in recent years. Copies are available for a nominal charge from Ian Carter.

Mr M. W. F. TWEDIE showed a male and female *Eilema deplana* Esp. (Lepidoptera: Arctiidae) bred from larvae beaten from spruce at Beckley, Sussex, in April. They were reared on *Pleurococcus* algae on conifer bark. The female had an unusually conspicuous yellow costal streak, so that it resembled a common footman. He later showed a slide of the larva.

COMMUNICATIONS

Mr A. J. HALSTEAD recalled that he had shown the 27.xi.86 meeting a hibernaculum of the brown tail moth, *Euproctis chrysorrhoea* L. taken in Woking, Surrey. He reported that larvae had survived the winter in large numbers and were

now pupating, having extensively defoliated the hawthorn hedge on which they were found.

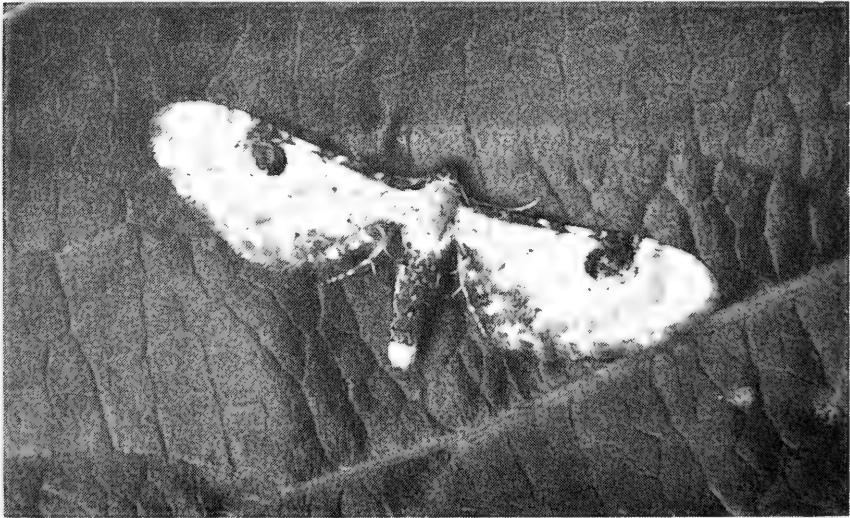
Mr R. A. JONES reported seeing large numbers of the hoverfly *Volucella pellucens* L. at Nunhead Cemetery. He also noted some plants of the milk thistle, *Silybum marianum* (L.) in flower at the edge of a car park near Vauxhall Bridge.

SLIDE EVENING

Mr M. W. F. TWEEDIE showed a series of slides to illustrate the diversity of resting postures in the Lepidoptera. The distinctive posture shown by moths in the field and the colour arrangement of the wing markings is very different to that shown by set specimens. In the discussion that followed it was suggested that it was necessary for moths to have different postures in order to fool predators. Entomologists also have difficulty in searching for different groups of insects; Prof. Owen mentioned his difficulties in attempting to sort coleoptera and hymenoptera simultaneously from a malaise catch, while Col. Emmet had problems in searching for different types of leaf mine. Mr R. Softly noted that some geometers, such as the winter moth, had different postures for resting and roosting. Col. Emmet said that resting moths could be distinguished from roosting specimens because the latter had their legs tucked under their bodies, whereas the legs are visible on resting moths.

Mr R. A. JONES showed slides taken earlier in the year in Florida. These illustrated some of the rich animal and plant life found in that sub-tropical state.

Mr A. J. HALSTEAD's slides depicted some of the more interesting pests and other animals that can be found in gardens.



Lime-speck Pug, *Eupithecia centaureata*. Believed to be protected from predators by its resemblance to a bird-dropping, this geometrid rests with the wings extended sideways, but with the forewings almost covering the hindwings, a rather unusual posture. Shown by Mr M. W. F. Tweedie,



One of the remarkable multitude of Florida dragonflies, possibly a *Tramea* species. Shown by Mr R. A. Jones.

9 July 1987

The Vice-President Mr J. M. CHALMERS-HUNT in the chair announced the death of Mr John Heath, a past President of the Society.

EXHIBITS

Mr R. A. JONES showed a single specimen of *Magdalis memnonia* (Gyll.) (Coleoptera: Curculionidae) taken on the wing over a pile of cut pine logs, in central High Wood, Burwash, East Sussex on 20.vi.84 by Mr A. W. Jones. This is the second British locality for the beetle. This weevil was found new to Britain in June 1971 by Mr P. Hodge; its larvae were boring the tips of Corsican pine, slightly 'browned' by the salt air. Burwash is about 17 miles from Friston, is further inland and the trees are not under 'salt stress' from sea winds. At present this species is denoted Red Data Book status 3 (not threatened but very localized), but with this second locality, its spread seems to have begun, and its status may soon warrant reclassification.

LECTURE

Mrs F. M. MURPHY spoke on 'Spider hunting in New Zealand', and has kindly provided the following resumé.

A trip to New Zealand, the land of living fossils

We went to New Zealand in January 1986, breaking both journeys, out and back, for a week in Singapore. There we stayed with a Chinese arachnologist and his family and were introduced to their spiders in the jungle reserve on Bukit Timah and the land by the reservoirs. This tropical rain forest was in some ways curiously like the temperate rain forest of Fiordland in the South Island of New Zealand.

Since one has to fly to Auckland we spent a week in North Island before going to Dunedin to stay with New Zealand's arachnologists, Drs Ray and Lyn Forster. We made trips to remnant forest near Dunedin as well as Fiordland and Stewart Island in the far south.

New Zealand is a very strange place with a remarkable lack of native vertebrates, two or three rare frogs, some skinks and geckoes, none too many bird species, two bats and a sealion are found there, together with the famous tuatara, the last survivor of a Jurassic order of reptiles. I have known about the lack of mammals from my student days when I attended a course of lectures on their distribution. This was before continental drift was generally accepted and land bridges popped up and down and vegetable 'rafts' sailed about in order to explain the oddities of mammal distribution. There are, however, lots of invertebrates in New Zealand.

In the UK we have 26 species of harvestmen, New Zealand, with much the same area, has 170! The spiders are by no means all described but they are fascinating. For example *Aotearoa magna* belongs to the Archaeidae a group originally described from the Baltic amber but now found in Madagascar and New Zealand. On the other hand *Dolomedes minor* is very like our own *D. fimbriatus* (though not the same species or one would believe that it had been introduced). We saw two species of Gradungulids, four-lunged members of the true spiders, both hunting spiders with one very long tarsal claw giving a characteristic appearance.

We also saw land flatworms on the tree trunks at night and two species of Onychophora or velvet worms and the curious native slugs with only one pair of tentacles. The velvet worms were found—like so much of the New Zealand fauna—on the underside of rotting logs.

Examination of a world map will show that New Zealand is the only sizeable piece of land *not* linked by a relatively shallow continental shelf to the rest of the world, indication that during the last ice-age it was one of the few 'islands' *not* attached by a land bridge. Eighty million or so years ago New Zealand *was* attached to the rest of Gondwanaland through Australia and an unfrozen Antarctica. Now it is 1000 miles out into the Pacific and (apart from the frozen wastes of Antarctica) the largest and loneliest part of former landmass in the world.



Pianoa isolata—a recently described Gradungulid.

OFFICERS' REPORTS

COUNCIL'S REPORT FOR 1986

The Council met seven times during 1986 with, on average, 15 members attending each meeting.

The Society's membership was 708 at the end of the year, and 51 new members were elected during the year. Against this 38 members had to be struck-off for non-payment of subscriptions, 10 resigned and two deaths were reported to the Society. Three members, Messrs E. W. Classey, E. Gowing-Scopes and N. A. Richardson, completed 50 years continuous membership at the end of 1986, and in recognition of this the latter two were elected Special Life Members; Mr Classey is already an Honorary Member.

Several of the Society's long serving Officers are resigning at this meeting. Mr S. N. A. Jacobs as a Trustee, Mr R. W. J. Uffen as Editor and Mr K. G. W. Evans as Exhibition Secretary. All these gentlemen have served the Society for many years in a number of capacities and the Society's especial thanks are due to them.

Messrs R. A. Jones and A. J. Halstead organized 19 indoor and 19 field meetings during the year. Many were well attended but, as usual, the number of members attending varied greatly, sometimes quadrupling from one indoor meeting to the next. The Indoor Meetings Secretary finds it very difficult to predict which subjects will appeal to the largest number of members. On taking over the post of Editor, Richard Jones will be resigning as Indoor Meetings Secretary (and also as Lanternist) but he hopes to complete the 1987/88 programme first. Four 'Open Days' have been held during the year, these give members the opportunity to visit the collections and library for an afternoon on a weekday or weekend. The Society continues to occupy the rooms at the Alpine Club under the terms of a licence granted by the Alpine Club and renewed every 6 months.

The Annual Exhibition was well attended and again well organized by Mr K. G. W. Evans who sadly is resigning as Exhibition Secretary. Dr B. MacNulty again ensured that the Annual Dinner was a success and the numbers attending increased slightly. He has also negotiated for the Annual Exhibition to be held at Imperial College on the same day as the Dinner in 1987. The Council hopes that this new arrangement will attract more members to both events; car parking should be much easier.

All the Society's publications continue to sell well and Mr N. A. Callow has to deal with a continuous stream of orders from home and abroad. A second edition of 'British hoverflies', with a supplement to the first edition, has been printed and will shortly be available for sale. No new publications appeared this year and the Council reluctantly took a decision not to proceed with a proposed book on dragonflies because of competition from several commercial ventures. A series of illustrated Microlepidoptera papers is being prepared and should be published as part of the 1987 'Proceedings'. The Society's next major publication is planned from 1989. Production difficulties meant that only a single issue of the Proceedings appeared in 1986 and that its appearance was much delayed. The Council regrets that members will have been disappointed in this way. However plenty of copy appears to be available for the coming year and we hope that members will support the new Editor by ensuring a continuing supply of copy. Last minute changes in plans to distribute the Proceedings add greatly to the burden on our Distribution Secretary, David Yendall, but somehow he continues to ensure that the Proceedings and Society notices arrive in our letterboxes.

In last year's Presidential Address mention was made of the possibility of seeking common premises with the London Natural History Society. The matter was discussed by Council during 1986 but in the end we reached the conclusion that the Society could not afford to proceed with this idea at the present time. During the year the Society's opinion was sought, by the Nature Conservancy Council, on the Quinquennial Review of the Wildlife and Countryside Act under which changes to the list of protected species on Schedule 5 and the regulation of trade in rare and declining native butterflies were proposed. The Society continues to be represented on bodies concerned with conservation, such as the Joint Committee for the Conservation of British Insects and Wildlife Link.

HONORARY TREASURER'S REPORT FOR 1986

For the first time since 1st January 1982, it has been necessary to make an increase in subscription rates, but, even so, it has been possible to restrict this rise to well below the rate of inflation over this period.

A superficial look at the Income and Expenditure account might prompt the question as to why it was necessary to raise subscriptions at all, as the overall surplus in 1986 is slightly in excess of that in 1985. However, the yield from subscriptions was over £1800 less than the cost of running the Society, and would probably have been over £3000 less had the normal pattern of producing 2 parts of 'Proceedings', one with coloured plates, not been interrupted for reasons other than financial. The shortfall was met, and the higher one could have been met if necessary, this year, from interest and dividends; but anticipated capital expenditure is expected to reduce this interest in future years. For instance, the Royal Society loan has now been repaid, the printing and binding bills for 1000 copies of 'British hoverflies' reprint is awaited, a computer and software to take on subscriptions and membership records will be obtained in 1987 if a current study shows this to be advantageous, a modern binocular microscope for use by members at the Society's rooms will be purchased and it is hoped that six illustrated papers on Microlepidoptera will be published in two parts during 1987, to name some of the immediate expenditure. Besides reduction of capital for short-term investment, a fall in interest rates could further reduce the yield from interest, so subscription rates must more nearly cover general membership costs. The ability to keep subscription rates so low is solely due to the immense amount of work that officers, assistant officers and other members perform on behalf of the Society at no cost.

I should like to close my report by thanking the Assistant Treasurer, Geoff Burton for all his hard work. He is responsible for both subscriptions and membership records and a year when subscription rates change is always a difficult one, but, if all members will ensure that their subscriptions are paid promptly by the 1st of January each year at the correct current rate, the burden of his duties will be eased considerably. I regret to say that this has not happened this year, and when Geoff Burton checked standing order receipts, 31 per cent of members had failed to amend them. This means over 100 letters had to be sent, plus probably a slightly lesser number of cheque-paying members who have either paid at the old rate or forgotten to pay at all. I really must ask members to give thought to the vast amount of unnecessary work generated by their overlooking to pay the correct subscription when due, and to show some consideration to the Assistant Treasurer.

The Society's thanks are also due once again to our Honorary Auditors Tony Pickles and Reg Bell for carrying out the audit of our accounts.

COL. D. H. STERLING

British Entomological and Natural History Society
Balance sheet as at 31st December 1986
Funds

	1985		1986	
£	£		£	£
	14464	<i>General fund</i> —Opening balance	16668	
		Gain on investment disposal	3864	
16668	2204	Excess of income over expenditure	2296	22828
	2308	<i>Housing fund</i>		2308
	13714	<i>Special publications</i> —Opening balance	15187	
15187	1473	Surplus from sales	993	16180
	26702	<i>Hammond bequest fund</i> —Opening balance	27740	
	2947	Income	3121	
	29649		30861	
27740	1909	Expenditure	55	30806
	3037	<i>Hering memorial fund</i> —Opening balance	3144	
	191	Gain on investment disposal		
	366	Income	371	
	3594		3515	
3144	450	Expenditure	300	3215
65047		Total funds		75337
				75337
		These funds are represented by:—		
		<i>Investments at cost (details appended)</i>		
	20722	General investments	24586	
23658	2936	Hering memorial fund investments	2936	27522
		<i>Stock</i>		
	1681	Special publications at cost	1074	
1915	234	Christmas cards	127	1201
		(The value of the library, collections, ties, and back numbers of 'Proceedings' is not included in the accounts)		
		<i>Liquid assets</i>		
	36248	N.S. investment account	40313	
	1268	Debtors and advance payments	922	
	3742	Cash on deposit account	7200	
	2007	Cash on current account	3495	
	43265		51930	
		<i>Less:—</i>		
	1500	Royal Society loan (repaid 1986)		
39474	2291	Subs. in advance, amounts owed and provisions	5316	46614
65047		Total assets		75337
				75337

Schedule of investments as at 31st December 1986

		Book value at cost		Assessed current market value	£
		General	Hering memorial		
		£	£		
£1600	Agric. Mort. Corp. 9½% 1985-8	646.49	646.48	@ 95	1520
410	Shell T & T 25p Ord.	477.79	771.83	@ 988	4051
150	Unilever 25p Ord.	248.45		@ 21 7/8	3281
£450.35	Treas. 9½% 1999		400.00	@ 93 25/32	422
£4098.0	Treas. 13½% 1993	4041.44		@ 114	4672
£6836.92	Treas. 8¼% 1990	5910.00	300.00	@ 93 5/16	6379
£2138.90	Funding 5¾% 1991	1670.00		@ 86 7/8	1858
4776	Charifund Units M & G	11592.00	817.24	@ 412.2p	19687
		24586.17	2935.55		41870

British Entomological and Natural History Society
Income and expenditure Account for 1986

1985		1986	1985		1986
£		£	£		£
3271	Publications account	2387	4732	Subscriptions	4526
1724	Rent and insurance	1762	3585	Interest and dividends	4022
617	Stationary and general expenses	704	57	Donations and bequests	106
521	Indoor meetings and exhibition	630	94	Surplus on sales	7
9	Cabinets and collections	197			
106	Subs/donations other societies	99			
16	Library	580			
	Shortfall on 1985 dinner	6			
2204	Excess income over expenditure	2296			
8468		8661	8468		8661

Publications account for 1986
(Publications free to members)

3767	Production of 'Proceedings'	2376	293	Sales	337
645	Distribution costs	348	848	Hammond bequest grant for plates	
			3271	Net cost to income & expenditure	2387
4412		2724	4412		2724

Special publications account for 1986
(Publications for sale)

3539	Opening stock	1681	3854	Sales	1730
168	Hoverfly addl. costs		1681	Closing stock	1074
355	Distribution & general costs	130			
1473	Surplus to Spl. publications fund	993			
5535		2804	5535		2804

AUDITORS REPORT

In our opinion the annexed balance sheet gives a true and fair view of the Society's affairs as at 31st December 1986 and the income and expenditure accounts give a true and fair view of the Society's results for the year.

A. J. PICKLES FCA

R. A. BELL

THE PROFESSOR HERING MEMORIAL RESEARCH FUND, 1986

A single award of £300 was agreed by the Committee to support the work of Mr P. H. Sterling of the Department of Zoology, Oxford University. Mr Sterling is assessing the effect of certain land management techniques (coppicing in hazel woodland, and sheep-grazing for the restoration of limestone grassland) on leaf-miners. Initial studies suggest that the coppicing may reduce numbers of leaf-miners in recently cut hazel woods, so that the technique should be used with caution. The award is made to meet part of the cost of fieldwork for the 1987 season in which the recipient intends to expand his range of field sites. Leaf-miners are particularly suitable for such habitat-assessment since numbers of individuals, and usually species, can be measured by the direct searching of leaves. It is gratifying that the fund is able to support a project on leaf-miners, the results of which are expected to be of such potential importance for conservation.

Mr Ashley Kirk-Spriggs, a recipient of a Hering award in 1984/85, submitted a report on his study of the parasites and predators of rice pests from Sulawesi. To date 10 000 insects have been mounted and labelled, considerable progress has been made on identification, and over 5000 specimens have been sent to specialists.

M. J. SCOBLE

CURATORS REPORT 1985

The Editor regrets, but due to an oversight, this report was omitted from the Officers' Reports published in Vol. 19, p.79.

The first thing that I want to mention this year is the state of the Joy collection of Coleoptera. Some queries have been made concerning this collection, which has, over the last two years suffered from attacks by *Anthrenus*. As a result, a few specimens were lost. For the time being, the drawers have been treated and placed in other cabinets, until such time that the collection can be brought together again as a whole. There was some concern as to whether the collection contained any important or type specimens. I decided to consult the British Museum, to see if they could provide any information about Joy or his collection. Mr Peter Hammond, of the Department of Entomology (Coleoptera) was able to tell me that Joy, fortunately, presented his type, and other important specimens to the British Museum during his lifetime.

It has been suggested that the collection, which is of historic importance, be located in the British Museum. The British Museum would be very willing to accept the collection, and take good care of it; but this would, in all probability, result in its dispersal, and against what I think was Joy's intention. It would also be more difficult of access and study by members. What is essential at the moment, is for a member of the Society to re-arrange the Joy collection, compatible with his Handbook of British Beetles.

The Society holds several important collections of insects, which it should retain intact as far as is possible. If members keep their eyes open for any sign of *Anthrenus* or mites when studying the collections, and inform the curator if they find evidence of these pests, we need not worry unduly. The problem with *Anthrenus* is now, we hope, under control.

Whilst on the subject of collections and Coleoptera, it has been brought to my notice that a specimen of *Carabus intricatus* L. is missing from the Society's main collection of Coleoptera. This specimen has not been loaned as far as I am aware. If a

member has the specimen on loan, or has any knowledge of its whereabouts, would they please let the curator know.

Several members have enquired about surplus cabinets. It was mentioned in 1984 and last year that there was a possibility of one or more cabinets being made available for purchase. Unfortunately, the situation is still the same as reported in 1985. Until the thinning and emptying of drawers, there is little hope of freeing any in the near future.

I am very pleased to report the receipt of a further collection of Scandinavian Lepidoptera from our Swedish member Stig Torstenius. This will add to our already fine collection from that region. I must also thank Mr Brad Ashby who will be re-arranging the specimens in a cabinet provided for that purpose.

A start has been made by Mr P. J. Chandler on checking and re-organising the Hymenoptera. The main collections are in continuous use at all meetings, and a number of specimens have been loaned to members for research purposes. Duplicate specimens of macro- and microlepidoptera are now reduced somewhat, due to members depredations. It is hoped to make more available in the near future.

Sales of Society ties have reduced the stock to a low level; only two colours remain. An order for new supplies in maroon, green and blue has been placed. They should be available for sale later in the year.

Donations to the Society's collections were made during the year. The thanks of the Society for the specimens go to Dr F. H. N. Smith, Mr S. Torstenius and E. S. Bradford.

Once again I must thank Mr P. J. Chandler, Mr. W. Parker, Mr. B. Ashby and other members for their help and advice during 1985.

E. BRADFORD

HONORARY CURATOR'S REPORT FOR 1986

Firstly, I would like to thank Eric Bradford for his assistance in ensuring a smooth transfer of the curatorship. There has been steady progress during the year in several areas but no major changes affecting the Society's collections.

The battle against *Anthrenus*, which has periodically afflicted the collections in recent years, has continued. Damage has been sustained at different times to a small number of specimens in at least three cabinets and steps have been taken to eliminate the problem. Thanks are due to those members who have drawn my attention to evidence of this attack.

Bill Parker has continued his work on the Macrolepidoptera collections and has particularly assisted in selecting the more desirable specimens from collections acquired in recent years. A projected rearrangement of the British Butterflies in two Hill units has now received fresh impetus as Mr D. A. Moore has undertaken to do this work according to a plan suggested some years ago by Mr B. F. Skinner; Mr Moore has begun to implement this plan.

The original Coleoptera collection including material collected by Ashdown, West and Kemp has been amalgamated with the Henderson collection and duplicate material segregated. A specimen of *Carabus intricatus* L. collected by Dr Leach, which had been announced last year as being lost, has been discovered to be in this collection. It is planned to rehouse the Joy collection of Coleoptera, which has been scattered through several cabinets in recent years, in a series of Hill units which are currently being made ready by Mr L. Christie. This collection will be restored to the arrangement in Joy's *Handbook of British Beetles*.

Most of the store boxes containing miscellaneous insects have been cleared. These, together with a redundant cabinet, various other equipment and duplicate specimens of Lepidoptera, were sold at the Annual Exhibition and through the invaluable efforts of Bill Parker realized a substantial sum, which it is intended to put towards the purchase of a stereoscopic microscope for use in the Society's Room.

No collections have been acquired during the year but some specimens have been donated by Mr B. West and the President, to whom my thanks are due.

P. J. CHANDLER

HONORARY LIBRARIAN'S REPORT FOR 1986

A total of 68 journals were bound during the year as result of the Society's success in obtaining a grant of just over £1100 from the British Library for this purpose. Due to the high cost of bookbinding nowadays the Society owes many thanks to the British Library for its splendid assistance.

Some more journal exchange terminations are being contemplated, where such foreign journals are concerned mainly with the Nearctic region.

A full list of all books overdue going back to 1962 has been made. Currently a stock-take of the books and journals held in the Library is also being undertaken. The number of books borrowed for far beyond the loan period is still excessive, making unnecessary extra work for the Librarian and his assistants. That other probably inevitable problem afflicting libraries, theft of books (or at least books being borrowed without record of the borrower being left), has befallen the Society during the past year. All of our copies of the *Transactions of the Norfolk and Norwich Naturalists' Society* have gone missing. These journals were only reinstated to the Library in 1985 after non-receipt for 20 years, making their unrecorded loss particularly annoying.

The sighting by one member of two of the Society's volumes by J. W. Tutt on the British Noctuae, for sale on an entomological bookseller's stall was disturbing. Unfortunately it has not proved possible to trace the original borrower of these books, or to recover them.

Sales of books and journals surplus to Library requirements realized £331.50 during the year. Due to the bulk of desirable duplicate items having been sold in recent years, mainly at Annual Exhibitions, this valuable source of extra income will be much reduced in the next few years.

I would like to thank all those individuals and organizations who have given books to the Society during the past year, particularly Mrs F. Murphy, Dr I. McLean and Dr J. D. Bradley. Finally I would like to convey special thanks to Mr J. Dobson and particularly to Mrs Frances Murphy for their help in the running and organization of the Library.

S. R. MILES

Erratum

Volume 20, Part 3, Page 113

Line 5 should read:

Phthinia humilis (Winnertz) var.; Hutson, Ackland & Kidd, 1980: 54, Fig 223.

Misident.

EDITORIAL

THE FUTURE OF THE SOCIETY'S JOURNAL

In 1968 the Society changed its name from the South London to the British Entomological and Natural History Society; a reflection of its changing membership.

Since then, the Society has continued to grow and change, and so has the journal. The 'Proceedings and Transactions' has become much more than just the organ by which members are kept in touch with Society news and events. Most of the articles published are no longer 'papers given before the Society', but are original scientific articles in their own right. They are nevertheless of interest and use to a nationwide indeed a worldwide membership.

In view of this change, a recommendation of the Publications Committee to alter the title of the Society's journal was accepted at the Society's Council Meeting on September 3rd.

As from 1988, the new title of the Society's journal will be *British Journal of Entomology and Natural History*.

Despite this change, and minor alterations to the layout and design of the journal, the content will remain as it is at present. Along with full-length papers on all aspects of entomology and natural history, will appear short communications, book reviews, letters, announcements and full reports of Indoor and Field Meetings and the Annual Exhibition.

It is also intended to continue the practice, started with this year's volume, of publishing 192 pages per year in four parts. To ensure that this can continue, a steady supply of articles and notes is required, please continue to send all you can.

RICHARD A. JONES



B.E.N.H.S. PUBLICATIONS—1987 MEMBERS' PRICE LIST

For non-members add 50%. Postage and packing extra.

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A special discount of 20% will be allowed on sales of 10 or more consecutive volumes. Separate parts of volumes so published can be supplied on demand at prices proportionate to those of the whole volumes (except 1963 and 1968, listed above). No copies are at present available of 1920-1, 1922-3, 1944-5.

THE NEW AURELIANS (1972)	1.00
LARVAE OF BRITISH LEPIDOPTERA NOT FIGURED BY BUCKLER	10.00
FIELD GUIDE TO THE SMALLER BRITISH LEPIDOPTERA (1979)	6.00
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BRITISH HOVERFLIES: 2nd hard back edition	15.00
Supplement to 1st edition	1.00
AN INTRODUCTION TO THE GELECHIIDAE (8 pp., 1 col. pl.)	
<i>Teleiodes & Teleiopsis</i>	1.60
THE BRITISH ARGYRESTHIINAE AND YPONOMEUTINAE (26 pp., 2 col. pl.)	3.50

THE PROFESSOR HERING MEMORIAL RESEARCH FUND

The British Entomological and Natural History Society announces that awards may be made from this Fund for the promotion of entomological research with particular emphasis on:—

- (a) Leaf-miners,
- (b) Diptera, particularly Tephritidae and Agromyzidae,
- (c) Lepidoptera, particularly Microlepidoptera,
- (d) General entomology,

in the above order or preference having regard to the suitability of candidates and the plan of work proposed.

Awards may be made to assist travelling and other expenses necessary to field work, for the study of collections, for attendance at conferences, or, exceptionally, for the costs of publication of finished work. In total they are not likely to exceed £250 in 1987.

Applicants should send a statement, if possible in sextuplicate, of their qualifications, of their plan of work, and of the precise objects and amount for which an award is sought, to Dr. M. Scoble, Department of Entomology, British Museum (Nat.Hist.), Cromwell Road, London, SW7, as soon as possible and not later than 30th September, 1987.

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INSTRUCTIONS TO AUTHORS

Contributions must be double-spaced with 3cm margins either side to facilitate marking up. They should be typed if possible, on one side only of A4 paper. Layout should follow that of the journal, but apart from underlining scientific names, no marks should be made to define typeface.

Line and continuous tone figures are accepted. Writing on figures is best listed separately for setting and its placing indicated on a duplicate figure. Seek advice before drawing. Reduction may otherwise necessitate redrawing.

Authors of original papers of more than one page qualify for 25 free reprints. Extra copies (prices on application) must be ordered when proofs are returned.

MEETINGS OF THE SOCIETY

are held regularly at the Society's Rooms, but the well-known ANNUAL EXHIBITION and ANNUAL DINNER are planned for the 24th October 1987 at Imperial College, London SW7.

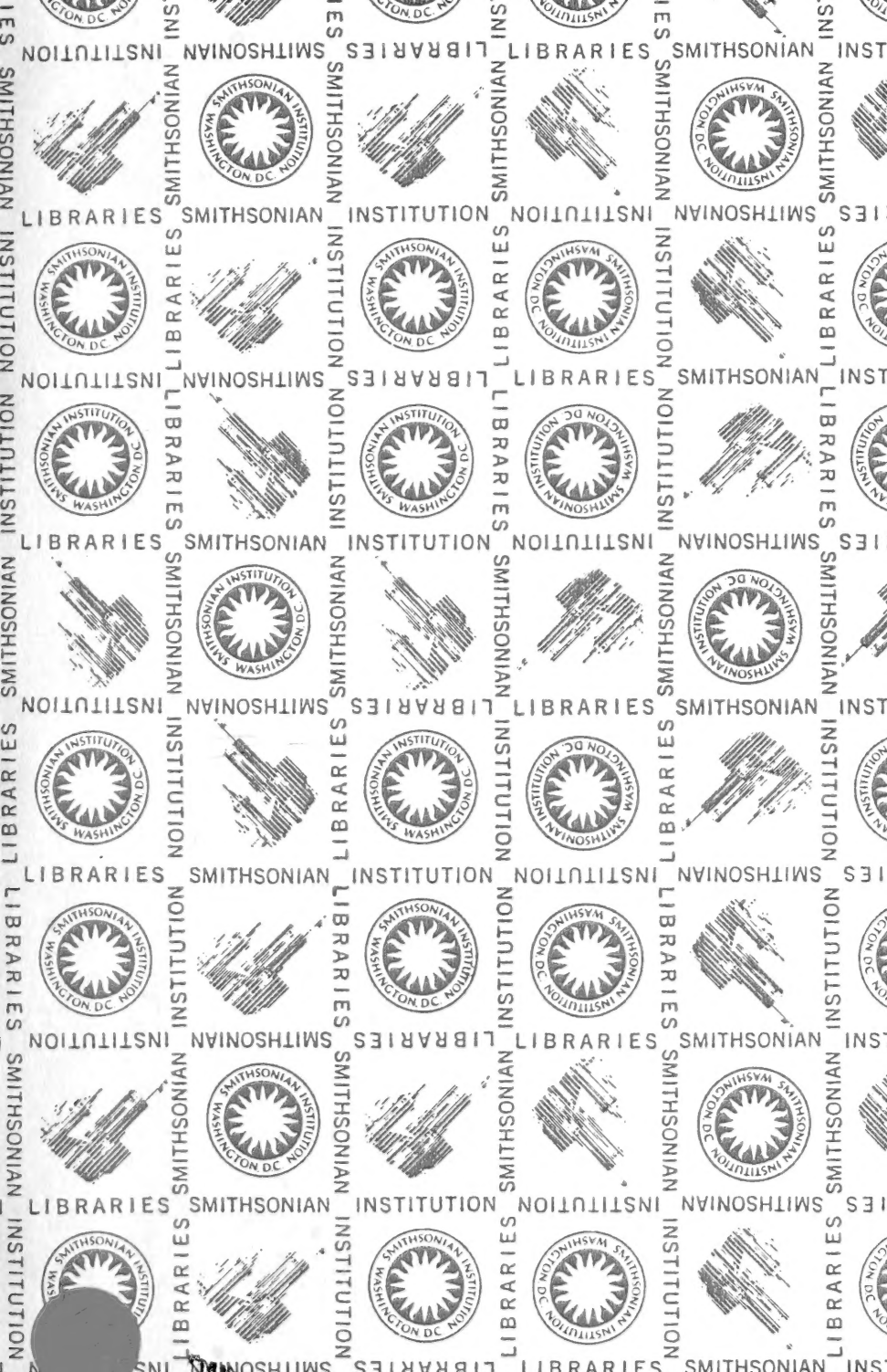
Frequent Field Meetings are held at weekends in the Summer. Visitors are welcome at all meetings.

The current Programme Card can be had on application to the Secretary at 32 Penton Road, Staines, Middx, TW18 2LD.

SUBSCRIPTION RATES 1987

London members £11.50, Ordinary members £6.50, Juniors £3.00. Send to: Asst. Treasurer, Mar-y-Mar, Minster Drive, Minster-in-Sheppey, Kent, ME12 2NG.





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