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Cover illustration: Duke of Burgundy fritillary, *Hamearis lucina* (Linnaeus). Photo: Richard Revels.

NOTE: The Editor invites submission of photographs for black and white reproduction on the front covers of the journal. The subject matter is open, with an emphasis on aesthetic value rather than scientific novelty. Submissions can be in the form of colour or black and white prints or colour transparencies.

NYSIUS SENECIONIS (SCHILLING) (HEMIPTERA: LYGAEIDAE) NEW TO THE BRITISH ISLES

PETER J. HODGE

8 Harvard Road, Ringmer, Lewes, East Sussex BN8 5HJ,

AND DAVID A. PORTER

Leyeshurst, 76 London Road, Hailsham, East Sussex BN27 3DD.

On 20.ix.1992 we visited a sheltered heathy clearing in Holman Wood, part of Brede High Wood, East Sussex (TQ7920) in order to study the exceptionally interesting insect community which was present there at that time. The weather was warm for late September, with an early afternoon maximum of about 21°C, and by sweeping mixed vegetation, which included young birch *Betula*, greater bird's-foot trefoil *Lotus pedunculatus* Cav., St John's wort *Hypericum*, ragwort *Senecio jacobaea* L. and ling *Calluna vulgaris* (L.) Hull, several interesting species of bugs were discovered.

These included two specimens of the nationally scarce (Na) shield-bug *Eurydema dominulus* (Scop.) (Pentatomidae), one swept by each of us; a single example of *Corizus hyoscyami* (L.) (Rhopalidae), swept by David Porter, a species usually associated with sand dunes which appears to be very rare and perhaps not permanently established in East Sussex; and a single female *Stictopleurus* (Rhopalidae), swept off St John's wort *Hypericum* by Peter Hodge.

Two specimens of an unfamiliar *Nysius* (Lygaeidae), a male and a female, were swept, probably off ragwort flowers, by Peter Hodge. On 26.ix.1992 we revisited the site and David Porter swept a single female of the *Nysius*.

The Lygaeid bugs were readily determined as *Nysius senecionis*, using the 'key to British *Nysius*' by Kirby (1986). This key was extracted and modified from the 'key to the European Lygaeidae: Orsillinae' (Dolling, 1985). The title of Kirby's key is somewhat misleading and implies that all six species are British. However, this is not the case since *N. senecionis* has evidently not been previously recorded from either Britain or Ireland. Furthermore, the species has never been included in a check list of British Hemiptera, although it is known to occur in the Channel Islands.

Species of the genus *Nysius* have gained the reputation of being very difficult to identify and many entomologists have collected material which has not yet been named. It is therefore possible that *N. senecionis* is standing unidentified in a few British Hemiptera collections.

N. senecionis is readily distinguished from all other British *Nysius* by measuring the relative length of the first segment of the posterior tarsus, which is not or only slightly longer than the second and third segments together (Fig. 1). In all other British *Nysius* species, the first segment is distinctly longer than the second and third segments together (Fig. 2).

In addition, the buccula in *N. senecionis* is of even height throughout and tapers very abruptly posteriorly (Fig. 3), whereas in all other British species it is higher anteriorly than posteriorly.

These two characters make *N. senecionis* the most distinct and easily identified member of the genus in Britain.

The distribution of *N. senecionis* includes most of central and southern Europe, and parts of North Africa, but it has not yet been recorded from Scandinavia (Stichel, 1957–59).

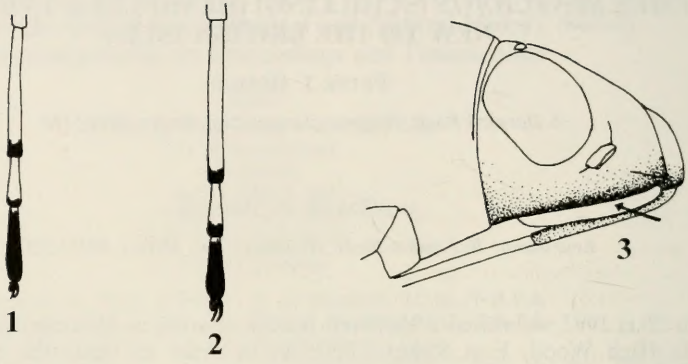

Fig. 1. Metatarsus of *Nysius senecionis*. Fig. 2. Metatarsus of *N. graminicola*. Fig. 3. Head, lateral view, of *N. senecionis*. Reproduced, with permission, from Kirby (1986).

Acknowledgements

We would like to thank Dr Stephen Judd of the Entomology Department at Liverpool Museum for confirming the identification and for his helpful advice, and Peter Kirby for allowing the reproduction of illustrations from his key.

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Note added in proof

Additional British records of *Nysius senecionis* (Schilling) (Hemiptera: Lygaeidae) from Hampshire and Kent.—Since the discovery of this new British bug in East Sussex in September 1992 I have kept a sharp look-out for it in other localities. Until August 1996 all attempts to rediscover the species met with failure, but on 8.viii.1996 I found several specimens of *N. senecionis*, including pairs in-cop, on flowers of ragwort *Senecio jacobaea* (L.) growing in sandy soil at Hyde Common near Fordingbridge, South Hampshire, SU1712. On 15.viii.1996 the species was swept in numbers off ragwort at Shortheath Common, SU7736, and in a sandy field near The Warren, near Oakhanger, SU7735, both in North Hampshire. Finally, on 30.viii.1996, I found a single male on the ground near ragwort growing on sandy ground near Halling, West Kent, TQ7063. All indications are that *N. senecionis* is now firmly established in many parts of southern England.—PETER J. HODGE, 8 Harvard Road, Ringmer, Lewes, East Sussex BN8 5HJ.

Editorial comment.—It appears that *Nysius senecionis* may be spreading and even be moderately common in some parts of south-east England (P. Kirby, pers. com.) and hemipterists are urged to examine recently caught *Nysius* specimens. The editor would welcome short notes in support of this possible expansion of the bug's range.

RICHARD A. JONES.

EURYSA BRUNNEA MELICHAR, 1896 (HEMIPTERA: DELPHACIDAE) NEW TO BRITAIN

ALAN J. A. STEWART

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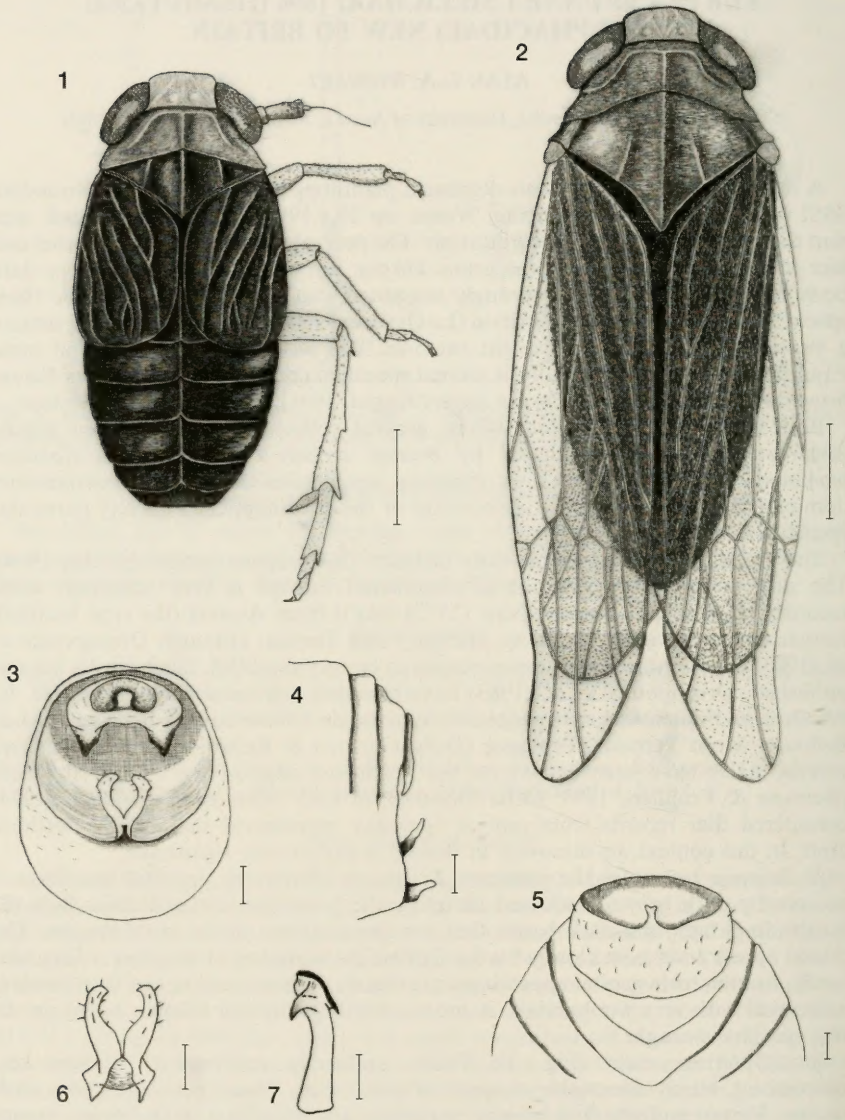
A macropterous female of this delphacid planthopper was collected at Roundhill SSSI (SO9438) near Westmancote, Worcs. on 25.v.1992 by P. F. Whitehead, who sent the specimen to me for identification. The near-obsolete keels on the vertex and face immediately placed it in the genus *Eurysa*, but the combination of very dark body coloration and habitat strongly suggested that it was not one of the three species previously recorded in Britain (Le Quesne, 1960: 35–7). The following season, a brachypterous male was caught on 5.vii.1993 within the same general area. Examination of the genitalia of the second specimen confirmed its identity as *Eurysa brunnea* Melichar, 1896 (= *Eurysa singeri* Kupta, 1941), a species new to Britain.

Both specimens were taken during general collecting in unimproved grazed calcareous grassland, dominated by *Bromus erectus* Huds. and *Brachypodium pinnatum* (L.) Beauv. The area contains wet flushes supporting communities dominated by *Juncus* spp. No association of the planthoppers with any particular species was noted.

The genus *Eurysa* Fieber currently includes 19 European species (Asche, 1994). The distribution of *E. brunnea* in continental Europe is very scattered; when recorded, it is never common. Nast (1972) lists it from Austria (the type locality), former Czechoslovakia, Germany, Hungary and Tunisia, although Drosopoulos *et al.* (1983) consider the last of these records to be very doubtful. Since Nast's list was published, Drosopoulos *et al.* (1983) have recorded it from north-west Greece. Its presence in France was first suggested by a single female caught in June 1984 at Bedouin, Mont Ventoux, Provence (Della Giustina & Remane, 1992); since then, several males have been caught on the north-east edge of the French Pyrenees (Remane & Frohlich, 1994; Della Giustina, *in litt.*). Remane & Frohlich (1994) considered that records from central Germany represented the species' northern limit. In this context, its discovery in Britain is particularly significant.

E. brunnea resembles the common *E. lineata* (Perris) in size, but the body is universally dark brown/black and therefore the pronotum and scutellum lack the longitudinal light and dark bands that are characteristic of the latter species. The dorsal appearance most closely fits Le Quesne's description of *Eurysa* (= *Eurysula*) *lurida*, but the male genital appendages are clearly different and in any case *lurida* is associated with very wet habitats. A more formal description follows, based on the two specimens caught.

Brachypterous male (Fig. 1): Frons uniformly mid-brown, median keel obsolescent, barely discernible at junction with vertex. Postclypeus and genae dark brown. Vertex uniform mid-brown, pronotum and scutellum dark brown, except anterior median part of pronotum bordering vertex which is paler. Wings mostly black/brown merging to mid-brown along internal margin; rest of wing margin narrowly pale, except along border with scutellum. Legs uniformly pale brown. Abdomen black dorsally, dark brown/black ventrally with sparse covering of very fine pale hairs, longer on ventral surface of genital segment. Overall length, 2.25 mm; wing length, 0.9 mm, width 0.75 mm. Genital segment only slightly taller than broad when viewed from behind (Fig. 3), squarely truncate when viewed laterally (Fig. 4), ventral margin with narrow central backward-pointing projection, approximately



Figs 1–7 *Eurysa brunnea*. 1: brachypterous male, dorsal view; 2: macropterous female, dorsal view; 3: male genital segment, rear view; 4: male genital segment, lateral view; 5: bifid projection on male genital segment, rear view; 6: parameres; 7: aedeagus (adapted from figure in Drosopoulos *et al.* (1983)). Scales: Figs 1 & 2, 0.5 mm; Figs 3–7, 0.1 mm.

0.1 mm long, bluntly bifid at apex (Fig. 5). Anal tube with broad and widely separated spines beneath, their length approximately half the distance between their bases, parallel or slightly divergent (Fig. 3), roughly triangular when viewed laterally. Parameres narrowing only slightly towards broadly blunt apex with inward pointing projection; overall profile goblet-shaped (Fig. 6). Aedeagus as in Fig. 7.

Macropterous female (Fig 2): Body coloration similar to male. Wings entirely hyaline, veins and margins pale yellow/brown darkening to mid-brown towards apical border. Overall length, 3.8 mm; wing length 3.0 mm, width 1.2 mm.

Little is known about the host plants or habitat requirements of this species. In Germany, it occurs on various grasses under trees (M. Asche, *in litt.*). In Greece, Drosopoulos *et al.* (1983) report collecting specimens from the lower parts of *Secale montanum*, a member of the Poaceae not native to Britain. The fact that it has been found in central England suggests that other areas of southern Britain may also be climatically favourable to it. If it follows the preference of its congeners for occupying the lower levels of dense vegetation (Kirby, 1992: 212–3), it may well have been widely overlooked.

I thank Manfred Asche for confirming the identity of the specimens and William Della Giustina for helpful correspondence.

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BOOK REVIEW

New British Beetles: species not in Joy's practical handbook by P. J. Hodge and R. A. Jones, BENHS, 1995, 192 pp, paperback, £18, hardback £24.—It is quite remarkable that the standard work on the identification of British beetles is still Joy's *A practical handbook of British beetles* (Witherby, 1932). While many families have subsequently been up-dated by RESL handbooks, and some groups covered by other publications, Joy

remains the primary focus for most coleopterists. This new book has been produced to help us deal with the over 650 British species which are not included in Joy!

In the continued absence of an up-dated version of Joy, this new book aims to bring coleopterists up to date with those species which are not included. The additions are very much a mixed bag and not just recent arrivals, natural or otherwise. They include those previously confused or overlooked, and others which Joy omitted as they were excessively rare or doubtfully resident at that time. Additionally the new book acts as a primer, providing both tips on the identification of the additional species and the necessary references to further information. The authors are to be congratulated for bringing us back on line, for providing this very useful source book.

Species not in Joy—as this new book is already commonly known—considers each beetle family anew, comparing how it was treated by Joy to how it is currently treated. Each of the missing species has at least a few lines of text, generally much more, explaining why it was omitted from Joy, describing the main distinctions from species in Joy and occasionally others similarly omitted from Joy, and giving references to sources of further information. It is not intended to confirm the identity of the species in question, only to alert the reader to the possibility that a specimen may not be one described in Joy, and to focus the reader on where further help can be sought in the literature. Each reference given is annotated to indicate the type of material contained therein. To have gone further, and provided reliable keys, would have meant considerably more work and hence a longer period without this much-needed help.

The text is organized by current taxonomic order and the most up-to-date names are used. With all the taxonomic changes in the intervening 60-odd years, a full and comprehensive index is essential and thankfully this is provided. Introductory sections explain the lay-out of the species entries in a particularly helpful way and provide a current overview of the literature today.

A minor feature but one which pleased me immensely to see is the comment on page xi that "several formerly rare species have recently increased or have obscure habits which are only now understood". All too often an increase in records is assumed to be the result of a species having 'spread', but in many cases it represents only an increase in abundance in long-established localities making the beetle concerned more obvious to recorders who may not have noticed it there before. Real evidence for increases in range is much less forthcoming, and difficult to demonstrate convincingly, and the authors are to be thanked for avoiding that common pitfall.

An understandable criticism of this book is undoubtedly the fact that Joy is not readily available in the homes or workplaces of many coleopterists. The original edition is long out of print and the Classey reprint (1976) has gone the same way. So what, people might say, is the value of an up-date to an unobtainable book? Well, the answer is: a lot better than nothing at all! Joy *is* available through libraries, and many local museums hold copies. While the ideal situation is a personal copy for everyone, life just isn't ideal!

Old hands will also say that there is nothing new here, that their well-thumbed copies of Joy have all of this information already written into the margins of the relevant pages. That may well be the case for some experienced coleopterists, but by no means all. New and developing enthusiasts will also undoubtedly find this book invaluable. It is a direction finder and as such very practical, a fitting follow-up to Joy.

KEITH N. A. ALEXANDER

MELIGETHES CORVINUS ERICHSON, 1845 (COLEOPTERA: NITIDULIDAE) REAFFIRMED AS A BRITISH SPECIES

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Meligethes corvinus has proved one of our most elusive *Meligethes* species, and is known from just a few specimens collected at Mickleham and Caterham, Surrey, in the early 1870s (*vide* Rye, 1872a: 267; 1872b: 37; Champion, 1873: 39), details of which are given in Kirk-Spriggs (1996: 53). The late A. M. Easton (1907–1989), who lived at Great Bookham, Surrey for many years collected extensively on the Surrey commons, and despite his concerted efforts to collect this species was unable to do so. He further examined all specimens published as such, and in every case the material was misidentified (Kirk-Spriggs 1996: 54). As a result the species has for many years been regarded as extinct in the British Isles, and is recorded as such by Hyman & Parsons (1994: 66). It was, therefore, of great surprise to us to find two unidentified female specimens collected by the second author from Ranmore Common, Surrey, 26.v.1968, 'sweeping low, damp vegetation, mainly *Primula* sp. & *Viola* sp., edge of beech wood', along with two male *M. carinulatus* Förster, 1849.

Ranmore Common is less than two miles from Mickleham where *M. corvinus* was first collected in the early 1870s. Caterham, Mickleham, and Ranmore Common are all on the North Downs chalk escarpment. It seems likely that the species has been present continuously in the area since its first capture, and this highlights the problem of finding species with small, very localized populations, and the need for caution in promulgating extinction in such cases. The early date of capture of the specimens indicates that they were probably overwintering adults.

We have compared the specimens with one of G. C. Champion's original Caterham specimens (now in the NMWC), and they fit well on external characters and genitalia. The female genitalia of *M. corvinus* are the most distinctive of all the British species (*vide* Kirk-Spriggs, 1996, fig. 301), and we are left in no doubt as to the identity of the specimens.

Meligethes corvinus is a member of the *subrugosus* species-group, of which there are only two British representatives, *viz. M. subrugosus* and *M. corvinus*. The species-group may be separated from others in having the anterior tibiae crenulate throughout (with no larger more prominent teeth towards the apex), in having narrow side borders to the pronotum, and by their very distinctive male and female genitalia (*vide* Kirk-Spriggs, 1996, figs. 225–228, 300–301).

Both species are associated with the botanical family Campanulaceae of the genus *Campanula*; but whilst *M. corvinus* has been shown to be associated with species of *Campanula* with medium to large flowers, particularly *C. latifolia* L., *C. rapunculoides* L. and *C. trachelium* L. on the Continent (Audisio, 1993: 780), the British larval host-plant has not been ascertained. Audisio (1993: 780) also notes that adults may also occasionally frequent species of *Lamium* and *Galeopsis* (Lamiaceae) on the Continent. The species is confined to the shaded edge of old woods (Kirk-Spriggs, 1996: 53), particularly those of beech (*Fagus sylvatica*) (Audisio, 1993: 780).

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BOOK REVIEW

Keys to the insects of the European part of the USSR. Volume 3, Hymenoptera, Part 5, Science Publishers, Lebanon, New Hampshire, USA, 1996, xiii + 507 pp, hardback, US $95.00.—This is an English translation of a work originally published in the Russian language, covering the braconid subfamilies Opiinae, Alysiinae and Aphidiinae (the latter treated as a family). V. I. Tobias is an author of all parts: he is solely responsible for Alysiinae and joined by A. B. Jakimavičius and I. G. Kiriyak for Opiinae and Aphidiinae respectively. The key to subfamilies was given in Part 4, and the numbering sequence of subfamilies and genera follows on from that.

The general remarks made in reviewing Part 4, on the rest of the Braconidae, apply (*Br. J. Ent. Nat. Hist.* 1996; **9**: 189–190): it is a very useful compilation, but not quite as reliable or easy to use as it looks. The present part covers 1020 species in 100 genera, of which 38 species and 1 genus (plus 2 subgenera) are described as new. As with part 4, these nominal taxa take the date of publication of the Russian original, and it is a serious scientific flaw that nowhere in this translated version can that date (1986) be discovered. As with part 4, much of the work is heavily derivative and cobbled together from sources of variable quality. And, as with part 4, the text would have benefited from a final read-through by a knowledgeable English-speaking entomologist—it may then have been possible to avoid our being told that all Aphidiidae (i.e. Aphidiinae) are "parasites of lice". This is, of course, also a good illustration of the risks of using common names—plant lice perhaps can't be expected to adhere to vegetarianism under the stresses and strains of translation. But the more serious warning is to be aware of the possibility of translation/transcription errors, especially those that would evade a spellcheck.

In some cases keys to large genera are extremely long, either because the genera (such as *Chorebus*, 492 couplets) are very species-rich, or because generic names (such as *Opius*, 680 couplets) cover rather messy and unresolved generic-level uncertainties as well. One large group (*Aspilota* + *Synaldis*) was judged to be in such a difficult state taxonomically that no key to species is given. The key I tried to use particularly (to *Phaenocarpa*, 132 couplets) permitted reasonable progress once I had sussed the couplet numbering error on p. 200, which should read 12(117) rather than 12(17)—but for all of these difficult groups accurate and confident progress will almost always require a reliably determined reference collection. Despite these problems and shortcomings, however, the translation usefully brings into the English language a lot of material that was otherwise scattered and sometimes hard to get hold of, quite apart from its being (mostly) in German originally. Although some parts of the classification have, since the date of the Russian original, been substantially improved (and in some cases publication on this has been in English) this is a very useful book for anyone who reads English better than Russian and who has a need to identify, at least provisionally, these fascinating and very understudied insects from the Western Palaearctic.

MARK R. SHAW

THE SUBFAMILY DIAPRIINAE (HYMENOPTERA: DIAPRIIDAE) NEW TO THE ISLE OF MAN

J. P. O'Connor and M. A. O'Connor

c/o National Museum of Ireland, Kildare Street, Dublin 2, Ireland.

The Diapriidae is a large family of relatively obscure insects, represented by three subfamilies (Ismarinae, Belytinae and Diapriinae) in the British Isles. Most species are probably endoparasitoids that develop in dipterous pupae within the puparia. Many are gregarious endoparasitoids with as many as 30–50 individuals emerging from a puparium (Gauld & Bolton, 1988). The Diapriinae is a poorly understood group in the British Isles and even the number of species which have been recorded is uncertain. There are two British checklists which do not correspond with one another (Fergusson, 1978; Nixon, 1980). The former is more comprehensive, listing 122 definite species. However Nixon only included 106 species in his handbook, stating Fergusson's list contained many species names that were likely to be misidentifications or at any rate would require prolonged identification. Since then, O'Connor & Ashe (1992) have reinstated *Idiotypa rufiventris* (Thom.) while Notton (1992, 1993, 1994) has added seven species. There are no published Manx records of the Diapriinae. During a visit to the island in July 1996, the authors collected three species while searching for other insects and these records are reported here. Dr David Notton has kindly provided details of another species and it is also included. The material has been identified using Nixon (1980).

Basalys abrupta Thom. Female, Laxey Wheel (SC4385), 15.vii.1996. The specimen was collected on an area of cliff-face with water seepage. *B. abrupta* is a common species both in Britain and Ireland (Nixon, 1980; O'Connor & Ashe, 1992).

Platymischus dilatatus Westw. Three males, two females, Port e Vullen (SC4792), 15.vii.1996. Specimens were collected along with *Trichopria nigricornis* (see below). Both species were crawling about in large numbers upon three large black boulders and one small white boulder beside a waterfall-filled pool on a stony and sandy beach. Surprisingly, no specimens were found on other boulders or stones elsewhere on the beach. Bolton & Gauld (1988) state that *P. dilatatus* is frequently found in large numbers on the seashore in Britain where it parasitizes the sepsid *Orygma luctuosum* Meig. in rotting seaweed. It has also been found in Ireland, both in seaweed and crawling on a stone (O'Connor & Ashe, 1992).

Trichopria aequata (Thom.). Female, Ballaglass Glen (SC48), 24.iii.1950, W. D. Hincks (Manchester Museum). The species is widespread and often abundant in both Britain and Ireland.

Trichopria nigricornis (Marshall). Seven males, seven females, Port e Vullen (SC4792), 15.vii.1996. *T. nigricornis* is probably a common coastal species in the British Isles. In Ireland, it was frequently taken by A. W. Stelfox under *Silene vulgaris maritima* (With.) Á. and D. Löve (O'Connor & Ashe, 1992).

Voucher specimens have been deposited in the National Museum of Ireland, Dublin, and The Natural History Museum, London.

Acknowledgement

We are indebted to Dr David G. Notton who very kindly confirmed our determinations, identified the specimen of *B. abrupta* and provided the record of *T. aequata*.

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BOOK REVIEWS

The beetles of northeastern North America by the late N. M. Downie and R. H. Arnett, Sandhill Crane Press, Gainesville, Florida, 1996, 1722 pages, 2 vols, hardback, $195.—This ambitious book has been long awaited, particularly since the original volume 1, a 272-page book published in 1994, was subsequently scrapped and rewritten for the revised 2-volume issue recently arrived from the USA. Essentially, the book is an extensive key to species with brief individual descriptions and distribution data. The keys are remarkably unillustrated, with just a few whole-insect pictures to punctuate the text. The keys also contain many comparative couplets, which will prove difficult when examining lone specimens of difficult groups. But the book is very concise given that it covers 7356 species in 1834 genera. The area covered includes Greenland, Canada from Ontario westwards and the USA from Minneapolis and St Louis west to Cincinnati, Pittsburgh and Newport News. Each family is appended with a useful list of references—many to important works from which the keys and text are adapted. At just over £125, the book is very reasonably priced; I took advantage of the pre-publication offer and got them for $99 plus $12 postage, about £70, and I think I got a real bargain.

RICHARD A. JONES

Animals under logs and stones by C. Philip Wheater and Helen J. Read. Naturalists' Handbook 22, Slough, Richmond Publishing, 1996, 90 pp, paperback £8.95, hardback £16.—Another micro-habitat guide from Richmond follows the usual style. A short introduction to the semi-subterranean environment is followed by brief descriptions of likely invertebrates and their lifestyles and several illustrated keys to selected groups enabling identification to genus or species in many cases. The authors have been pushed to cover a very broad group of animals in a small booklet, but they have done well to cram so much in. The book is aimed at non-specialists like 'A' level students, or perhaps undergraduates, but any general entomologist will also find it useful if only for providing usable keys to the common species of earthworms, millipedes and centipedes.

RICHARD A. JONES

THE STATUS OF *GYMNOSOMA ROTUNDATUM* (L.) (DIPTERA, TACHINIDAE) IN SOUTHERN ENGLAND

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Gymnosoma rotundatum is a distinctive fly which has a black thorax with golden pubescence on the pronotum and humeri, a bright pink abdomen with black markings, and which is free of long hairs and spines. It is illustrated in Colyer & Hammond (1951, 1968) who say that "it is generally considered to be rare, although we have found it in numbers . . . in more than one locality in Surrey". Since then, there seems to have been little change in its recorded distribution; there have been a scatter of records from Sussex, Kent and Surrey in recent years (Belshaw, 1993); van Emden (1954) also reports records from Hampstead, north London, and data available to Falk (1991) suggested that this species was sufficiently rare to merit Red Data Book 3 (RDB3) status.

The earliest records that I am aware of are a specimen from Abbots Wood, Sussex, on 11.viii.1872 (Wainwright; specimen in the Natural History Museum, London) and one from Guestling near Hastings in 1877 (Bloomfield). The next is a specimen from Bookham Common, Surrey on 13.vii.1927 by C. N. Colyer followed by records from a small number of localities in Surrey in the 1940s and 50s. There are slightly more records for the period 1960 to 1980, mainly from West Sussex by Mr A. W. Jones, with a considerable increase in available records from 1985 onwards. The majority of the records are from the late 1980s and early 1990s, coinciding with my own interest in recording, but also including many further records by Messrs Mike Edwards, Peter Hodge and A. W. Jones.

The dramatic rise in the numbers of records in the 1980s and 90s (Table 1) seems to suggest that *G. rotundatum* has increased in frequency, possibly associated with the spell of hot summers over the past ten years, but as this also coincides with a period of far more intensive recording than in previous decades, it is likely that the increase in

Table 1. Frequency of records of *Gymnosoma rotundatum* in 10-year sequences since 1870.

Decade	Records
1870–1879	2
1880–1889	0
1890–1899	0
1900–1909	0
1910–1919	0
1920–1929	1
1930–1939	0
1940–1949	1
1950–1959	3
1960–1969	3
1970–1979	11
1980–1989	24
1990–1996	38

Table 2. Frequency of records of *Gymnosoma rotundatum* related to time of year.

"Fortnight"	Records
1–15 May	2
16–31 May	1
1–15 June	3
16–30 June	3
1–15 July	3
16–31 July	25
1–15 August	15
16–31 August	22
1–15 September	2
16–30 September	0
1–15 October	1

records is simply a factor of recorder effort. This tends to be confirmed by anecdotal comments from Mike Edwards in West Sussex who reports that *G. rotundatum* "has always been easy to find around here—going back into the early 1970s" (pers. comm.).

The distribution of *G. rotundatum* is seemingly confined to a narrow corridor from the West Sussex coast through Surrey and parts of North Hampshire, with odd outlying records to the east and north (Fig. 1). This narrow band of distribution is mirrored within my main area of search, Surrey (Figure 2). Single individuals are usually encountered, but it is not uncommon to find numerous specimens at a single site.

Overall, I am aware of 87 records of this species from around seventy localities, including numerous records for Rewell Wood, West Sussex, and several from Bookham Common, Surrey. There are records from at least 19 post-1980 10-km squares, thus suggesting that it is actually a great deal commoner than previously supposed. *Gymnosoma rotundatum* appears to have no clear habitat preferences in terms of either geology or vegetation type. Those records where the geology can be confidently ascribed show the following breakdown and provide no obvious indication of an association with a particular soil type, although sand (22 records) seems to be better represented than clay (10) and chalk (12).

These data seem to suggest that *G. rotundatum* is most commonly associated with hot sandy sites, especially heathland and scrubby sites on sand and chalk. Adults visit a wide range of flowers, especially umbellifers such as hogweed *Heracleum sphondylium*, hedge parsley *Torilis japonica* and wild parsnip *Pastinaca sativa*. Often they can be found flying amongst ruderal vegetation such as *Polygonum persicaria* and this helps to confirm a preference for hot dry places. They are most frequent in July and August, but as can be seen from Table 2, the flight period ranges from May to October.

The host of *Gymnosoma rotundatum* in Britain appears to be unknown. Belshaw (1993) indicates that eggs are attached to adult pentatomid bugs of the genus *Palomena*, but there seem to be no breeding records for the species in Britain. On the Continent, *G. rotundatum* certainly occurs considerably further north than in Britain and I found this fly to be widespread in parts of western Russia and Belarussia in 1995 at a latitude similar to Edinburgh.

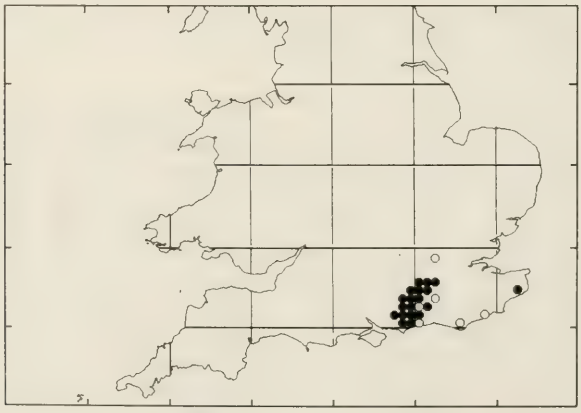

Fig. 1. The distribution of *Gymnosoma rotundatum* in Britain. Shaded circles represent post-1980 records, open circles represent pre-1980 records.

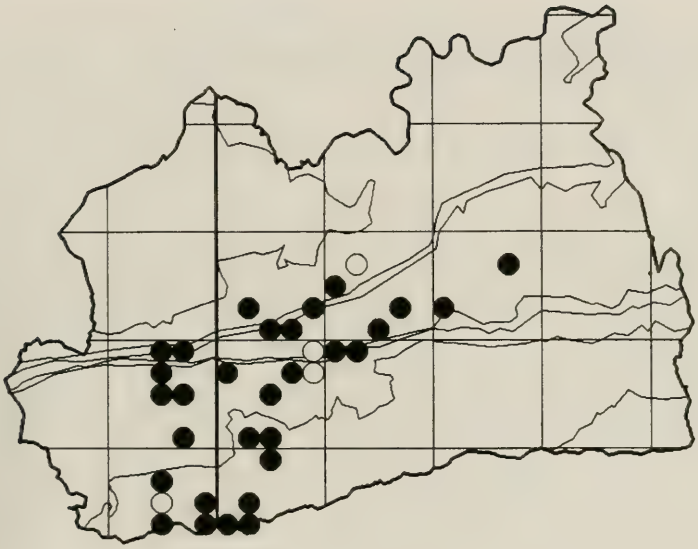

Fig. 2. The distribution of *Gymnosoma rotundatum* in Surrey. Shaded circles represent post-1980 records, open circles represent pre-1980 records.

This striking fly is likely to be found by hoverfly specialists and casual collectors who examine umbellifer flowers, and should be borne in mind as a species worthy of retention. I would welcome further records in order that the distribution or possible spread of *G. rotundatum* can be monitored.

Acknowledgements

I am most grateful for records and comments from G. A. Collins, Dr J. Denton, Mr M. Edwards, Mr P. Hodge and Mr A. W. Jones. Additional data derive from the card index of flies compiled by Steven Falk for the National Review of Diptera (Falk, 1991).

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BOOK REVIEW

Chrysomelidae biology, edited by P.H.A. Jolivet and M.L. Cox. Amsterdam, SPB Academic publishing, 1996, 3 vols, 444, 466 and 366 pp, US$175, US$184 and US$156 or together US$450 (about £275).—As important phytophagous beetles, the chrysomelids have attracted a lot of attention from ecologists and agricultural biologists and these highly academic studies are primarily aimed at this research audience.

Volume 1 contains papers on classification, phylogeny and genetics, and begins with a look back at historical concepts of the family and its subfamily, tribe and generic make-up before considering modern phylogenetic analyses and some genetic studies. I found the most interesting papers were those by Mike Cox on chrysomelid pupae, which contains many descriptions and over 400 illustrations, and Mauro Daccordi on the distribution of the modern-day Chrysomelinae from a possible Gondwanian origin.

The second volume contains ecological studies, including papers on insect predators, fungal pathogens, cannibalism (becoming a very popular research topic), population dynamics and host–plant relations. An enlightening paper by Richard E. White reports on the use of leaf beetles as biological control agents against some of the many injurious plants which have been introduced at various times into the United States. Three programmes have already been highly successful, including the use of the common European species *Chrysolina hyperici* (Forster) to control St John's-wort and *Longitarsus jacobaeae* (Waterhouse) to control ragwort. Other controls in motion at the moment also look to succeed in their aims to control other invasive non-native plants like purple loosestrife and spurges.

The final volume, subtitled "general studies", contains various papers on zoogeography, larvae, embryonic development and reproduction, and biological studies in various subfamilies. One hundred and fifty-eight Mediterranean *Longitarsus* species are examined by Maurizio Biondi in terms of their zoogeographical distribution and ecological categorization. L.N. Medvedev reports on the 40 leaf beetle species known from the Arctic tundra zone and examines their adaptive peculiarities (well developed subelytral cavity offering insulation, ridged elytral structure similar to some high-mountain species, short egg stage) and their origin. A catalogue of known larvae of western Palaearctic species (just over 20% of known species) is given by W.R. Steinhausen together with an extensive reference list. Parthenogenesis in the Chrysomeloidea (and other Coleoptera in passing) is examined by Mike Cox. And among the life-cycle contributions, especially interesting papers are presented on the subaquatic Donaciinae by A.O. Bienkowski, case-bearing larvae of some North American clytrines by L. Lesage and V.L. Stiefel, and *Aphthona* species associated with spurges by L. Fornasari.

The books are neatly produced, but it was immediately apparent that less than full care had been taken with parts of the publication: no-one seemed quite sure how to spell Palaearctic (even in the same paragraph), running heads in an index were transposed and whilst reading Medvedev's Arctic paper I discovered that his table 2 appeared to have been omitted and he is not listed in the author index. I was left wondering whether there were many other howlers. Those with a special interest in the Chrysomelidae will find the books a useful reference, but the high price of modern academic books will discourage more general readers.

RICHARD A. JONES

PARASITIZATION OF BRITISH LADYBIRDS BY *DINOCAMPUS COCCINELLAE* (SCHRANK) (HYMENOPTERA: BRACONIDAE)

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The braconid wasp, *Dinocampus coccinellae* (Schrank) is perhaps the best known parasitoid of British coccinellids. The species is a member of the subfamily Euphorinae (see Shaw & Huddleston, 1991, for general biology of the subfamily). The life history of this wasp has been well documented (Ogloblin, 1924; Balduf, 1926; Bryden & Bishop, 1945; Walker, 1962; Sluss, 1968; Maeta, 1969; Hodek, 1973; Obrycki *et al.*, 1985; Majerus, 1991, 1994). In brief, *D. coccinellae* is a thelytokous parthenogen, female offspring resulting from unfertilized eggs, males being generally absent. The wasp specializes in parasitizing coccinellids, attacking a wide range of host species. Adult wasps lay a single egg into adult or, less frequently, larval or pupal hosts. Although several females may lay in the same host individual, only a single larva develops per host, first instar larvae being equipped with large mandibles which are used to kill other eggs and larvae in their host. Larvae feed on trophic cells (teratocytes) which erupt into the body of the host when the egg hatches (Ogloblin, 1924; Sluss, 1968; Kadono-Okuda *et al.*, 1995). These cells swell, absorbing nutrients from the host. Once fully developed the larva exits, usually through the ventral surface of the host's abdomen, and spins a silken cocoon between the legs of its host, anchoring it to the substrate. In Britain, *D. coccinellae* has two or three generations per year and passes the winter as a larva within its host.

Despite the considerable amount of documentation on the life history of this parasitoid, there are rather few reports of the levels of parasitization on different coccinellid species. Hodek (1973) states that parasitization rates vary considerably according to region, season and the host. He sensibly contends that comparison of data from the literature is of little value because of differences in the methods used to ascertain parasitization levels. Some rates are determined by dissection while others are assessed by observing the number of parasitoid larvae that successfully emerge from their hosts. Furthermore, some data sets omit crucial details such as the date that samples were collected, the treatment of samples after collection, and even the total number of individuals in samples. Reviewing available data, Hodek (1973) cites parasitization levels of *D. coccinellae* in ten host species. Rates of infestation vary from levels of around 1% to a maximum of 38% recorded for *Coccinella septempunctata brucki* Muls. in Japan (Maeta, 1969). The only British data cited by Hodek report 20% parasitization of *Coccinella septempunctata* L. in Berkshire (Walker, 1962).

Here I report parasitization rates for *D. coccinellae* in samples of a number of British coccinellids collected between June 1984 and May 1996.

METHODS

Samples of coccinellids of various species were collected in one of three ways, by eye (E), by use of a beating tray (B) or by use of a sweep net (S). The status of adults with respect to activity and generation was assessed, division being made into six

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categories: overwintering (W), overwintered reproducing (R), new generation reproducing (N), new generation preparing for winter (P), mixed generation active (M) and aestivating (A). The collection of samples was unsystematic with respect to geographic region. The majority were collected in southern England or East Anglia, but most parts of the British mainland yielded some samples. Samples were transferred to 90-mm Petri dishes usually on the day of collection, and always within four days of collection, and retained in the laboratory at around 21 °C. Ladybirds were fed suitable food. For predatory species, aphids of three species (*Acyrthosiphon pisum* (Harris), *Aphis fabae* Scop. and *Microlophium carnosum* Buckton) were used as available, together with an artificial agar-based food (see Majerus *et al.*, 1989 for recipe). Non-predatory species were fed on artificial food only.

Samples were examined daily for emerging parasitoid larvae. Samples were retained for at least 50 days. In no case did parasitoid larvae emerge from ladybirds more than 33 days after collection. Details of the number of parasitized and unparasitized ladybirds were recorded for all samples including those from which no parasitoids were found. It should be noted that due to the methods used (samples were not dissected), the results obtained only give levels of successful parasitization, not of attacks.

Results

Table 1 gives details of the parasitization levels in all samples in which the sample size exceeded the arbitrary figure of 20 individuals. Table 2 summarizes the results for all samples of each species.

Discussion

The results lead to a number of very general conclusions. In Britain, *D. coccinellae* parasitizes a wide range of coccinellid hosts, but by no means all species. Taking the total sample sizes into account, it seems reasonable to conclude that *Anisosticta 19-punctata* (L.), *Adalia 2-punctata* (L.) and *Exochomus 4-pustulatus* (L.) are not successfully parasitized by *D. coccinellae* in Britain. In addition, it seems probable that *Subcoccinella 24-punctata* (L.), *Aphidecta obliterata*, (L.), *Adalia 10-punctata* (L.), *Myrrha 18-guttata* (L.), *Thea 22-punctata* (L.), *Chilocorus renipustulatus* (Scriba) and *Chilocorus 2-pustulatus* (L.) are rarely, if ever, successfully attacked. With regard to *S. 24-punctata*, a member of the sub-family Epilachninae, lack of parasitization is in accord with the contention (Balduf, 1926; Liu, 1950) that Epilachninae are never parasitized by *D. coccinellae*. Similarly, the data from the two species of *Adalia* support the view that species of this genus are immune to successful attack. It may be noted that several authors (Bryden & Bishop, 1945; Walker, 1962; Klausnitzer, 1969) report that *D. coccinellae* readily attack the adults of *Adalia* species in captivity, but that parasites never emerge, and the ladybirds do not appear to suffer. The lack of parasitization in any of the three British species of the sub-family Chilocorinae also supports previous reports, for no members of this sub-family are included in Hodek's (1973) list of the host species of this wasp. However, Hodek (1973) does include an unpublished data set of parasitization of coccinellids in northern Transvaal which gives a parasitization level of 6.6% of *Exochomus concavus* Fürsch by *D. coccinellae* (van Rensburg, unpublished).

Of the British species that are parasitized by this wasp, *Coccinella 11-punctata* L. (22.1%), *Harmonia 4-punctata* (Pont.) (19.4%) and *C. 7-punctata* (17.4%) are the only species to suffer high levels of parasitization reasonably consistently, although

Table 1. Details of samples of adult ladybirds collected and retained to allow the emergence of parasitoids. (For abbreviations, see text.)

Species	Date	Location (given as O/S ref.)	Collection method and adult status	Sample size	Number infected	Infection rate (%)
S. 24-punctata (L.)	19.x.87	TL820900	S–W	168	0	0
24-spot ladybird	15.vi.88	TL820900	S–R	48	0	0
	15.i.89	SZ175905	S+B–W	81	0	0
	12.vi.95	TL817729	S–R	56	0	0
T. 16-punctata (L.)	8.i.86	TL752760	B–W	127	3	2.4
16-spot ladybird	18.x.86	TL817729	B+S–W	563	7	1.2
	18.x.86	TL752760	B+S–W	164	4	2.4
	18.x.86	TL395629	S–W	344	12	3.5
	14.xi.86	SU163057	S–W	187	5	2.7
	9.xii.86	TL760825	S–W	931	13	1.4
	10.xii.86	TL519588	B+S–W	423	8	1.9
	17.iii.87	TL817729	B+S–W	1776	15	0.8
	17.iii.87	TL752760	B+S–W	1191	12	1.0
	18.iii.87	TL395629	S–W	178	2	1.1
	25.iii.87	SU163057	S–W	93	0	0
	25.x.87	TL817729	B+S–W	169	4	2.4
	25.x.87	TL752760	B+S–W	100	2	2.0
	25.x.87	TL395629	S–W	428	11	2.6
	17.xii.87	TQ180525	B+S–W	241	1	0.4
	14.i.88	SP437091	S–W	279	4	1.4
	13.iii.88	TL817729	B+S–W	1085	9	0.8
	13.iii.88	TL752760	B+S–W	629	7	1.1
	13.iii.88	TL395629	B+S–W	242	0	0
	21.x.88	TL817729	B+S–W	155	3	1.9
	21.x.88	TL752760	B+S–W	158	4	2.5
	21.x.88	TL395629	S–W	272	13	4.8
	15.iii.89	TL817729	B+S–W	271	2	0.7
	15.iii.89	TL752760	B+S–W	337	2	0.6
	15.iii.89	TL395629	S–W	194	5	2.8
Adonia variegata (Goeze) Adonis' ladybird	8.viii.91	SJ989185	E+S–M	113	3	2.7
A. 19-punctata (L.)	5.vi.85	SU019562	E+B–R	43	0	0
Water ladybird	6.xi.87	TL416616	E–W	1276	0	0
	1.ix.88	TQ185605	E+B–P	62	0	0
A. obliterata (L.)	16.vii.86	NN970536	B–M	89	0	0
Larch ladybird	8.ix.86	TL141437	B–P	121	0	0
	14.xi.94	TL817729	E+B–W	44	0	0
A. 2-punctata (L.)	5.i.87	TL444586	E–W	122	0	0
2-spot ladybird	7.iii.87	TL444586	E–W	89	0	0
	5.v.87	TL444586	E–R	267	0	0
	11.vii.87	TL444586	E–N	354	0	0
	9.ix.87	TL444586	E–P	287	0	0
	4.ix.87	TL444586	E–W	134	0	0
	15.i.89	SU163057	E–W	83	0	0

(*Continued*)

Table 1 (*continued*)

Species	Date	Location (given as O/S ref.)	Collection method and adult status	Sample size	Number infected	Infection rate (%)
	2.vi.90	SJ816449	E–R	77	0	0
	26.v.94	TL447576	E–R	1426	0	0
	14.i.95	TL415574	E–W	1238	0	0
A. 10-punctata (L.)	8.vi.87	TL444586	E–R	34	0	0
10-spot ladybird	11.vii.87	TL444586	E–M	61	0	0
	9.ix.87	TL444586	E–P	29	0	0
	16.i.89	SU163057	E–W	21	0	0
	13.viii.90	SX798627	E–M	40	0	0
C. 7-punctata L.	18.x.86	TL817729	E+B–W	879	166	18.9
7-spot ladybird	18.x.86	TL752760	E+B–W	734	191	25.6
	18.x.86	TL395629	E+B–W	230	78	33.9
	17.iii.87	TL817729	E+B–W	765	96	12.5
	17.iii.87	TL752760	E+B–W	937	120	12.8
	18.iii.87	TL395629	E+B–W	198	48	24.2
	6.vi.87	TL447576	E–R	113	21	18.9
	12.vii.87	TL447576	E–M	355	14	3.9
C. 5-punctata L.	12.v.89	SN626754	E+B–R	31	1	3.2
5-spot ladybird	19.xii.90	SN626754	E+B–W	27	5	18.5
	3.i.93	SN626754	E+B–W	55	5	9.1
C. 11-punctata L.	14.xi.86	SZ175905	B–W	53	18	34.0
11-spot ladybird	19.iii.92	SZ175905	B–W	51	9	17.6
	17.vi.92	TF730438	E+B–R	63	12	19.0
	2.ix.92	TF942440	E+B–P	44	13	29.5
	19.xii.93	TL415574	E–W	23	4	17.4
	13.iii.94	TL415574	E–W	28	2	7.1
C. magnifica	12.v.86	SU115034	E+B–R	44	0	0
Redtenbacher	11.xi.86	SU115034	B–W	25	0	0
Scarce 7-spot	16.iii.89	SU115034	B–W	22	0	0
ladybird	22.viii.89	SU115034	E+B–W	188	1	0.5
Coccinella	19.vi.86	SU994366	S–R	199	0	0
hieroglyphica L.	9.vi.89	SU994366	S–R	35	1	2.9
Hieroglyphic ladybird						
H. 4-punctata	8.v.88	TL760825	B–R	42	7	16.7
(Pontoppidan)	8.v.88	TL817729	B–R	81	13	16.0
Cream-streaked	12.viii.88	TL817729	B–P	103	19	18.4
ladybird	15.xii.88	TL817729	E+B–W	31	10	32.3
	3.iii.89	TL817729	E+B–W	27	6	22.2
M. 18-guttata (L.)	19.x.87	TL820900	E+N–W	22	0	0
18-spot ladybird	16.i.89	SU307145	E+B–W	35	0	0
Calvia 14-guttata (L.)	5.vi.84	TL825882	E–R	26	1	3.8
Cream-spot	8.vi.87	TL444586	E–R	28	0	0
ladybird	11.vii.87	TL444586	E–M	21	0	0
	9.ix.87	TL444586	E–P	23	3	13.0

(*Continued*)

Table 1 (*continued*)

Species	Date	Location (given as O/S ref.)	Collection method and adult status	Sample size	Number infected	Infection rate (%)
P. 14-punctata (L.)	29.v.85	TL825882	E+S−R	124	0	0
14-spot ladybird	8.v.88	TL817729	E+S−R	98	2	2.0
	7.vi.89	TL817729	E+S−R	213	0	0
	29.xi.89	TL817729	E−W	84	7	8.3
	4.xi.95	TL817729	E+S−W	22	1	4.5
	14.ii.96	TL817729	E+S−W	21	0	0
M. oblongoguttata (L.)	12.v.86	SU307145	B−R	32	0	0
Striped ladybird	8.v.88	TL760825	B−R	47	2	4.3
	8.v.88	TL817729	B−R	29	0	0
A. ocellata (L.)	4.vii.84	SU994366	E+B−A	40	1	2.5
Eyed ladybird	7.x.84	SU994366	E+B−P	42	0	0
	12.v.86	SU307145	B−R	57	2	3.5
	8.v.88	TL760825	B−R	28	0	0
	8.v.88	TL817729	B−R	77	1	1.3
Halyzia 16-guttata (L.)	8.v.88	TL817729	B−R	27	0	0
Orange ladybird	26.v.88	TQ173527	E+B−R	147	3	2.0
	30.vi.89	TQ173527	E+B−R	180	0	0
	24.vi.94	TQ173527	E+B−R	56	0	0
	27.vi.95	TQ173527	E+B−R	80	1	1.3
T. 22-punctata (L.)	19.x.87	TL820900	S−W	43	0	0
22-spot ladybird	21.x.88	TL395629	E+S−W	61	0	0
	14.vii.89	TL376641	E−W	39	0	0
C. renipustulatus	28.viii.86	SU908587	E−P	26	0	0
(Scriba)	16.v.90	SP437091	E−R	88	0	0
Kidney-spot ladybird						
C. 2-pustulatus (L.)	9.vi.89	SU994336	S−R	46	0	0
Heather ladybird						
E. 4-pustulatus (L.)	4.vii.84	SU994366	E+B−N	108	0	0
Pine ladybird	18.x.86	TL817729	E+B−W	548	0	0
	3.iii.87	TL760825	E+B−W	675	0	0
	21.x.87	TL760825	E+N−W	200	0	0
	1.iii.88	TL760825	E+B−W	494	0	0
	12.xi.88	TL760825	E+B−W	120	0	0
	24.ii.89	TL760825	E+B−W	441	0	0
	7.vi.94	SU307145	B−W	216	0	0
	25.xii.94	TL422567	E+B−P	81	0	0

the scarce (in Britain) ladybird *Coccinella 5-punctata* L. may also suffer significant losses. In the other species infected, parasitization levels were generally below 5%.

Various authors have previously commented upon the possible role that ladybird size may have in determining whether a species is a suitable host for *D. coccinellae*. For example, Klausnitzer (1969) speculates that parasitization of *Anatis ocellata* (L.) by this wasp is impeded by the coccinellid's large size. Conversely, some authors have

Table 2. Mean infestation rates across all samples for each species.

Species	Total of samples	Number parasitized	Mean level of infestation (%)
S. 24-punctata	353	0	0
T. 16-punctata	10537	148	1.4
A. variegata	113	3	2.7
A. 19-punctata	1381	0	0
A. obliterata	254	0	0
A. 2-punctata	4077	0	0
A. 10-punctata	185	0	0
C. 7-punctata	4222	734	17.4
C. 5-punctata	113	11	9.7
C. 11-punctata	262	58	22.1
C. magnifica	279	1	0.4
C. hieroglyphica	234	1	0.4
H. 4-punctata	284	55	19.4
M. 18-guttata	57	0	0
C. 14-guttata	98	4	4.1
P. 14-punctata	562	10	1.8
M. oblongoguttata	108	2	1.9
A. ocellata	244	4	1.6
H. 16-guttata	490	4	0.8
T. 22-punctata	143	0	0
C. renipustulatus	114	0	0
C. 2-pustulatus	46	0	0
E. 4-pustulatus	3444	0	0

contended that the lack of records of successful parasitization of *A. 2-punctata* and *A. 10-punctata* by *D. coccinellae* may be due to the small size of these ladybirds (Hodek, 1973; Majerus & Kearns, 1989). The data presented here must draw these speculations into doubt. In the case of *A. ocellata*, several successful cases of parasitization are noted. In addition, *Myzia oblongoguttata* (L.), which is only marginally smaller than *A. ocellata*, was also successfully attacked. Furthermore, Timberlake (1916) reports the parasitization of the large coccinellid *Olla abdominalis* (Say) by *D. coccinellae*.

The contention that the two British *Adalia* species are too small to support full development of the parasitoid larva must be doubted on the basis of the findings with respect to *Tytthaspis 16-punctata* (L.), which is considerably smaller than either *Adalia* species (and see Majerus, in prep.). Thus, it seems that although host size may play some part in determining the successful reproduction and development of *D. coccinellae*, it is not the only factor involved, and in some species it is probably not the most crucial one.

Iperti's (1964) assertion that it is difficult, although not impossible, to obtain emergence of adult wasps from cocoons resulting from parasitization of *Propylea 14-punctata* (L.) is not born out by my observations here. All ten of the cocoons from the *P. 14-punctata* samples produced wasps normally.

One other interesting species is *Coccinella magnifica* Red. The results show that all five British species of *Coccinella* are capable of being parasitized, but that *C. magnifica* is rarely successfully infected. This has been found by other workers (Sloggett, pers. comm.). The low level of attack against *C. magnifica* is of interest

partly because it is surprising when compared with other species of its genus, and partly because there is a plausible explanation for the low level of attack. The infestation levels of *C. magnifica* are much lower than those of *C. 7-punctata*, yet the two species are closely related and are of a similar size. However, *C. magnifica* is a myrmecophile, in Britain living exclusively in the vicinity of the nests of wood ants (*Formica rufa* group sp.) (Donisthorpe, 1920; Majerus, 1989, 1994; Sloggett pers. comm.), while *C. 7-punctata* is rarely found close to such ants. One of several non-mutually exclusive hypotheses for the causes of the evolution of myrmecophily in *C. magnifica* is that by living in close proximity to these aggressive ants, the ladybirds gain a natural selective advantage through reduced parasitization and predation (Majerus, 1989, 1994). The essence of this hypothesis is that the ants drive potential predators and parasitoids away from their foraging area. This might account for the low level of infestation by *D. coccinellae* found. Alternatively, *D. coccinellae* may itself shun the vicinity of *Formica* nests, either to avoid harassment by ants, or because the density of coccinellids is low in such areas. It is pertinent to note that no other parasitoid has been recorded from *C. magnifica* in Britain (Majerus, 1994).

While keeping in mind Hodek's (1973) points in respect of the difficulty of comparing parasitization levels, a number of comparisons can be made, particularly when samples being compared vary only in one detail, such as date, or location. Considering location first, few species show any significant and consistent differences in infestation rates between sites. For some species, the infestation rates found are too small to show such differences given the current sample sizes. One possible exception concerns *C. 7-punctata* in which samples from Dry Drayton (TL395629) show consistently higher infestation rates than those from two other East Anglian sites taken at the same time.

More instructive are comparisons between samples taken from the same sites on different dates. Again the results from *C. 7-punctata* are perhaps most valuable because of the relatively large sample sizes and the high infestation rates. Comparisons of pairs of samples of overwintering beetles, collected from three sites in October 1986 and March 1987, reveal that at all three of the sites the infestation rate declines significantly during the winter (for TL817729, chi-squared = 12.187, d.f. = 1, $P < 0.001$; for TL752760, chi-squared = 45.335, d.f. = 1, $P < 0.001$; for TL395629, chi-squared = 4.800, d.f. = 1, $P < 0.05$). Similar declines in infestation rates during the winter are evident in the samples of *C. 11-punctata* from Hengistbury Head (SZ175905) in 1986/1987 and Coton (TL415596) in 1993/1994, and of *H. 4-punctata* from King's Forest (TL817729) in 1988/1989. Furthermore, in the samples of *T. 16-punctata*, taken each October and March from 1986 until 1989, from Mildenhall (TL752760), King's Forest (TL817729) and Dry Drayton (TL395629), although infestation rates are low, there is a consistent decrease in the proportion found to be parasitized over the winter.

There are five possible explanations for the decline through the winter in the proportions of samples that are parasitized. First, infected hosts may become active earlier in the spring than uninfected hosts, possibly being stimulated into early season foraging as a result of low nutrient reserves due to the parasitoid draining resources. Although not recorded for *D. coccinellae*, this effect has been noted from other members of the subfamily Euphorinae (Wylie, 1982). In this case, the decline may simply be a result of infected individuals leaving the main overwintering sites before uninfected beetles.

Second, infected individuals may move away from other conspecifics to reduce the probability of uninfected ladybirds being attacked once the parasitoid emerges. Such altruistic behaviour has been reported in the pea aphid (*A. pisum*) parasitized by the

wasp *Aphidius ervi* (Hal.). Infected aphids "commit suicide" by dropping off their food plant. Their suicide decreases the probability of the parasitoid attacking their parental colony either because the wasp within them dies with them, or because they thereby remove the wasp to a safe distance from their parental colony (McAllister and Roitberg, 1987). In the case of ladybirds, movement to exposed positions, thereby increasing the probability of death from winter bird predation (Majerus & Majerus, in press) or climatic exposure, or to low herbage layers well removed from most overwintering aggregations, would reduce the likelihood of parasitized ladybirds being collected compared to unparasitized individuals. However, it is important to stress that such behaviour is only likely to evolve under kin selection. That is to say, the advantage from this suicidal behaviour of parasitized individuals accrues primarily to closely related ladybirds. While instances of such advantages have been reported in some aposematic species (Tostowaryk, 1971; Shapiro, 1976; Bowers, 1979) these cases involve species in which aggregations consist of siblings. This is not the case for most coccinellids, in which each winter aggregation probably involves a random selection of the local population.

Third, the parasitoids may induce behavioural changes in their hosts for their own benefit. For example, Brodeur & McNeil (1989) report that the wasp *Aphidius nigripes* modifies host behaviour depending on whether the wasp is entering diapause phase or not, to reduce the incidence of hyperparasitism. Similarly, the wasp *Cotesia* (= *Apanteles* sensu lato, in part) *euphydryidis* (Muesebeck), which parasitizes larvae of *Euphydryas phaeton* Drury, alters the behaviour of its host to increase its chances of escaping predation (Stamp, 1981). Several other cases of this kind have been reported (see Fritz, 1982 for review). In the case of ladybirds, it is not obvious what benefits parasitoids might gain by removing their hosts from their normal overwintering sites. Predation of coccinellids in overwintering aggregations by birds does occur, but is a relatively rare phenomenon (Majerus & Majerus, in press). Attacks on coccinellids by other predators or by parasitoids during the winter have not been documented. Consequently, it is difficult to conceive how removal of hosts from aggregations is likely to benefit the parasitoid if one concedes an adaptive explanation for aggregative overwintering in coccinellids. However, this negative argument does not say there is no benefit, simply that no benefit has yet been envisaged.

Fourth, the decline could be explained if parasites were to emerge from their hosts during the winter. This possibility can be reasonably rejected due to the weight of evidence showing that development of *D. coccinellae* is arrested in diapausing hosts (for example, see Kadono-Okuda *et al.*, 1995).

Finally, the parasitoid's drain on its host's resources may decrease the probability of the host surviving through the winter.

Sequential samples taken throughout the winter, and experiments to test the mortality and dispersal behaviour of parasitized and unparasitized ladybirds during the winter, are needed to test these possibilities.

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BOOK REVIEW

Plant galls by Margaret Redfern and R. R. Askew. Naturalists' Handbooks 17, Richmond Publishing Co. Ltd., Slough. 1992. £16 hardback, £8.95 paperback. 99 pp. Cecidology, the study of galls (from the Greek *kekis* a gall) is deservedly increasing in popularity in Britain. The activities of the British Plant Gall Society in promoting cecidology via their meetings and publications have now been augmented by this well-illustrated and attractively produced guide.

An amazing amount of information is packed into the pages of this little book. Starting with an introduction which includes consideration of the definition and formation of galls, chapter 2 gives examples of the different agents responsible for inducing galls, and chapter 3 examines a good selection of the communities and interactions which are known for suites of insect galls on some familiar plants. The latter chapter concludes with a helpful table of suggestions for projects, which should stimulate keen readers to initiate their own original studies. Galls, their causers and associated species are ideal subjects for study: their life cycles, changing numbers over time, interactions between associated species, spatial distribution and natural enemies are all suitable for study by anyone with sufficient patience and persistence. Many galls are common and widely distributed, and will be found even in small gardens where their hostplants occur. Little equipment is needed for their study, though a binocular microscope is highly desirable for activities such as dissecting galls, counting and identifying their occupants, or examining the process of gall initiation and development. Chapter 4 on identification takes up half the book, and this enables the causers of galls on a selection of common plants to be identified to species. Sound advice on using other key works and getting vouchers confirmed by specialists will help those attracted to cecidology by this publication to get off to a good start. The inexpensive *Provisional keys to British plant galls* by F. B. Stubbs (1986), published by the British Plant Gall Society, which allows the majority of British gall-causers to be identified, is an ideal companion volume. However, *Plant galls* not only enables gall-causers to be studied, but also gives an entry to the intricate world of their predators, parasitoids and some other associated species, which are not included in any other general guide. A brief section on techniques, some useful addresses and six pages of references and further reading, together with an index, complete the book.

Given the range of technical terms used, a glossary might have been worth including to aid comprehension, but this is a small omission in a well-planned and stimulating introduction to this fascinating subject. The experience and enthusiasm of the authors for their field shines through and the result is one of the best of this consistently good series. Strongly recommended!

I. F. G. McLean

BUTTERFLIES OF THE TOUBKAL NATIONAL PARK AND ITS ENVIRONS, MOROCCO

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North-west Africa is a particularly interesting area zoologically. Effectively isolated from Europe and from the rest of Africa by natural ocean and desert barriers, it forms the southern and western-most limits of the Palaearctic zoogeographic region. The Atlas mountains of Morocco and Algeria, in reality structural extensions of the Alpine systems of Europe, rise to more than 4000 metres and provide conditions for species diversification. A significant number of the butterfly species in Morocco, particularly in the mountains, are restricted in distribution and some are endemic to that country.

The high rugged peaks and deep valleys of the Moroccan High Atlas form an almost impenetrable barrier between the Mediterranean flora, fauna and climate to the north and the arid Anti-Atlas Mountains on the edge of the desert to the south. The few areas of abundant vegetation are largely confined to creeks, deep river valleys and cultivated areas. The Toubkal Park lies at the western end of the High Atlas (Fig. 1).

Since the early part of this century, effort has been made to afford some measure of protection to ecologically important areas and cultural heritage in Morocco. Legal provisions supporting and regulating the rights of common pasture in Moroccan state

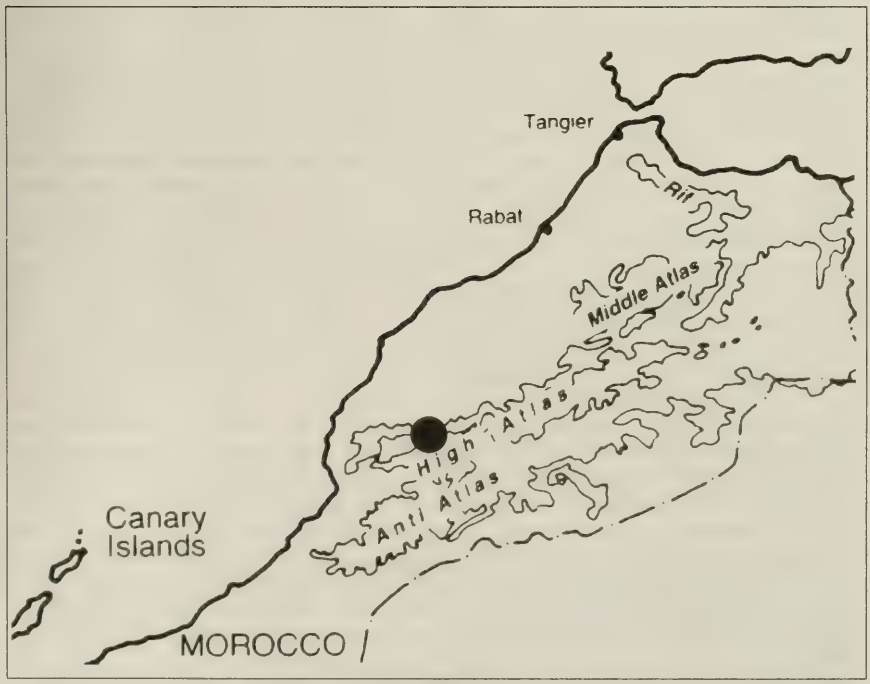

Fig. 1. Morocco, showing the position of the Toubkal National Park.

Table 1. Butterfly species (numbers) recorded from the Toubkal Park and its environs, compared with total species in Morocco and in the Maghreb States of Morocco, Algeria and Tunisia combined.

	Butterfly species recorded from		
	Toubkal	Morocco	Maghreb States
Papilionidae	3	4 (75%)	4 (75%)
Pieridae	14	23 (60.8%)	23 (60.8%)
Lycaenidae	23	39 (58.9%)	45 (51.1%)
Nymphalidae	12	17 (70.5%)	19 (63%)
Satyridae	17	30 (56.7%)	33 (51.5%)
Danaidae	—	1	1
Libytheidae	—	1	1
Hesperiidae	8	19 (42.1%)	20 (40%)
Total	77	133 (57.9%)	146 (52.7%)

forests (including protected areas) were incorporated in a ministerial order of May 1921 and the first national parks were formally established in 1934. The Royal Edicts Dahir of 11 September 1934 directed that park regulations must contain protective provisions and that potentially damaging activities such as hunting or building must be controlled by the Direction Regionale des Eaux et Forêts du Haut Atlas.

A consultant committee of the national parks, formed in 1946, is comprised of representatives from various administrative departments with an interest in the protection of nature and development of tourism. In 1995, as part of a government reorganization, the Service du Parc et Réserves Naturelles was created. The declared aim for the Toubkal National Park is not to isolate it as a preserve, but to regulate traditional land uses and tourism, in an effort to prevent ecological degeneration.

The Toubkal National Park was created in the early 1940s. Initially, the park boundary avoided all human settlements and was somewhat arbitrary; since then there have been some changes and the boundary is currently under further official scrutiny. Djebel Toubkal, at 4165 m the highest peak in North Africa (in fact, the eighth highest peak in Africa and the highest peak between the Ethiopian highlands and the Alpine massifs of Italy and Switzerland), lies near the centre of the park, and the terrain of the Toubkal Massif and adjacent peaks is extremely rugged and inhospitable. In addition to the park itself, a 'zone périphérique' includes land possibly identified for future incorporation.

The northern boundary of the peripheral zone cuts through Oukaimeden, one of the best known localities in Morocco for entomologists, as well as for ornithologists and botanists. Since the 1930s, when the French began to ski there, Oukaimeden has been a popular winter ski resort, but between March and August, the few lush valleys are protected by its status as a designated *agdal*, an ancient indigenous system of range management surviving in only a few of the more remote regions of Morocco. This is a collective pasture with rigid, fixed opening and closing dates, owned and managed by two sedentary tribes, the Ourika and the Rhiraya, who share grazing rights in a stable arrangement dating from the 17th century. The *agdal* is 'open' from the 10th of August to the 15th of March each year (Gilles *et al.*, 1992); livestock is not allowed above a certain altitude at other times and as a result, the local fauna, Berber communities and winter ski enthusiasts all benefit.

The High Atlas mountains, despite their parched appearance in summer, support a significant fauna and 32 species of butterfly were observed hill-topping at 2788 m on the

Adrar-n-Guinnous, south-west of the Toubkal park, on one day in June 1994 (Tennent, 1995). At species level, the park and its immediate environs (including Oukaimeden) support an unexpectedly high proportion of the total Moroccan butterfly fauna and overall, more than half of the butterfly species known from the Maghreb States of Morocco, Algeria and Tunisia have been reported from the park (Table 1).

Toubkal Park butterfly species

There follows a list of the butterfly species recorded from the Toubkal Park and its environs, including Oukaimeden. The status of each species is indicated. (C) = common (widespread and common in most years; may be abundant). (S) = scarce (resident in smaller numbers; may be local or very local). (R) = rare (irregular visitor; not seen every year; includes those species recorded singly).

Papilionidae
Papilio machaon mauritanica Verity, 1905 (S)
Iphiclides feisthamelii Dup., 1832 (S)
Zerynthia rumina africana Stichel, 1907 (S) (Note 1)

Pieridae
Aporia crataegi mauretanica Oberth., 1909 (S)
Pieris brassicae brassicae L., 1758 (C)
Pieris rapae mauretanica Verity, 1908 (C)
Pieris napi segonzaci Le Cerf, 1923 (C)
Pontia daplidice L., 1758 (C)
Euchloe ausonia melanochloros Rober, 1907 (C)
Euchloe belemia belemia Esp., 1800 (S)
Elphinstonia charlonia charlonia Donzel, 1842 (R) (Note 2)
Anthocharis belia belia L., 1767 (S) (Note 1)
Zegris eupheme maroccana Bernardi, 1950 (S)
Colotis evagore nouna Lucas, 1849 (R) (Note 2)
Colias croceus Geoff., 1785 (C)
Gonepteryx rhamni meridionalis Rober, 1907 (C)
Gonepteryx cleopatra cleopatra L., 1767 (C)

Lycaenidae
Nordmannia esculi mauretanica Staud., 1892 (C)
Callophrys rubi fervida Staud., 1901 (C)
Tomares ballus ballus F., 1787 (S)
Tomares mauretanicus Lucas, 1849 (C)
Lycaena phlaeas phlaeas L., 1761 (C)
Heodes alciphron heracleana Blachier, 1908 (S)
Thersamonia phoebus Blachier, 1905 (S)
Lampides boeticus L., 1767 (C)
Leptotes pirithous L., 1767 (S)
Tarucus theophrastus F., 1793 (R) (Note 3)
Azanus jesous Guér.-Mene., 1849 (R) (Note 4)
Cupido lorquinii H.-S., 1851 (C)
Celastrina argiolus mauretanica Rothschild, 1925 (S)
Glaucopsyche melanops alluaudi Oberth., 1922 (S) (Note 5)
Pseudophilotes abencerragus abencerragus Pierret, 1837 (C)
Plebejus martini ungemachi Rothschild, 1926 (S)
Aricia agestis cramera Esch., 1821 (C)
Aricia artaxerxes montensis Verity, 1928 (C)
Cyaniris semiargus maroccana Lucas, 1920 (C)
Agrodiaetus amanda abdelaziz Blachier, 1908 (S)
Plebicula atlantica atlantica Elwes, 1905 (C)
Lysandra punctifera Oberth., 1876 (C)
Polyommatus icarus Rott., 1775 (C)

Nymphalidae
Charaxes jasius jasius L., 1767 (R) (Note 6)
Nymphalis polychloros erythromelas Austaut, 1885 (S)
Vanessa atalanta L., 1758 (S)
Cynthia cardui L., 1758 (C)
Polygonia c-album imperfecta Blachier, 1908 (C)
Pandoriana pandora seitzi Fruhstorfer, 1908 (C)
Fabriciana auresiana astrifera Higgins, 1965 (S)
Issoria lathonia L., 1758 (C)
Melitaea cinxia atlantis Le Cerf, 1923 (S)
Melitaea phoebe occitanica Staud., 1861 (C)
Melitaea aetherie algirica Rühl, 1892 (S)
Melitaea didyma occidentalis Staud., 1861 (C)

Satyridae
Melanargia galathea lucasi Rambur, 1858 (C)
Melanargia ines ines Hoffman., 1804 (C)
Hipparchia aristaeus algirica Oberth., 1876 (C)
Neohipparchia statilinus sylvicola Austaut, 1880 (S)
Chazara briseis L., 1764 (C)
Pseudochazara atlantis Austaut, 1905 (S)

Satyrus ferula atlantea Verity, 1927 (C)
Berberia lambessanus Staud., 1901 (C)
Arethusana arethusa aksouali Wyatt, 1952 (S) (Note 5)
Maniola jurtina jurtina L., 1758 (C)
Hyponephele maroccana maroccana Blachier, 1908 (C)
Pyronia cecilia Vallantin, 1894 (C) (Note 1)
Coenonympha pamphilus lyllus Esp., 1806 (C)
Coenonympha fettigii inframaculata Oberth., 1922 (S)
Coenonympha vaucheri vaucheri Blachier, 1905 (C)
Pararge aegeria aegeria L., 1758 (C)
Lasiommata megera megera L., 1767 (C)
Lasiommata meadewaldoi Rothschild, 1917 (S) (Note 5)

Hesperiidae
Pyrgus alveus numida Oberth., 1910 (C)
Spialia sertorius ali Oberth., 1881 (C)
Carcharodus tripolina Verity, 1925 (S)
Carcharodus stauderi stauderi Reverdin, 1913 (S)
Thymelicus acteon orana Evans, 1949 (S)
Thymelicus lineola semicolon Staud., 1892 (C)
Thymelicus sylvestris iberica Tutt, 1905 (C)
Hesperia comma benuncas Oberth., 1912 (C)

Note 1. *Z. rumina*, *A. belia* and *P. cecilia* are usually found only at low to moderate levels within the park.

Note 2. *E. charlonia* is not found in the park every year. In favourable years it extends its range by migration and in some years, 1994 for example, it may be locally quite common. *C. evagore* is resident in the park wherever the host-plant, *Capparis* sp. (Capparidaceae) occurs, but also extends its range under favourable conditions and may be found singly at high altitudes.

Note 3. The occurrence of *T. theophrastus* at 2400 m near Oukaimeden (Tennent, 1996b: 165, 174) is remarkable. It is unlikely to be resident at such high altitudes, where known host-plants, *Zizyphus* and *Paliurus* spp. (Rhamnaceae) are absent.

Note 4. *A. jesous* is common south of the park in hot areas where *Acacia* (Fabaceae) is common; occasional specimens have been reported from the lower slopes of the Toubkal Massif.

Note 5. So far as is known, *G. melanops alluaudi*, *A. arethusa aksouali* and *L. meadewaldoi* are taxa endemic to the Toubkal Massif and its environs.

Note 6. *C. jasius* is a butterfly of low to moderate altitudes in Mediterranean coastal regions. The only record from the park the author is aware of was in 1992, when an individual was observed by the author over a 3-day period near Oukaimeden at 2400 m.

This list results from numerous visits to the Toubkal Massif by the author between 1979 and 1994. It may not be complete and the following species may also be present in the park:

Maurus vogelii insperatus Tennent, 1996—for 74 years after its discovery in the Middle Atlas mountains of Morocco, it was known only from a few localities close to the Taghzeft Pass, making it one of the most local butterflies in the world. The discovery of the species in 1994 in the western High Atlas, south-west of the park, was remarkable and it may well fly within the boundaries of the park. This unobtrusive and distinctive butterfly is the only representative of the genus *Maurus*; the host-plant, *Erodium cheilanthifolium* (Geraniaceae) is probably more conspicuous than the butterfly.

Eurodryas desfontainii Godart, 1819—It was only recently that this butterfly was discovered flying at high altitude in the mountains north of the Dades Gorge, in a habitat similar to that predominant in the Park.

Neohipparchia hansii Austaut, 1879—The author has not seen this butterfly in the park, although it is quite likely to fly there. It is usually a local butterfly where it occurs.

Gegenes nostrodamus F., 1794—Seen singly up to 1400 m not far from the park boundary on the slopes of the Tizi-n-Test. It may fly in the park.

Erroneous records

Pseudaricia nicias Meig., 1830—reported to be abundant at Oukaimeden by de Toulgoet (1966 : 200). The species does not fly in North Africa; this was presumably a mis-identification of one of the other park lycaenids.

Pieris mannii Mayer, 1851—mistakenly reported from the High Atlas mountains by de Toulgoet (1966 : 201), and by de Friena (1975 : 39), who mis-identified the species (de Friena 1995, pers. comm.).

Carcharodus alceae Esp., 1780—the status of *C. alceae* and *C. tripolina* has been the subject of much confusion over the years and it is not possible to separate the two from external characters. It is believed that only the latter species flies in North Africa (de Jong, 1978; Tennent, 1996a) and that the numerous published records of the occurrence of *C. alceae* refer to *C. tripolina*.

Acknowledgements

Madam Hnia Bencheikh, Chef de la Division de la Coopération, Ministère de l'Agriculture et de la réforme Agraire, gave authority to collect and study butterflies in Morocco; Ms Dawn Marie Roberts Carome accompanied the author to the summit of Djebel Toubkal in June 1994 and kindly supplied most of the historical information on the park and its boundaries.

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BOOK REVIEWS

Atlas of the dragonflies of Britain and Ireland by R. Merritt, N. W. Moore and B. C. Eversham, HMSO, London, 1996, xii + 150 pages (+ 8 pages colour photos), softback, £15.95, and **Dragonflies of Surrey** by P. Follett, Surrey Wildlife Trust, Woking, 1996, viii + 88 pages (+ 3 b/w and 13 colour plates), hardback, £12.—Some years ago I reviewed a whole clutch of dragonfly identification guides published in 1987. The great upthrust in interest in the group is now resulting in a large number of atlases and distribution guides.

The national atlas, produced by the Joint Nature Conservation Committee and the Institute of Terrestrial Ecology is clear and authoritative. After initial chapters on the history of Odonata recording, checklist and vice-county break-downs, each species is given a full A4 page to cover its description, habit, biology, status and distribution and is faced with a full-page distribution map of the British Isles. Given that dragonflies are so popular now, it might be argued that they are one of the few groups in which recorded distribution really does reflect actual distribution and the definiteness of the maps (except perhaps in Ireland where the dot spreads are more scattered) is support of this. The map showing final coverage of the Odonata mapping scheme is impressive, with only a very few holes. The atlas includes records to the end of 1990, and although it is claimed that even before this date the general patterns of distribution were well known, there is no explanation as to why it took 6 years to produce the book, or what the last 6 years' worth of recording has added to our knowledge. The colour photographs show habitats, larvae and adults of selected species and are bright and clear. The book is excellently laid out, crisp and direct and well recommended.

The Surrey atlas is equally recommended. Despite its smaller format, similar details of description, habitat, biology and status are contained on a page, although accounts do vary in length according to the detail necessary for each species. An interesting addition to this atlas is a consideration of fossil species found in Surrey. Several line drawings and the 3 black and white plates illustrate this informative chapter. Again, the colour photographs of habitats and adults are crisp and bright. My only concern about the book is one which I hold for many local atlases—the use of too simple a county outline on which the distribution dots occur. As a land-locked county, the outline of Surrey is unrecognizable to many of us without the additional cues of neighbouring vice-county boundaries or large towns marked. In this case Surrey rivers are shown (only to the Surrey border however), but one is still sometimes left wondering where exactly some of the insects occur. I would like to see a time when each map in such an atlas is individually crafted to show geological or geographical structures relevant to that insect species. For example, many of the dragonflies associated with acid bogs and sphagnum pools show distributions in the west of the county, a vague background stippling to show the position of these heaths would be most illuminating. Similarly, the absence of the large red damselfly, *Pyrrhosoma nymphula*, from the north-east might be shown in conjunction with the urbanization of the area. This minor gripe aside, the book is very well produced, with an attractive dust jacket and the Trust are to be congratulated for their work in producing this, the second of the Surrey atlases after the butterfly volume which was reviewed earlier (Hart, C. 1996, *Br. J. Ent. Nat. Hist.* **9**: 164).

RICHARD A. JONES

A SIMPLE, EFFECTIVE AND CHEAP BAITED PITFALL DESIGN

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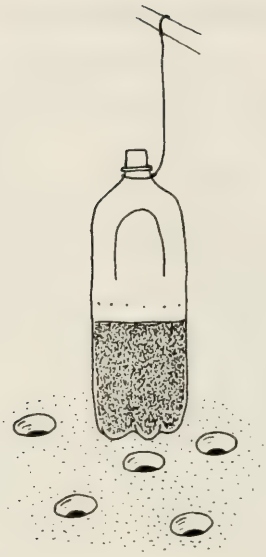
Baited pitfall traps are recommended for capturing specialist terrestrial invertebrates (Cooter, 1991; Cogan & Smith, 1974) but most designs include the bait and preservative within one container. The nature of this design leaves it vulnerable to disturbance by foraging animals, frequently resulting in a loss of specimens and effort. In addition the resultant samples are usually contaminated with bait. J. H. Keys in his notebook, held at Plymouth Museum, describes success in Devon using "carrion bottles" but makes no mention of the practicalities. Having found many of my carrion traps disturbed or with contaminated samples, a more robust and hygienic design was required.

During the spring of 1996 a baited pitfall trap design was created and tested. The requirements were for a relatively weatherproof design, resistant to disturbance by dogs, foxes and other vertebrates, and to provide clean, hygienic samples. The trap was initially designed for use with a carrion bait such as fish, but proved effective with a liquid bait where a fermenting mixture was used.

Several designs were attempted but the most successful consisted of a 2-litre plastic drink bottle suspended approximately 5 cm above the ground with a number of uncovered pitfall traps set below it. The plastic bottle possessed a rimmed neck which was attached by tough string to an overhanging object such as a branch. An arch was cut in the top third on one side of the bottle, this produced an elongate flap attached by its base to the bottle. This flap was resistant to manipulation but could be bent back to aid with the insertion of bait. About half way up the bottle a ring of punctures allowed some airflow through; this hopefully was exaggerated when the bottle swung in the wind. The free movement of the bottle was essential to the design. Any attempt by an animal to get the bait would be hampered by the lack of leverage onto the plastic bottle.

Below the baited bottle the pitfall traps consisted of plastic cups with rims set flush with the ground and partially filled with a 50% ethylene glycol solution and a few drops of detergent (washing up liquid). The ethylene glycol solution was diluted from concentrated (c. 97%) car antifreeze purchased locally, it was dyed blue. This preservative was diluted to a relatively strong solution to counteract rain dilution. Only occasionally were the traps disturbed and the contents lost due to animals. Initially ten traps were set under each bottle but later five or six pitfalls produced similar quantities of material. At one site all the pitfall traps were pulled up on several occasions. This was rectified by the addition of a very large pinch of extra hot chilli powder to each trap; this did not seem to affect the specimens collected. I suspected that pheasants were the culprits as I had seen them pecking at the traps previously; however the chilli powder solved the problem.

In the spring of 1996 ten traps were set, some isolated and others amidst busy public areas; all but two were intact on return. The two casualties were in busy public areas and were probably tidied up as the bottles were nowhere to be seen, the string cut and the concealed pitfalls intact. In some cases the traps lasted in public areas for over a month. The use of clear bottles and the need for overhanging branches was advantageous in that the traps were well concealed. The traps were successful at attracting several unusual species and good value considering the low cost and effort of setting them up.



The traps double as effective pitfall traps as well as capturing those species attracted to the bait. The fermenting fruit bait consisted of partially liquidized leftover fruit (melon, apple, banana) from the grocers, left for at least a week in a sealed container and with sugar and half a sachet of baker's yeast added prior to taking out into the field. This bait was particularly effective in attracting *Dorcus parallelipipedus* (L.), *Carabus violaceus* L., *Carabus problematicus* Herbst, *Carabus nemoralis* Müller, *Carabus granulatus* L., *Carabus intricatus* L., as well as occasional *Serica brunnea* (L.) and one individual of *Trypodendron domesticum* (L.).

The carrion bait consisted of fish heads from the local fishmongers or chopped waste bones from the butchers. This bait was successful in attracting carrion and dung beetles such as *Necrophorus humator* F., *N. vespilloides* Herbst, *N. vespillo* L., *Necrodes littoralis* L., *Oeceoptoma thoracica* L., *Thanatophilus rugosus* L., *Omosita depressa* L., *O. discoidea* F., *Onthophagus coenobita* (Herbst), *Geotrupes stercorosus* (Scriba), *G. spiniger* (Marsh.), *Typhaeus typhoeus* (L.), *Creophilus maxillosus* L., *Saprinus aeneus* (F.), *Margarinotus striola* (Sahlb.), *M. cadaverinus* (Hoffm.), *M. carbonarius* (Ill.) and *Laemostenus terricola* (Herbst).

Acknowledgement

I would like to thank Helen Burchmore of Plymouth Museum and Art Gallery.

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SHORT COMMUNICATIONS

Some observations of Geotrupidae (Coleoptera: Scarabaeoidea) in Devon.—In March 1994, while searching a standing rotten beech trunk, the remains of what appeared to be a species of *Geotrupes* were found. These remains consisted of legs, elytra and various other highly sclerotized body segments. They were found 1.4 m above the ground in a section of loose timber and peeling bark. The remains were likely to be *Geotrupes stercorosus* (Scriba) as this is the only species of *Geotrupes* found in that particular mature oak and beech woodland. In April 1994 further *Geotrupes* remains were found under the peeling bark of an oak trunk in another ancient oak and beech woodland. These remains were not identified to species. In April 1995 searching deadwood revealed the remains of a specimen of *G. stercorosus* under the loose bark of a fallen bough of oak. These remains were found 0.8 m above the ground. Again the remains consisted of heavily sclerotized body segments. The habitat was again mature beech and oak woodland. These three instances provided only circumstantial evidence of climbing in *Geotrupidae*. However in October 1995 a female *Typhaeus typhoeus* (L.) was observed climbing easily up a moss-covered beech trunk. This individual had reached a height of 1.2 m above the ground. Following this observation it is not inconceivable that *G. stercorosus* as well as the other species of *Geotrupes* climb up suitable vertical surfaces. However the extent, frequency and purpose of such climbing is, as yet, unclear.

In April 1995 21 *Geotrupes spiniger* (Marsh.) were found under horse dung in grazed areas of Dartmoor, near Tavistock, Devon. Of these only one was found above ground and burrowing into the dung with no tunnel extending into the ground. Even after thorough excavation only two tunnels contained *pairs* of *G. spiniger*. The lack of pairs found in tunnels suggests a difference between these field observations and the laboratory observations of Kuhne (1995). Without exception all 18 tunnels had, within the first 10 cm, a 90° to 180° change in direction. This usually consisted of a downward curve in the tunnel, almost appearing as the start of a spiral descent. Following the initial curve the tunnels continued in a relatively linear descent. Kuhne (1995), describes the male and female *G. spiniger* both excavating the tunnel and horizontal brood chamber but does not refer to the initial spiral descent as found here. The tunnels did not exceed 30 cm in length, the more normal length being 40 to 60 cm (Shirt, 1991). This may have been due to the thin soil layer over solid rock, the soil rarely exceeded 25 cm depth at the sites visited. Similarly, tunnels of *T. typhoeus* did not exceed 30 cm in length. *T. typhoeus* usually produces longer tunnels of 1 m to 1.5 m (Jessop, 1986; Shirt, 1991). In some instances *T. typhoeus* males were found at the entrance to the tunnels, while the females remained in the depths of the tunnel. In one instance a male was found excavating a second (3 cm when found) burrow under horse dung while a female remained in the longer tunnel some 15 cm distant.

G. spiniger was relatively common in April although Shirt (1991) classes it as a late summer and autumn species while Jessop (1986) notes its occurrence as mostly July to October. During the period 1994 to 1995 *G. spiniger* was the predominant geotrupid in unimproved open pasture whilst *G. stercorosus* was predominant in ancient woodlands. Only very infrequently would a *G. spiniger* individual be found in woodland. *T. typhoeus* was found in low numbers in both ancient woodland and unimproved open pasture.—C. R. TURNER, 19 Pew Tor Close, Tavistock, Devon PL19 9JQ.

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Shirt, D. B. 1991. Scarabaeoidea. In: Cooter, J. *et al.* (Eds). *A coleopterist's handbook.* Amateur Entomologists' Society, Feltham, pp. 97–102.

Editorial note.—That scarabaeids sometimes occur under bark is borne out by my own observations. On 27.xii.1984, I found a specimen of *Trox scaber* (L.) together with several specimens of *Aphodius sphacelatus* (Panz.) and *A. granarius* (L.) under the wet fungoid bark of a large dead standing oak between Lurgashall and Petworth, West Sussex. RICHARD A. JONES.

Nomenclatural changes to some British Tortricidae (Microlepidoptera).—In the recently published *Checklist of the Lepidoptera of Australia* (Nielsen *et al.*, 1996) the genus *Piercea* Filipjev, 1940, is newly synonymized with *Gynnidomorpha* Turner, 1916. The generic combinations of five British species are affected in consequence, and these are listed below together with their code numbers as given in the most recent list of British Lepidoptera (Emmet, 1992).

927 *Gynnidomorpha minimana* (Caradja)
928 *G. permixtana* ([D. & S.])
929 *G. vectisana* (H. & W.)
930 *G. alismana* (Rag.)
931 *G. luridana* (Gregs.)

It should also be noted that Falkovitsh (1962) published a new monobasic genus *Piniphila* with type-species *Tortrix (Sericoris) decrepitana* H.-S., 1851, which is, however, a junior synonym of *Tortrix bifasciana* Haworth, 1811. Bradley *et al.* (1979) apparently overlooked Falkovitsh's publication and included *bifasciana* in the "dustbin" genus *Olethreutes*, and this treatment was followed by Emmet (1992). However, Razowski (1983) treated *Piniphila* as a good genus (and included *bifasciana* as a senior synonym of *decrepitana*) and gave morphological characters distinguishing it from *Olethreutes*. The entry for *bifasciana* in Emmet (1992) should therefore be amended as below.

1079 *Piniphila bifasciana* (Haw.)

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Falkovitsh, M. I. 1962. New Palaearctic genera of the tribus Olethreutini (Lepidoptera, Tortricidae). *Ent. Obozr.* **41**: 190–197 [In Russian].

Nielsen, E. S., Edwards, E. D. & Rangsi, T. V. (Eds) 1996. Checklist of the Lepidoptera of Australia. *Monogr. Austr. Lepid.* **4**: i–xiii, 1–529.

Razowski, J. 1983. Motyle (Lepidoptera) Polski. Cz. VI—Olethreutinae: Olethreutidii. *Monogr. Fauny Polski* **13**: 1–177 [In Polish].

A tale of two galls.—Galls are distinctive and abnormal growths produced by a plant in response to the influence of an organism (Redfern & Askew, 1992). Frequently, galls are lush outgrowths and have the appearance of being potentially attractive food for other species. I have previously shown that some free-living psyllids and aphids can have faster growth rates when feeding on buckthorn (*Rhamnus catharticus* L.) leaves with galls formed by *Trichochermes walkeri* Förster, and that these different Homoptera show associations ranging from obligate use of galled leaves, through showing a preference for feeding on galled leaves, to showing no significant association with *T. walkeri* galls (McLean, 1994).

Although such feeding on galled leaves by sap-sucking Homoptera may have some negative effects on a gall-former such as *T. walkeri* (though this has yet to be tested for this species), eating gall tissue, and/or eating the gall-inducing organism within the gall, is obviously more directly damaging to the gall-former. I have recently observed two instances of interactions between galls and free-living species which offer contrasting outcomes for the respective gall-formers.

First, I have seen a grey squirrel, *Sciurus carolinensis* Gmelin, feeding on the contents of leaf-petiole galls formed by the aphid *Pemphigus spirothecae* Passerini (Homoptera: Pemphigidae) on Lombardy poplar *Populus nigra* L. var. *italica* at the rear of Monkstone House, City Road, Peterborough at around 19.30 BST on 15 August and again at about 18.30 BST on 20 August 1996. The debris of broken galls and discarded leaves rained down at the rate of several per minute, but whether it was the honeydew, the insects themselves, or these items together which were the principal attraction for the squirrel (or squirrels, as I could not tell whether the same individual was responsible on both dates) remains a mystery. However, examination of the opened galls suggested that it was the gall contents rather than the galls themselves which were consumed by the squirrel(s), which had perhaps acquired a sweet tooth!

Second, in my garden at Miller Way there is a female sallow bush, *Salix* ?*aurita* L. on which I noticed an inflorescence gall, possibly formed by the mite *Phytopus triradiatus* (Nalepa) (Acari: Eriophyidae) according to the figures in Redfern & Askew (1992) and Stubbs (1986), though the overall form of the gall was more compact. On 20 August 1996 I saw that a substantial number of higher branches on the bush had been defoliated by the clutch-feeding larvae of the buff-tip, *Phalera bucephala* L. (Lepidoptera: Notodontidae). The branch with the single inflorescence gall was completely defoliated around the gall, but the gall itself was intact. Whether these voracious larvae ignored the gall because of its non-leaf shape and texture, and/or whether some chemical(s) deterred feeding is unknown. Clearly, there would be a strong selective advantage favouring those galls which are distasteful to chewing insects such as Lepidoptera larvae (not to mention other browsers, including mammals) but whether many galls are unpalatable seems unclear, and is worth further observation and experiment.—IAN F. G. MCLEAN, 109 Miller Way, Brampton, Huntingdon, Cambs PE18 8TZ.

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***Ampedus sanguinolentus* (Schrank) (Coleoptera: Elateridae) on Wimbledon Common and Putney Heath.**—Mr Maxwell Barclay found this species at Wimbledon Common in October 1995. On 14.iv.1996 I found a specimen of the same species on Putney Heath, part of the same area of heathland, under the bark of a fallen birch, a little south of King's Mere.

Mr A. A. Allen and Mr B. A. Cooper have previously recorded this species on Wimbledon Common, in March 1946, and 1966 (Hodge, 1993), but I know of no other records for it since then in this locality. *Ampedus sanguinolentus* is graded a "notable A" species, and is restricted to heathland in southern England. It has an association with rotten birch but may develop in other species, for example pine and sallow.

I wish to thank Mr Maxwell Barclay, who alerted me to the presence of this species on the Common.—MARTIN HENDERSON, 18 Landseer Close, Merton Abbey, London SW19 2UT.

REFERENCE

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details of indoor meetings and the annual exhibition (but not field meetings and workshops),
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EDITORIAL

Call for colour-illustrated articles and papers

The Journal is lucky in that it is able to offer authors colour reproduction of their illustrations without having to ask them to defray the costs. At present, four colour plates are published each year: two of specimens exhibited at the Society's annual exhibition and two others. The two photographs for the 1996 annual exhibition are in hand, but other colour-illustrated articles are currently sought to complete the colour printing work. In particular, the Editor is keen to get short communications illustrated with single colour transparencies taken "in the field" showing living insect behaviour, form or ecology. Four or six such articles could be published together in a block to share a colour plate between them. At the same time, authors who consider a whole colour plate necessary to accompany a paper should not be put off. Colour illustrations can be submitted in the form of transparencies or paintings. Please contact the editor if you wish to discuss the possibilities of colour illustrations.

Richard A. Jones

LETTER TO THE EDITOR

Field meeting records.—I want to ask about records relating to field meetings and subsequent use of the information and records gathered. The *British Journal of Entomology and Natural History* and the society's previous titles are the record left for future generations of naturalists. Reports of field meetings provide a historical record of what was recorded at given places, often re-visited over a number of years. At present the records are published in a very abridged form, only itemizing what at the time of publication seem to be the more noteworthy observations.

I noticed the plan to run a meeting at Welshbury Wood, Glos. in April 1996. This seemed a potentially interesting site and I was keen before travelling such a long distance to get a better idea of the known fauna and noted that this was 'a follow-up meeting' to one held in 1994. In an ideal world I would have been able to turn back to the relevant field meeting report to refer to a full list of records accumulated at the time and published for future reference.

Instead of a report under the usual reference of proceedings and transactions of a field meeting, I found a report included in Paul Waring's 1994 presidential address, which immediately breaks the norm of being able to locate a locality report by referring to the back cover. Secondly, having located this report of the meeting I was eager to know what insects were recorded at the 19 lights operated. One moth is recorded. However references are made to reports appearing elsewhere. One (Brock, 1994) is in *Antennae*—the Newsletter of the Gloucestershire Branch of Butterfly Conservation, a second (Waring, 1994e) is a wildlife report in *British Wildlife* and a third (Waring, 1995a) is a report on the national moth conservation project in *Butterfly Conservation Annual Review*. I do not have reasonably easy access to any of the above publications, nor I suspect do the majority of other BENHS members. A fourth reference was to the BENHS Annual Exhibition write-up, but no species are listed.

Other field meeting reports are usually abridged to a similar degree. I suspect that the data are being gathered at the time and then lost to the society.

We, as a major national society are missing a valuable opportunity to compile the information gathered at field meetings by our members. Secondly we are failing to

pass on as comprehensive a set of details of the current fauna and flora to future generations of naturalists. I consider this to be a very serious shortcoming. Consider what a superb set of records for various sites visited by the society's members attending field meetings would be available now, had these records been published in fuller form, or stored from the start.

I appreciate that to publish comprehensive lists would be prohibitive in time and cost, but for those interested, an archive of field meeting reports could be held in our library. Comprehensive reports are I think essential now in the face of such heavy pressure on the environment from commercial activities. Equally, photographic records of localities, giving date, exact location, etc would be of considerable value in the future.

At the very least, the society should commission a shoe box, cardboard carton or similar, (a filing cabinet would be a great luxury) into which all individual observers' reports taken at the field meeting, be deposited. These should be headed by the compiler's name, location and vice-county, date, and orders of fauna or flora contained. This in no way interferes with the present publication of field meeting reports, but offers a bank (or box) of data when needed.—DAVID WILSON, Joyce House, Green Tye, Much Hadham, Herts SG10 6JJ.

Editorial comment.—Any member of the BENHS will realize that there are far fewer field meeting write-ups than actual field meetings. Why should this be? It is usually put down to pressure of time. As a leader of field meetings myself, I must throw up my arms too and admit that I have not written them all up. Even those that I have reported have tended to be abbreviated accounts, with a few of the more interesting species listed. But I do have longer lists, and until now, I have been wondering what to do with them.

David's suggestion of a central repository for the Society is an excellent one, and one which I will seek to take further. I have a couple of shoe boxes which I will be pleased to donate to this end. And it has been pointed out to me that the Society now has a computer and the "Recorder" software which would enable rapid access to these records for any interested party. Perhaps the Society needs someone to transfer records onto the computer—a Society archivist maybe, any volunteers?

Paul Waring recognized the importance of the Society's field meetings when he made them the topic of his presidential address. And he has now written up the 1994 Welshbury Wood meeting; it is published in this issue, pages 39–42. He reminds me that this is one of seven field meetings that he led in 1994, which he is getting round to writing up as and when time allows.

What of other field meeting leaders? As Paul states in his address, even the shortest of reports, made soon after the meeting was held, is better than no report at all. Nevertheless, I have rather few field meeting notes sent to me. I would take this opportunity to urge leaders to send in their brief accounts even if they are still waiting on lists from the various other people who attended. A fuller report can always be published at a later date. Illustration with photographs greatly enhances the reports too. Not only does it give a flavour of the site and its prizes to those who missed the occasion, but it leaves a permanent social record of the Society and its members.

So, after David and I have had our say, I look forward to receiving a shower of reports, long and short, of the meetings recently held by the Society. In the mean time, before members attend their next season of field meetings, they would do well to contact the leaders personally beforehand to get any species lists or historical information, published or otherwise.—RICHARD A. JONES.

BENHS FIELD MEETINGS

Welshbury Hill, near Cinderford, Gloucestershire, 25 June 1994

Leader: **Paul Waring**. This was a joint evening and night-time meeting between the BENHS, the Gloucestershire Invertebrate Group and Butterfly Conservation. It was attended by 22 people, including 14 members of the BENHS. Welshbury Hill (Fig. 1) is the site of an iron-age hill fort, now largely overgrown with small-leaved lime *Tilia cordata* Miller. Presumably there was formerly good visibility from the fort but it seems that some of the stools of lime coppice extend out on both sides of the earth ramparts and therefore pre-date them. Small-leaved lime is the only larval foodplant of the rare scarce hook-tip *Sabra harpagula* (Esp.) in Britain, and the moth is only known from the Wye Valley woodlands on the borders of Gloucestershire with Monmouthshire and formerly (1837–1938) from Leigh Woods in the Avon Gorge near Bristol (Emmet & Heath, 1991). One of the aims of this meeting was to see if this moth could be found in other old lime woods outlying the Wye Valley/Forest of Dean area. Another was to begin to discover the existing moth interest of the site and consider how it might be affected by different management options, such as clearing trees from the areas of archaeological interest, mass thinnings or fellings of the apparently rather even-aged lime stands, or felling of smaller coups on rotation.

No scarce hook-tip was seen during the field meeting at Welshbury Hill, despite the operation of 17 mercury vapour lights and one actinic trap in or near stands of lime, even though the moth was recorded by a group including the leader and various members the previous night at its known haunts near Tintern. Return visits to Welshbury Hill were made by Bernard Skinner on 27.vi.1994, and by Paul Waring, Ray Barnett and Andy Pym with three light traps on 1.vii.1994, but again no scarce hook-tip was seen. On each of these visits many other species of moths were noted and on the last night the weather was particularly favourable for light-trapping. The most important find was the pyralid moth *Salebriopsis albicilla* (H.-S.), the larva of which feeds on small-leaved lime. This moth was first discovered in Britain in 1964

Fig. 1. Welshbury Hill approaching from Flaxley, Gloucestershire. Photo: P. Waring.

Fig. 2. One of the stands of small-leaved lime *Tilia cordata* light-trapped near the top of Welshbury Hill. Photo: P. Waring.

and was known, until this meeting, only from the Wye Valley woodlands, and from Leigh Woods in 1968 and 1995 (Skinner, 1996; Waring, 1996a,b). A number of males and a female were seen on the BENHS meeting and several more males and females in the subsequent visits, in several traps both in thinned and unthinned stands of tall lime trees. Some eggs were obtained and these have since been reared and the immature stages described and illustrated (Skinner, 1996). The male in the

Fig. 3. Dominic Rey, Mr and Mrs Tony Dobson, and Bernard Skinner examining one of Tony's "wine-ropes" at Welshbury Hill. Photo: P. Waring.

Fig. 4. Male *Salebriopsis albicilla* (Pyralidae) at rest in the morning by one of the light traps at Welshbury Hill where a colony was discovered on 25.vi.1994. Photo: P. Waring.

accompanying photograph (Fig. 4) is shown at rest where found by the light trap. He was moving his antennae alternately, lifting one then the other, showing off the striking white basal portions in the process.

Other note-worthy species included Blomer's rivulet *Discoloxia blomeri* (Curt.), clay triple-lines *Cyclophora linearia* (Hübn.), cloaked carpet *Euphyia biangulata* (Haw.), clouded magpie *Abraxas sylvata* (Scop.), dingy shell *Euchoeca nebulata* (Scop.), great oak beauty *Boarmia roboraria* (D. & S.), poplar and satin lutestrings *Tethea or* (D. & S.) and *Tetheella fluctuosa* (Hübn), scarlet tiger moth *Callimorpha dominula* (L.), sharp-angled carpet *Euphyia unangulata* (Haw.) and square-spot *Paradarisa consonaria* (Hübn), as well as plenty of lime hawk-moths *Mimas tiliae* (L.). In addition, 79 species of macromoths were recorded in the adjacent Flaxley Woods, using another four traps, during the meeting, including the cloaked carpet. The night's total for the two woods together was 94 species of macros; 19 species of micromoths were recorded in Flaxley Woods but *S. albicilla* was not seen (Roger Gaunt, pers. comm.).

Other invertebrates recorded during the meeting included a ground beetle *Carabus problematicus* Herbst running across the main track through the woodland after dark (det. Gavin Boyd) and several cockchafers *Melolontha melolontha* (L.) which came to the light traps.

During the late afternoon we watched a pair of common buzzards *Buteo buteo* circling and calling in the sky over the wood and just before dusk one flew off from a perch among the trees. A fledgling long-eared owl *Asio otus* spent a great deal of time calling from the lime trees up by the fort as we walked around the traps at 01.00 hrs, indicating that the birds had bred here. A breeze rustled the leaves in the tree tops and there was only broken cloud during the night. The light traps in sheltered locations had the largest catches, particularly of geometrid moths. A badger *Meles meles* was seen during the meeting and a large sett and several badgers were seen on the second of the follow-up visits.

A number of us spent all night in the woods, getting a few hours sleep in our cars among the trees and sharing breakfast on a glorious sunny morning with the elder *Sambucus nigra* L. in bloom and with commanding views over the Severn Valley. This really is a most atmospheric and grand site to work.

A copy of this report and a full species list have been sent to the Forestry Commission and the records have been copied for the Invertebrate Site Register (JNCC, Peterborough) and the Gloucestershire Invertebrate Group. Brock (1994) reported on the meeting for the Gloucestershire Branch of Butterfly Conservation. I would like to thank the Forestry Commission for permission to hold this field meeting and Roger Gaunt, Gloucestershire county moth recorder, for looking after the group in Flaxley Wood. I thank everyone who attended and helped to ensure such an enjoyable meeting, such good coverage of the woods by light traps and the collection of so much useful data. Shortly after the meeting I was asked to comment on various management proposals and the results from the meeting were a great help in this, particularly so since there are few other invertebrate records for these sites.

References

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Waring, P. 1996a. The presidential address—part 2. *Br. J. Ent. Nat. Hist.* **9**: 30.

Waring, P. 1996b. Wildlife reports—moths. *Br. Wildlife* **7**: 188.

Howlands Marsh Nature Reserve (Essex Wildlife Trust), 14 September 1995

Leaders: **Joe Firmin** and **Reg Arthur**. This was a joint meeting between BENHS, the Invertebrate Group of Colchester Natural History Society and Essex Lepidoptera Panel, attended by nine with a good spread of entomological expertise and three Essex county recorders in the group.

Howlands Marsh is a 186-acre SSSI managed by Essex Wildlife Trust and is one of the few coastal grazing marshes still surviving in Essex. It consists mainly of hummocky grassland split up by dykes and fleets. There is a narrow fringe of saltmarsh outside the sea wall, widening into a large block where two creeks meet at St Osyth.

It was a sunny day and five butterfly species were recorded. There were five sightings of the clouded yellow, *Colias croceus* (Geoff.), during the day.

As well as the usual Essex coastal specialities such as Roesel's bush cricket, *Metrioptera roeselii* (Hagenb.), and the ruddy darter dragonfly, *Sympetrum sanguineum* (Müll.), the following scarcer species were noted. Orthoptera: great green bush cricket, *Tettigonia viridissima* L. Diptera: *Myopites eximia* Séguy, galls were found on *Inula crithmoides* (golden samphire) growing between concrete blocks on the sea wall. Hymenoptera: *Aulacidea follioti*, galls found on *Sonchus asper* by a borrowdyke; this is a new site for this scarce cynipid wasp known in Britain only from the Essex coast where it was first discovered in 1993. Coleoptera: Adonis' ladybird *Adonia variegata* (Goeze) swept from sea-wall vegetation; this is a mainly coastal species, scarce in north Essex. *Cassida vittata* de Vill., a local tortoise beetle;

two individuals were found under driftwood. *Sibinia primitus* (Herbst), a local weevil associated with *Sagina* and *Spergularia* although on this occasion taken on water parsnip by BENHS member Nigel Cuming.

Six stayed on to run three m.v. lamps in the reserve. The night yielded a species tally of 39 macro species and four species of microlepidoptera. Among the more interesting macro moths recorded were autumnal rustic (*Paradiarsia glareosa* Esp.); crescent (*Celaena leucostigma* Hübn.); hedge rustic (*Tholera cespitis* D. & S.); small wainscot (*Photedes pygmina* Haw.) and bulrush wainscot (*Nonagria typhae* Thunb.).

During the day a number of the attractive little saltmarsh plume moth (*Agdistis bennetii* Curt.) were seen on sea lavender, which is the larval foodplant.

Searches of the reserve reedbeds revealed the presence of larvae of the reed dagger (*Simyra albovenosa* Goeze). This is a local species in Essex and Suffolk.

Beachy Head, East Sussex, 15 June 1996

Leader: **Mark Parsons**. Although billed as a field meeting to Beachy Head, this meeting was centred on the downs at the foot of Beachy Head nearer Eastbourne, incorporating Holywell, Whitbread Hollow and Cow Gap. Only two members attended the afternoon meeting. This was perhaps not unexpected given the fact that, despite sunny conditions, a cool strong south-easterly wind was blowing. This meant that there was very little flying. However, six species of butterfly were noted including a few Adonis blue *Lysandra bellargus* (Rott.) and several painted lady *Cynthia cardui* (L.) (some evidence of the recent strong migration of this species). The most significant find of the afternoon, and the day, was the discovery of half-a-dozen larvae of the plume moth *Cnaemidophorus rhododactyla* (D. & S.), confirming that the species is at least temporarily resident in the Eastbourne area. The larvae were very localized and seemed to be present in just a small area, although given the time it was not possible to search all potentially suitable sites.

Although the cool winds did not abate, ten members and friends attended the evening session. However, it rapidly became obvious that it was not to be a particularly fruitful evening as the temperature had dropped to around 10°C shortly after dusk and, if anything, the winds had become more blustery. Some were able to run traps in comparatively sheltered spots, other trapping sites were somewhat more exposed. Fourteen m.v. light traps were operated, but despite this effort the total list for the macrolepidoptera struggled to around the 40 species mark. Amongst these was evidence again of a recent migration, with two bordered straw *Heliothis peltigera* (D. & S.) being noted. The resident species that did appear included the privet hawk *Sphinx ligustri* L., a few small elephant hawk *Deilephila porcellus* (L.), and several cream-spot tiger *Arctia villica* (L.). Perhaps not surprisingly, very few microlepidoptera were seen. It was a great disappointment that the weather was against us as it was generally agreed that the area, with its variety of chalk downland habitats, should prove a particularly interesting place for study.

I would like to take this opportunity to thank David Pearce (the Downland Ranger) for granting access permission to the site.

Le Havre, France
Joint Meeting with Evreux Entomological Society, 31 May–2 June 1996

Leaders: **B. Goater** and **D. J. L. Agassiz.** This was the third joint meeting between the two societies. The first was in Rouen in 1993, the second at Dinton Pastures in 1994. Apart from a brief excursion to Pamber Forest in the rain during the second meeting, this was the first meeting planned primarily for field work.

Unfortunately only four members represented the BENHS, but the number of our hosts varied between 12 and 15 at various times. A rendezvous at Le Havre enabled British participants to travel as foot passengers, although two from further east went by car through the Channel Tunnel.

After meeting up with our hosts we travelled to the village of Bouquelon. A brief look in the vicinity, which was not designated as a collecting locality, revealed species of note—in the churchyard the microlepidopteron *Argyresthia trifasciata* Stdgr was abundant. Only one specimen has been recorded in England despite its being a horticultural pest on *Thuja* and related trees. In the same place was the handsome blue-and-red clerid beetle *Trichodes alvearius* (F).

We were then taken to a vantage point overlooking Le Marais Vernier, a large area of wetland. The conservation strategy was explained by the park warden with his interpreter. The resources made available by the local authority for this were impressive, and a range of measures such as grazing by highland cattle were practised. Then we went down into the marsh to collect and record specimens. Among the more remarkable for English entomologists were the soldier beetle *Cantharis fusca* L., the soldier fly *Beris clavipes* (L.) and a cocoon of the alder kitten *Furcula bicuspis* (Borkh.), uncommon British species. There was also a surprisingly large example of the groundhopper *Tetrix ceperoi* (Bol.), and the violet leaf beetle *Agelastica alni* (L.) was so common it is difficult to understand why it has died out in Britain. Nor could we fail to notice the storks, nesting at what must be their most northerly European site; they had availed themselves of a platform provided on a tall strong pole.

After being extravagantly wined and dined by our hosts in Bouquelon we returned for night work at lights in the Marais Vernier. It is always interesting to compare the methods of different groups of entomologists; one local custom was to use a Wood's glass black m.v. lamp high above a normal m.v. lamp. A number of moths were recorded despite a cool evening, including *Cyclophora pendularia* (Clerck), but nothing non-British. We were kindly accommodated by local members to whose homes we repaired at great speed in the early hours.

On the Saturday morning we assembled at the Museum in Rouen, where many specimens collected by local members were set before us, some of which we attempted to name. This was followed by a further meal at a Rouen restaurant appropriately named Flunch! In the afternoon we went to a piece of calcareous downland at Saint Adrien, on the right bank of the Seine south of Rouen. The weather was warm and bright, apart from a very light shower, and we were impressed with the richness of flora and fauna. Whilst the field cricket sang to us wood white butterflies were in quantity and other Lepidoptera scarce in Britain were noted: a swallowtail butterfly, a black-veined moth, a mine of the tortricid *Lobesia occidentis* (Falk.) and cases of *Coleophora ochrea* (Haw.) and *C. vibicella* (Hübn.).

Non-British species included *Coleophora chamaedryella* (H.-S.), *Xerocnephasia rigana* (Sodof.) and the green-underside blue butterfly *Glaucopsyche alexis* (Poda.). There were also found the groundhopper *Tetrix tenuicornis* (Sahlb.), the cockroach *Ectobius sylvestris* (Poda), several red-and-black ground bugs *Lygaeus equestris* (L.) and the shieldbug *Graphosoma italicum*, boldly striped in black and red, a common Mediterranean species which does not reach Britain.

After a wonderful afternoon we returned to our respective hosts, again to consume splendid wine and food. The next morning those who had not had to dash for a ferry returned to the Rouen Museum for more work on collections. It was Mother's Day in France which made finding a restaurant for lunch quite a task, after which our hosts were finally left in peace. For the few members who braved the journey and the language this was a memorable meeting, like its predecessors, and our warmest thanks go to our hosts of the Evreux Entomologists Society for their excellent hospitality.

Selected species lists

Bouquelon, Eure, 31 May 1996

Psyche casta (Pallas) a few cases
Glyphipterix simpliciella (Steph.) a few
G. fuscoviridella (Haw.)
Argyresthia trifasciata Stdgr many adults and mines on *Cupressus*
Epermenia chaerophyllella (Goeze) a few larvae on *Heracleum*

Marais Vernier, Eure, 31 May 1996, afternoon and night

Luffia ferchaultella (Steph.)/?*lapidella* (Goeze) many cases
Psyche casta (Pallas) several cases
Bucculatrix cidarella Zell.
Prochoreutis myllerana (F.) a few pupae on *Scutellaria galericulata*
Glyphipterix thrasonella (Scop.) a few
Yponomeuta cagnagella (Hübn) many larval webs on *Euonymus*
Plutella xylostella (L.) a few
Coleophora serratella (L.) a few cases on *Alnus glutinosa*
C. follicularis (Vallot) a few cases on *Pulicaria dysenterica*
C. taeniipennella H.-S. case on *Juncus*
C. caespititiella Zell.
Agonopterix ciliella (Staint.) a few larvae on *Angelica*
A. ocellana (F.) larva on *Salix cinerea*
Mompha epilobiella (D. & S.) a few larvae on *Epilobium hirsutum*
Cochylis nana (Haw.)
Clepsis spectrana (Treits) a few
Olethreutes lacunana (D. & S.) several
Bactra lancealana (Hübn.) very many
Epinotia immundana (F. v. R.) a few
Evergestis pallidata (Hufn.) a few
Pyrausta aurata (Scop.) a few
Cynthia cardui (L.) a few
Drepana falcataria (L.) a few
Cyclophora pendularia (Clerck)
Timandra comai Schmidt = *griseata* auctt. a few
Orthonama vittata (Borkh.) many
Epirrhoe alternata (Müll.) a few
Chloroclysta truncata (Hufn.) a few
Operophtera brumata (Linn.) a few larvae on *Salix cinerea*
Eupithecia exiguata (Hübn.)
E. centaureata (D. & S.)
Lomaspilis marginata (L.) a few
Opisthograptis luteolata (L.)
Serraca punctinalis (Scop.)
Aethalura punctulata (D. & S.) several
Cabera exanthemata (Scop.)
Smerinthus ocellata (L.) a few
Deilephila elpenor (L.) a few
Phalera bucephala (L.)
Furcula bicuspis (Borkh.) an old cocoon on *Alnus glutinosa*
Notodonta dromedarius (L.)
Peridea anceps (Goeze)
Calliteara pudibunda (L.) a few
Spilosoma lubricipeda (L.) a few
Diaphora mendica (Clerck)
Ochropleura plecta (L.) several
Diarsia rubi (View.) several
Xestia c-nigrum (L.)
Lacanobia oleracea (L.) a few
Hadena rivularis (F.)
Mythimna pallens (L.)
Acronicta megacephala (D. & S.)

Simyra albovenosa (Goeze)
Apamea crenata (Hufn.) a few
Oligia fasciuncula (Haw.)
Plusia festucae (L.) a few
Autographa gamma (L.) a few

St Adrien, Seine-Maritime, 1 June 1996
Eriocrania subpurpurella (Haw.) many vacated mines on *Quercus*
Ectoedemia atrifrontella (Staint.) mine in bark of *Quercus*
Stigmella aurella (F.) a few vacated mines on *Rubus*
S. hybnerella (Hübn.) a few mines, one tenanted, on *Crataegus*
Tischeria ekebladella (Bjerk.) many
T. marginea (Haw.) a few mines on *Rubus fruticosus*
Zygaena trifolii (Esp.) larva on *Lotus corniculatus*
Taleporia tubulosa (Retz.) case
Psyche casta (Pall.) many cases
Leucoptera laburnella (Staint.) a few tenanted mines on *Laburnum*
L. wailesella (Staint.) a few tenanted mines on *Genista tinctoria*
Caloptilia syringella (F.)
Acrocercops brongniardella (F.) a few mines, some tenanted, on *Quercus*
Phyllonorycter quercifoliella (Zell.) a few
P. emberizaepenella (Bouché)
Glyphipterix simpliciella (Steph.) a few
Argyresthia spinosella (Staint.)
Yponomeuta cagnagella (Hübn). many larval webs on *Euonymus*
Coleophora lutipennella (Zell.)
C. flavipennella (Dup.) many cases on *Quercus*
C. gryphipennella (Hübn.) many larval workings on *Rosa*
C. serratella (L.) many cases on *Corylus* and *Betula*
C. adjectella H.-S. case on *Prunus spinosa*
C. chamaedryella (H.-S.) many cases on *Teucrium chamaedrys*, 1 on *T. scorodonia*
C. hemerobiella (Scop.) case on *Crataegus*
C. ochrea (Haw.) many cases on *Helianthemum*
C. vibicella (Hübn.) many cases on *Genista tinctoria*
C. discordella Zell. case on *Lotus corniculatus*
C. follicularis (Vallot) a few cases on *Eupatorium cannabinum*
C. paripennella Zell. a few cases on *Centaurea nigra*
Elachista argentella (Clerck)
E. gangabella Zell.
Alabonia geoffrella (L.) many
Agonopterix heracleana (L.) larva on *Anthriscus sylvestris*
A. atomella (D. & S.) larva on *Genista tinctoria*
A. liturosa (Haw.) a few larvae on *Hypericum* sp.
Syncopacma taeniolella (Zell.) a few larvae on *Lotus corniculatus*
Telephila schmidtiellus (Heyd.) larva on *Origanum*
Aethes tesserana (D. & S.)
Xerocnephasia rigana (Sodof.)
Acleris schalleriana (L.) many larvae on *Viburnum lantana*
Olethreutes lacunana (D. & S.) a few
Lobesia occidentis Falk. vacated mine in *Euphorbia*
Epiblema costipunctana (Haw.)
Eucosma cana (Haw.)
Pammene sp.
Dichrorampha plumbana (Scop.) a few
Pyrausta aurata (Scop.) a few
Anania funebris (Ström)
Capperia britanniodactyla (Gregs.) larva and much feeding on *Teucrium scorodonia*
Pterophorus baliodactyla Zell. larval feeding on *Origanum*
Adaina microdactyla (Hübn.)
Erynnis tages (L.) a few
Papilio machaon L.
Leptidea sinapis (L.) many
Gonepteryx rhamni (L.) many
Callophrys rubi (L.)
Polyommatus icarus (Rott.) a few
Lysandra bellargus (Rott.) many
Glaucopsyche alexis (Poda)
Cynthia cardui (L.) a few
Lasiommata megera (L.) a few
Cyclophora punctaria (L.)
Scopula floslactata (Haw.)
Scotopteryx mucronata (Scop.) a few
Colostygia pectinataria (Knoch)
Asthena albulata (Hufn.)
Minoa murinata (Scop.)
Pseudopanthera macularia (L.) many
Erannis defoliaria (Clerck) larva on *Betula*
Campaea margaritata (L.)
Siona lineata (Scop.) a few
Phlogophora meticulosa (L.)
Autographa gamma (L.) a few
Callistege mi (Clerck) a few
Euclidia glyphica (L.) a few
Phytometra viridaria (Clerck) a few

Heathlands and bogs near Sway, New Forest, Hampshire, 27 July 1996

Leader: **Paul Waring**. The leader was joined by 32 people for the afternoon session and a further nine for the evening stint. This was a joint meeting and included some members of the Hampshire branch of Butterfly Conservation who were not also BENHS members. Hinchelsea Moor (SU275005) to the northeast of Set Thorns Inclosure and the boggy heathland (SZ258995) by the stream known as Avon Water, between Set Thorns and the Broadley Inclosure, were the two sites explored during the warm, dry, calm but somewhat overcast afternoon. The afternoon party walked down from the car park at Set Thorns (SZ272997) and through the gap in the embankment of the disused railway line on which my great-grandfather worked during its heyday. A July belle *Scotopteryx luridata* flushed from the heath as we set off from the car park.

A particular objective of this meeting was to see if we could find the speckled footman moth *Coscinia cribraria* (L.). This heathland moth is now endangered in Britain. There are old records of the adults being seen in numbers by day, when they sometimes fly up from low vegetation, and it also comes to light traps. A single adult was light-trapped in one of its old heathland haunts near Wareham in 1996, the first record since 1993 from Dorset, where it appears to be at an all-time low in numbers. Between 1993 and 1996 a number of promising sites and former localities in Dorset have been searched for larvae and adults, and light-traps have been operated by Norman Hutchinson, Peter Davey and others, without finding any other individuals.

The speckled footman used to be recorded from the New Forest heaths around Ringwood and Burley, but it has not been reported from the Forest since two were taken in 1959 and one in 1960. It is not clear how much effort has been made to find the moth in the extensive heaths and bogs near Sway; probably insufficient was the considered opinion of several local lepidopterists I contacted. This field meeting provided the opportunity to run light traps, search and net at dusk on six separate sites simultaneously. The date was chosen to coincide with the peak of the flight season, based on records from the 1970s and early 1980s.

Starting on Hinchelsea Moor, we found a stonechat *Saxicola torquata* and a few silver-studded blues *Plebejus argus* (L.) on arrival. Habitats on this boggy moor range from stands of common reed *Phragmites australis* (Cav.), greater reedmace *Typha latifolia* L. and sedges *Carex* spp. in the wettest parts, through zones of cotton grass *Eriophorum vaginatum* L. and rushes *Juncus* spp. with muddy patches covered in sundew *Drosera rotundifolia* L., rising into hummocks and drier slopes covered with ling heather *Calluna vulgaris* L., bell heather *Erica cinerea* L. and cross-leaved heath *E. tetralix* L. Some of the latter was close-cropped, much was ankle-deep and there was a large stand of more mature, calf-deep heathers, so there was certainly a wide range of habitats on offer for the speckled footman and other invertebrates.

A snipe *Gallinago gallinago* flew up and away almost as soon as we reached the boggy ground. We soon encountered numbers of the small red damselfly *Ceriagrion tenellum* (de Vill.) and the bog bush cricket *Metrioptera brachyptera* (L.). A common ground hopper *Tetrix undulata* (Sow.) was swept and several long-winged coneheads *Conocephalus discolor* (Thunb.) were seen. A large nymph of the striking red form of the large marsh grasshopper *Stethophyma grossum* (L.) was photographed. Several keeled skimmer dragonflies *Orthetrum coerulescens* (F.) were in evidence. Some were basking but there was only hazy sun and few were flying.

Fig. 1. One of the groups inspecting Hinchelsea Moor. Photo: P. Waring

A large immature female spider of a *Dolomedes* sp. was boxed and passed around for inspection, and several other species of spider were identified by Ken Halstead. These included *Agelena labyrinthica* (Clerck), *Pisaura mirabilis* (Clerck) guarding its nursery web (there was quite an abundance of these), *Linyphia triangularis* (Clerck) and *Evarcha arcuata* (Clerck). These are relatively common species but they attracted a lot of interest from members.

Adult moths seen included a rosy wave *Scopula emutaria* in perfect condition, an immaculate purple-bordered gold *Idaea muricata*, the small purple-barred *Phytometra viridaria* (F.) and several fresh green grass emerald *Pseudoterpna pruinata*. The beautiful yellow underwing *Anarta myrtilli* was seen as adults and swept as larvae, and other larvae recorded were the broom *Ceramica pisi* (L.) and the fox moth *Macrothylacia rubi*. A male oak eggar *Lasiocampa quercus* coursed swiftly over the site. Other heathland moths seen included several of the bordered grey *Selidosema brunnearia* (Vill.), narrow-winged pug *Eupithecia nanata* and more July belle, but there was no sign of the speckled footman.

As we returned from the bog to Set Thorns Inclosure, a nightjar *Caprimulgus europaeus* was flushed from amongst the heathers and gorse *Ulex europaeus* L. on an upper slope. Later in the meeting on nearby heathland Ron Louch found a nightjar's nest with one hatched chick still with egg tooth and another egg not yet hatched.

The party was then divided into two. The first group went off to inspect Cranes Moor (particularly SU1803 & SU1804), a large area of heathland between Burley and Crow, and to select light trap sites there for the evening. The other group strolled through Set Thorns Inclosure to Avon Water and then visited the northern part of this bog system by Wootton Inclosure, easily reached from the

Fig. 2. A gathering round Barry Fox's light and sheet. Photo: P Waring

car park at Wootton Bridge. Some of the species seen on Hinchelsea Moor were encountered again on these sites, and these are included in the accompanying table of results.

The Hare & Hounds pub and Forest Heath Hotel in Sway provided evening meals and other refreshments and another small group ate camp food under the trees at Set Thorns.

When we regrouped at 20.00 hours light traps were set up at selected spots at both ends of Hinchelsea Moor (H1-5) (several traps between SU269004 & SU277006), at Avon Water by Set Thorns Inclosure (one Robinson trap at SZ265988), at Avon Water by Wootton Inclosure (one actinic) and inside the eastern edge of this Inclosure (SZ246995) (m.v.), further up the same bog, opposite Wilverley Inclosure (SU243001), at the south end of Goatspen Plain both on the bog on the east side of the road to Burley and on the bank of mature heather on the west side (SU231011), and on Cranes Moor (several lights in SU1803 & SU1804). Over twenty light traps were in use in all.

Unfortunately, the cloud cover we endured during the afternoon had broken up by dusk and the night turned cold and misty. Driving from one group of trappers to another after dark was quite challenging as banks of mist rolled across the heathland and we strained to follow the roads and tracks. We expected to see the Hound of the Baskervilles leap into the headlight beams at any minute! Perhaps similar difficulties of navigation explain why a fresh male light crimson underwing *Catocala promissa* and a festoon *Apoda limacodes* ended up at m.v. traps on the open heathland at Goatspen Plain, instead of remaining in their breeding grounds in oak woodland. In general the light-trap catches were small as a result of the unfavourable weather, but

List of the more interesting moths recorded on the BENHS meeting in the New Forest on 27 July 1996.

	C1	C2	H1	H2	H3	H4	H5	A	G	W	Wi
Apoda limacodes (Hufn.)	—	—	—	—	—	—	—	—	G	—	—
Olethreutes rivulana (Scop.)	—	—	—	—	—	—	—	—	G	—	—
Rhyacionia pinicolana (Doubl.)	—	—	—	—	—	—	—	—	G	—	—
Lasiocampa quercus (L.)	C1	C2	H1	—	H3	H4	—	—	G	—	—
Macrothylacia rubi (L.)	—	C2	H1	—	H3	—	—	—	—	—	—
Ochropacha duplaris (L.)	C1	—	—	—	—	—	—	A	—	—	Wi
Pseudoterpna pruinata (Hufn.)	C1	C2	H1	H2	H3	H4	—	A	G	W	Wi
Cyclophora albipunctata (Hufn.)	—	—	—	—	—	—	—	—	—	W	—
Cyclophora punctaria (L.)	—	—	—	—	—	—	—	—	—	W	—
Scopula emutaria (Hübn.)	—	—	H1	—	—	—	—	A	—	—	Wi
Idaea muricata (Hufn.)	C1	—	—	—	H3	—	—	—	—	—	—
Idaea sylvestraria (Hübn.)	—	C2	H1	—	—	—	—	A	—	—	—
Idaea subsericeata (Haw.)	—	—	—	—	—	—	—	—	—	W	Wi
Idaea straminata (Bork.)	C1	—	H1	—	H3	—	—	—	G	W	Wi
Rhodometra sacraria (L.)	—	—	—	—	—	—	—	—	G	—	—
Orthonama obstipata (F.)	—	—	H1	—	—	—	—	A	—	—	—
Scoptopteryx luridata (Hufn.)	—	C2	—	H2	—	—	H5	—	G	—	—
Eulithis prunata (L.)	—	—	—	—	H3	—	—	—	—	—	—
Eulithis testata (L.)	—	—	H1	—	—	—	—	—	—	—	—
Perizoma albulata (D & S)	—	—	—	—	—	—	—	A	—	—	—
Eupithecia goossensiata Mab.	C1	—	—	—	—	—	—	—	—	—	Wi
Eupithecia nanata angusta Prout	C1	C2	H1	H2	—	—	—	—	—	—	Wi
Pachycnemia hippocastanaria (Hübn)	C1	C2	H1	—	H3	H4	—	—	G	W	Wi
Epione repandaria (Hufn.)	—	—	H1	—	—	—	—	—	—	W	—
Selidosema brunnearia (Vill.)	—	—	—	—	H3	—	H5	—	G	W	—
Gnophos obscurata (D & S)	—	C2	—	—	—	—	—	—	—	—	—
Hyloicus pinastri (L.)	—	—	—	—	—	H4	—	—	G	W	Wi
Dicallomera fascelina (L.)	C1	C2	—	—	—	—	—	—	G	—	—
Euproctis chrysorrhoea (L.)	—	—	H1	—	—	—	—	—	—	—	—
Lymantria monacha (L.)	—	—	—	—	H3	—	—	A	—	W	Wi
Thumatha senex (Hübn.)	—	—	H1	—	—	—	—	—	—	—	Wi
Miltochrista miniata (Forst.)	—	—	H1	—	H3	H4	—	A	—	W	Wi

Continued

a good range of species was recorded. It was pleasing to see the rosy wave along Avon Water and in the bog by Wilverley Inclosure, as well as on Hinchelsea Moor, and the purple-bordered gold also at Cranes Moor. The dotted-border wave *Idaea sylvestraria* turned up at all three of these sites. The rosy marbled *Elaphria venustula* and oak nycteoline *Nycteola revayana* were noted by George Higgs on Long Slade Heath adjacent to Hinchelsea Moor. Five old lady moths *Mormo maura* were attracted to wine-ropes by stunted trees along Avon Water; two more were seen at Wootton Inclosure and one on Goatspen Plain. An annulet *Gnophos obscurata* was noted on Cranes Moor.

Several migrant species were recorded, including the vestal *Rhodometra sacraria* (1), the gem *Orthonama obstipata* (3), the small mottled willow *Spodoptera exigua* (1), the rush veneer *Nomophila noctuella* (which was numerous throughout the summer)

List of the more interesting moths recorded on the BENHS meeting in the New Forest on 27 July 1996 (*continued*).

Cybosia mesomella (L.)	—	—	H1	—	—	H4	—	A	G	W	Wi
Eilema complana (L.)	C1	C2	H1	—	H3	H4	—	—	G	W	—
Eilema deplana (Esp.)	—	C2	—	—	H3	—	—	—	G	—	—
Agrotis clavis (Hufn.)	—	—	H1	—	—	—	—	—	G	—	—
Lycophotia porphyrea (D & S)	C1	C2	H1	—	H3	H4	—	—	G	W	Wi
Naenia typica (L.)	—	—	—	—	—	—	—	—	G	W	—
Anarta myrtilli (L.)	C1	C2	—	—	H3	H4	—	—	G	W	Wi
Polia nebulosa (Hufn)	—	C2	—	—	H3	—	—	—	—	—	—
Mythimna pudorina (D & S)	C1	C2	H1	—	H3	—	—	—	G	W	Wi
Mythimna straminea (Treits.)	C1	—	—	—	—	—	—	—	—	W	Wi
Brachylomia viminalis (F.)	—	—	—	—	—	—	—	—	G	—	—
Parastichtis suspecta (Hübn.)	—	—	—	—	H3	—	—	—	G	—	—
Acronicta aceris (L.)	—	C2	—	—	H3	—	—	—	—	—	—
Acronicta leporina (L.)	—	—	—	—	—	—	—	—	G	—	—
Craniophora ligustri (D & S)	—	—	—	—	—	—	—	—	—	W	Wi
Mormo maura (L.)	—	—	—	—	—	—	—	A	G	W	—
Dypterygia scabriuscula (L.)	—	—	H1	—	—	—	—	—	G	—	—
Amphipoea oculea (L.)	—	—	H1	—	—	—	—	—	—	—	—
Spodoptera exigua (Hübn.)	—	C2	—	—	—	—		—	—	—	—
Elaphria venustula (Hübn.)	—	—	—	—	—	H4	—	—	—	—	—
Lithacodia pygarga (Hufn.)	—	—	—	—	H3	—	—	—	—	W	Wi
Nycteola revayana (Scop.)	—	—	—	—	—	H4	—	—	—	—	—
Catocala promissa (D & S)	—	—	—	—	—	—	—	—	G	—	—

Site codes for Table of Results: C1 = SU1803, Cranes Moor, including J. Chainey, J. Spence, A. Dobson, A. Butcher, N. Hutchinson and others; C2 = SU1804, Cranes Moor, recorders as above; H1 = SU269004, Hinchelsea Moor, west end, P. & D. Sharpe and various others; H2 = SU2700, Hinchelsea Moor, large day-time group; H3 = SU277006, Hinchelsea Moor, east end, B. and J. Fox and several others; H4 = SU20, Long Slade Heath, G. Higgs and party; H5 = SZ2799, Hinchelsea Moor, J. Chainey *et al.* by day; A = SZ265988, Avon Water, D. Green and others; G = SU2301, Goatspen Plain, R. Louch, J. Gosling, D. Gibbs, A. Jenkins and party; W = SZ246995, Wootton Inclosure and edge, S. Curson and party; Wi = SU243001, boggy heath by Wilverley Inclosure, A. Pickles.

and a brown-tail *Euproctis chrysorrhoea* which was presumably a migrant from the coast, though larvae have also been found inland in Hampshire, in the Alice Holt area (T. G. Winter, pers. comm.). Larval webs are frequent on Lymington marshes only 10 km to the south-east of our trap sites on this meeting (A. Pickles, pers. comm.).

The speckled footman could still be present somewhere on these sites in spite of the negative results of the field meeting. Further surveys should be conducted on warmer nights, when the moth has sometimes been recorded in numbers, hopping low over the ground to light traps between 23.00 hours and midnight (S. Pittis, pers. comm.). The most promising areas to return to are probably the mature stands of heathers on warm dry hummocks and slopes at Cranes Moor and in the eastern part of Hinchelsea Moor.

As a separate issue, during this meeting we noted the scarcity of really tall, mature heathers in this part of the Forest. Nowhere did we find heathers which were knee-deep or taller. This stage of the heather growth cycle must be at a premium in the Forest because of the currently high grazing pressure from domestic stock and deer, and management practices to reduce the risk of fires.

I would like to thank everyone for supporting this field meeting and enabling the simultaneous survey of the above sites in the Forest. I would particularly like to thank John Chainey and Norman Hutchinson for looking after the group which covered Cranes Moor while the rest of us covered the sites nearer to Sway. I thank my wife, Rachel Thomas, and Susan Clarke for help with logistics at Set Thorns. I thank English Nature and the Forestry Commission for permission to hold this meeting, for providing keys to locked gates, and I would like to thank Martin Noble from the FC for joining us for the afternoon session. Copies of this report are being supplied to EN, FC and Barry Goater, the Hampshire Moth Recorder.

Titchwell, RSPB Reserve, Norfolk, 29 June 1996

Leader: **Matthew Shardlow**. Driving cold rain was the dispiriting weather in the early afternoon. Expectations were distinctly low, nevertheless 7 people attended.

This was a joint meeting of the BENHS and the Norfolk Moth Group. In the event the weather was bad enough to inhibit exploration of the saltmarsh, grazing marsh and more coastal habitats. We did however get five traps positioned in areas of wet woodland and *Phragmites* along the landward side of the reserve.

Moth activity at the traps was poor. Then at 21.30 some cloud cover moved in, the wind dropped off and over the next hour we caught some moths. Four traps stayed until dawn clocking up a pleasing 67 species, including 15 species of micro-moth.

There was a good representation of wainscots including southern (*Mythimna straminea* Treits.), obscure (*M. obsoleta* Hübn.) and silky (*Chilodes maritimus* Tausch.). Other highlights included double dart (*Graphiphora augur* F.), small seraphim (*Pterapherapteryx sexalata* Retz.), cream-bordered green pea (*Earias clorana* L.) and *Phlyctaenia perlucidalis* (Hübn.).

Without a doubt the moth of the night was a species that enchanted all who witnessed it. The rosy wave (*Scopula emutaria* Hübn.) may not look very impressive in most illustrations, but in life it has an elegant and delicate beauty that rivals any of the Geometridae. The wings are dusted with a pinkish shine and are held in such a way that the pattern takes on a delightful symmetry. The species is associated with coastal marshes and some inland bogs, but the larval foodplant is unknown. The rosy wave is nationally notable and had not been recorded at Titchwell for 36 years.

Dungeness, Kent, 28 September 1996

Leader: **Colin Hart**. Seven members gathered at the Britannia Inn over a drink and a bite to discuss the catches of the year and the prospects for the evening. In the event the weather was poor with moderate north-westerly winds and rain arriving soon after midnight. Catches were poor although most of the resident species expected at this time of year were seen. *Paradiarsia glareosa* (Esp.) and *Aporophila australis* (Boisd.), both of which have interesting forms at Dungeness, were present in small numbers. Migrants were represented only by a few *Peridroma saucia* (Hübn.) which arrived at about 11pm, and *Nomophila noctuella* (D.&S.) which as many members will know has been ubiquitous this year and had probably bred locally. Three *Calophasia lunula* (Hufn.) larvae were found on a clump of *Linaria vulgaris* (Mill.) close to the Britannia Inn and a larva of *Autographa gamma* (L.) was swept from the same plant. David Gibbs visited the bird observatory the following morning and discovered a long-dead *Scopula marginepunctata* (Goeze) in the kitchen.

BENHS INDOOR MEETINGS

11 March 1996

Dr I. F. G. McLean and M. S. Parsons showed specimens of two microlepidoptera, *Sorhagenia rhamniella* (Zell.) (Momphidae) and *Oidaematophorus lithodactyla* (L.) (Pterophoridae). The former was found at Chippenham Fen, Cambs. where Dr McLean has been conducting a long-term study on the population dynamics of a gall-forming psyllid, *Trichochermes walkeri*, on purging buckthorn. Shoots were sleeved to exclude a fly, *Leucopis* species, which is a specific predator of the psyllid. In June 1995 many small larvae and pupae were observed spun up in creases at the ends of the sleeves. Adult moths, identified by M. S. Parsons as *S. rhamniella*, and two species of parasites were bred from the pupae and larvae. This moth has previously been recorded from Wicken Fen, Cambs. and Great Chesterford, Essex. On 5.viii.95 Dr McLean found a plume moth to be frequent at Thwaite Common, East Norfolk while sweeping for Diptera. It was identified by M. S. Parsons as *O. lithodactyla* which has larvae that feed on fleabane, *Pulicaria dysenterica* (L.) Bernh. and ploughman's spikenard, *Inula conyza* DC. Fleabane is well established amongst the lightly grazed grassland and scrub on Thwaite Common.

The following persons have been approved by Council as ordinary members: Mr Andrew James Pym, Mrs Annette Elizabeth Binding, and Ms Jillian Elizabeth Binding.

Dr D. Agassiz announced that he was organizing a field meeting in the Le Havre area of France on 1–2 June. Hospitality would be provided by French entomologists.

Mr P. Hammond commented on the exhibit of the ant, *Lasius brunneus* (Latr.) shown at the previous meeting. This has become more widespread in recent years and is found as far west as South Wales. Some people have suggested that *L. brunneus* is an introduced species that was deliberately established in Windsor Forest earlier this century. Mr Hammond doubted this as about 30 commensal beetles have been found with the ant at Windsor Forest, which indicates that it has been there for a long time.

Mrs M. Palmer spoke on 'Landscapes and wildlife conservation in New Zealand'. The two main islands of New Zealand have a land area roughly similar to Great Britain but the population is only about 3½ million, with most people living in the cities and larger towns. As a result of the Waitangi Treaty with the Maori people, much of New Zealand is Crown land and has been left as wilderness areas. Mrs Palmer described the geography and range of climates occurring in the North and South Islands.

New Zealand has a high proportion of endemic plants and animals. Many of these are under threat as a result of introduced animals and plants. The latter include gorse, old man's beard, brambles and pines. Alien animals that are causing problems are rats, mice, stoats, cats, weasels, goats, pigs, wallabies, possums and deer. The Department of Conservation in New Zealand is attempting to restore some of the smaller off-shore islands to their former state by eliminating alien animals and plants. Species recovery programmes are being undertaken and the off-shore islands can be important refuges for species that are facing extinction on the main islands.

Mrs Palmer noted that two species from New Zealand, a flatworm and the water plant, *Crassula helmsii*, were causing conservation problems in Britain and suggested this might be revenge for all the plants and animals unwisely introduced from Europe to New Zealand.

15 April 1996

Mr A. J. Halstead showed a plant of danish scurvy grass, *Cochlearia danica* L. from the side of the A322 road at Worplesdon, near Guildford, Surrey. This coastal

cruciferous plant has spread inland in recent years along the edges of roads where salty rain water has splashed up onto the verges during the winter following application of salt to prevent freezing. During mid-April many roadsides have a narrow strip of this low-growing plant which has white or pinkish-white flowers.

Mr R. W. J. UFFEN showed a live female solitary bee, *Andrena clarkella* (Kirby) collected at Broxbourne Wood NR, Herts. This bee feeds specifically on *Salix caprea* L. catkins and so requires hundreds of miles of early spring trips to map it on a 10-km basis, even in a small county. *Andrena clarkella* appears to be widespread in Hertfordshire but is flying about one month later this year compared with 1995. Mr Uffen also showed a live specimen of the parasitic fly, *Servillia ursina* (Meig.) (Diptera: Tachinidae), also from Broxbourne Wood. This was the first time the exhibitor had seen this fly in Hertfordshire although he remembered it as a feature of early spring field meetings in Surrey during the 1950s and 60s.

Mr S. MILES announced that 156 replies had been received to the questionnaire on conservation circulated by the Society. This represents 22% of the membership. A summary of the information will be presented at the Annual Exhibition. It will be sent to those who replied to the questionnaire, with details of future projects. Mr Miles also said that the UK Biodiversity Steering Group has produced a two-volume set of species requiring action. Anyone wishing to see these lists should contact Mr Miles.

Mr C. HART reported that a light trap in his garden at Buckland, Surrey had on 11.iv.1996 attracted a dotted chestnut moth, *Conistra rubiginea* (D. & S.) which was a new record for this site. Two specimens of this moth were seen at Friday Street, south west of Dorking, Surrey a week before.

Mr R. UFFEN, commenting on the interest in the ant, *Lasius brunneus* (Latr.) at recent meetings, said that it has been recorded causing damage to a wood-framed house at Berkhamstead, Herts.

Dr M. REDFERN spoke on interactions between plants and gall-forming insects. She defined a gall as an increase in the number or size of plant cells induced by an animal or micro-organisms, such as viruses, bacteria or fungi, which provides nutrients and shelter for the causal organism. The gall-forming habit has evolved several times with most insect orders having some examples. Most galling occurs on higher plants rather than ferns and mosses, indicating that this method of feeding on plants has developed relatively late in evolutionary terms. Gall mites and gall midges are believed to have evolved from detritus-feeding ancestors, gall wasps from parasitoids, while other gall-forming animals evolved from plant feeders, such as leaf-miners, stem-borers, sap-feeders, pollen-eaters etc.

Galls vary in their complexity, with those caused by cynipid wasps being the most advanced. Gall formation often coincides with periods of growth activity in the host plant, such as in the spring or when seeds or fruits are being produced. This is demonstrated by an oak gall wasp, *Neuroterus quercusbaccarum* (L.). This produces currant galls on the foliage and male catkins in the spring, with males and females emerging during May. These lay eggs in the foliage and in late summer, the all-female spangle-gall generation develops on the underside of the leaves.

Galls can be initiated by the adult insects when eggs are deposited. This occurs with sawflies and some beetles. With some mites, psyllids and thrips, galling is initiated by the feeding activities of the adults. With cynipid wasps and tephritid flies, it is the larval stage that induces gall formation. Continual stimulation by the larvae or nymphs is necessary to maintain the growth of most galls. An exception is the sawfly *Pontania proxima* (Lep.), which produces bean-shaped galls on willow leaves. The galls develop as a result of substances secreted into the leaf when the eggs are

deposited, and the galls are fully formed by the time the eggs have hatched some 15 days later.

The yew gall midge, *Taxomyia taxi* (Inchbald) has a more complex life cycle than most gall midges. It forms a rosette of leaves at the shoot tips and this typically takes two years to complete. A minority of larvae, however, complete their development in one year, in which case the gall develops as an enlarged bud with no rosette of leaves.

Diplolepis rosae (L.) is a cynipid wasp that causes bedeguar galls on rose. Unlike oak cynipids, this species has a simple single gall cycle with no asexual phase. Females deposit a number of eggs in the epidermis of a rose leaf. Cells start to hypertrophy before the eggs hatch and once the larvae are present the gall begins to differentiate into a nutritive layer, surrounded by woody cells with an outer parenchyma and epidermis.

Dr Redfern concluded her talk with an example of a tephritid fly, *Urophora jaceana* (Hering). Females lay eggs in unopened flower buds of knapweed, *Centaurea nigra* L. The second-instar larvae emerge from the eggs and begin feeding on the achenes which enlarge. A woody layer develops around the larval cavities.

14 May 1996

The Vice-President, Dr M. SCOBLE, showed a programme for the International Conference on Lepidoptera he had attended recently at Miraflores, Madrid. He also showed some photographs taken of members attending the conference.

Mr K. MERRIFIELD showed some scale insects, probably brown scale, *Parthenolecanium corni* (Bouche) (Hem: Coccidae), found on the stems of a grape vine.

Mr R. SOFTLY circulated a copy of Volume 1: Pterophoridae by C. Gielis, published in 1996 by Apollo Books in the *Microlepidoptera of Europe* series. He also showed a live specimen of the pine beauty moth, *Panolis flammea* (D. & S.) ab. *griseovariegata* (Goeze), taken at light in his Hampstead garden on the late date of 13.v.1996. This is the first record for that part of north London since a 1898 list recorded it at Highgate. Its larval food plant, pine, is uncommon in that area.

Mr G. KING showed some small hairy caterpillars beaten from hawthorn at Wanstead Flats, London E7. One had spun a cocoon on the stem. The larvae were identified by other members as short-cloaked moth, *Nola cucullatella* (L.).

Mr A J HALSTEAD showed three live exhibits. These were: (i) larvae of a case-bearing caterpillar, *Coleophora lineola* (Haw.) (Lepidoptera: Coleophoridae) on the foliage of *Stachys byzantina* from a garden at Horsham, Sussex; (ii) a shell-bearing slug, *Testacella haliotidea* Draparnaud (Stylommatophora: Testacellidae) from a garden at Shrivenham, near Swindon, Wilts.; (iii) a death watch beetle, *Xestobium rufovillosum* (Deg.) (Coleoptera: Anobiidae) found under loose bark on an old oak tree at Dinton Pastures Country Park, Winnersh, Berks. on 12.v.1996. This tree also had trails of the ant *Lasius fuliginosus* (Latr.) marching up and down the trunk.

The applications for membership by Mr J. Humphreys, Mr A. W. Prichard, Dr P. C. Barnard, Mrs M. Earle and Ms J Boyd have been approved by Council.

Mr A. J. HALSTEAD reported that the two weedy grass areas in front of the Pelham-Clinton Building at Dinton Pastures are being taken over by the Country Park staff. They have scraped off the vegetation and will be resowing with a mixture of annual wildflower seeds.

Mr R. D. HAWKINS said he had seen a Camberwell beauty butterfly at Coulsdon, Surrey on 13.v.1996.

Dr M. MAJERUS spoke on 'Sex, parasites and venereal disease in ladybirds'. He prefaced his talk with some slides of various ladybird species and colour forms.

These included the North American species, *Hippodamia convergens*, which is collected from its montane overwintering sites for sale in the spring as a garden biological control for aphids. Last year 60 million were imported into Holland for use in glasshouses and to control aphids on lime trees in cities. It is likely that they would be unable to overwinter in Holland but there are dangers in releasing ladybirds into new countries. The European 7-spot ladybird has become widespread in North America and is out-competing some native ladybirds. It is also threatening two species of blue butterfly by eating their eggs.

Ladybirds have active sex lives. Female 10-spot ladybirds can have up to 40–50 partners with mating sessions lasting for 2–10 hours. If females are kept well fed and isolated from males for a couple of weeks they will then accept males of other species. Mating involves a period of up to 45 minutes when the male mounts the female and makes a series of twisting movements in short bursts. This appears to be foreplay as the spermatophore is not released during this phase. The male then makes a series of rolling motions, again in short bursts, during which fertilization takes place. Males can repeat this process at least three times during a mating session. It is not clear why ladybirds spend so much time mating or why females accept so many partners. A single mating is sufficient to allow a female to produce several hundred fertile eggs.

A parasitic mite, *Coccipolipus hippodamiae*, has been found living underneath the elytra of 2-spot ladybirds. It feeds on the beetle's haemolymph and infestations cause a reduction in fertility, with eggs being more prone to dry up and fail to hatch. The mites find new hosts by moving to the tips of the elytra and transferring to another ladybird while they are mating. The mite is widespread in Europe but is not found on British 2-spot ladybirds. This is probably because in Britain there is usually little overlapping of the generations, unlike elsewhere in Europe where there may be several overlapping generations a year, enabling the mites to transfer from one generation to the next.

Some ladybirds produce only female offspring. They lay male eggs as well but these fail to hatch. This trait is inherited through the female line. Research has shown that these females have a *Rickettsia* type of bacterium in the cytoplasm of their eggs that kills male embryos. Feeding the adult females with syrup laced with an antibiotic will control the bacterium and allow male eggs to hatch. In Russia another type of male-killing bacterium has been found in ladybirds. This is a *Spiroplasma* species and seems to cause a higher level of male-killing than the *Rickettsia* bacterium. The *Spiroplasma* bacterium also occurs in Japan where about 45% of the ladybird *Harmonia axyridis* is infected. Male-killing bacteria have also been found in other insect orders. Extensive infections of virulent male-killing bacteria will cause reduced fertility or the development of parthenogenesis.

Ladybirds suffer from several parasitoids. Two phorid flies, *Phalacrotophora* species lay eggs in the newly formed pupae, especially of the 7-spot ladybird. Up to 24 flies can develop in one pupa. A braconid wasp *Perilitus coccinellae* (Shrank) lays single eggs in adult ladybirds of many species except the 2- and 10-spots. Before emerging to pupate, the larva paralyses the ladybird by cutting the motor neurons to the legs. The larva pupates in a silk cocoon underneath the ladybird's body. The host insect protects the parasite through its warning coloration and, since the beetle remains alive, it will secrete a repellent fluid from its leg joints if attacked.

11 June 1996

The President, Mr C. HART showed specimens of three plume moths. *Platyptilia calodactyla* (D. & S.) is an uncommon species found on golden rod. In the first half of this century it occurred, sometimes commonly, in the woods of Kent and East

Sussex, especially around Ashford and Dover. More recently it has become scarce in Kent but has turned up in widely spaced areas, including Thorpeness, Suffolk, Formby, Lancashire, South Lincolnshire, Carmarthenshire, North Devon, and recently R. McCormick has reported it from South Devon. It is superficially similar to *P. gonodactyla* (D. & S.) which was shown for comparison. The double-brooded *P. gonodactyla* is found throughout Britain, except the north of Scotland, and its larvae feed on coltsfoot. *P. calodactyla* is generally darker and has a larger triangular forewing spot; the forewing termen is almost straight in *calodactyla* but curved in *gonodactyla*. The third plume moth, *P. tesseradactyla* (L.), is found in the Burren district of Ireland and elsewhere, including Co. Tyrone in Ulster. It is not found in Great Britain. The moth inhabits calcareous outcrops and short turf where the larval food plant, *Antennaria dioica* (L.) grows. The larvae start feeding on the flowers and then move down to the central rosette.

Mr M. ELVIDE showed a larva of the small eggar moth, *Eriogaster lanestris* (L.), found on 8.vi.1996 in a larval web on blackthorn near Haselbury Plucknett, Somerset.

Mr A. J. HALSTEAD showed a piece of tufa limestone which contained the impression of a fossilized leaf, possibly of a sallow. It came from some blocks of tufa being used to rebuild an alpine house at the RHS Garden, Wisley, Surrey. He also showed a live specimen of the buprestid beetle, *Agrilus pannonicus* (Pill. & Mitt.) found in a polythene tunnel at Wisley Garden. Its larvae develop under the bark of moribund oak trees. This formerly scarce beetle has become widespread in southern England, possibly as a result of an increase in the availability of suitable trees due to storm damage and drought stress. The third exhibit shown was a caddis fly with patterned wings collected the previous June at Whitmoor Common, near Guildford, Surrey. This was identified by Dr I. Wallace as *Hagenella clathrata* (Kolenati), an RDB 1 species previously only known from Whixhall Moss, Shropshire, Chartley Moss, Staffs. and Kinrara, Aviemore.

Mr R. SOFTLY displayed a copy of a booklet listing the noctuid moths in the Parque Nacional da Peneda-Geres reserve in Portugal. He acquired the booklet while on a visit there. Although the girl at the book stall had seemed reluctant to sell him a copy because it was in Portuguese and not English, Mr Softly was able to reassure her that the interesting bits were in Latin!

Mr A. J. HALSTEAD reported that a new publication, the *Journal of Sawfly Research* is being produced. It will be published twice a year and will cover the biology, systematics and distribution of the Symphyta of the western Palaearctic. The annual subscription is £15 and the journal is available from Mr A. Liston, Chalastos Press, Daibersdorf 6, D-84177 Gottfrieding, Germany. A checklist of European sawflies and a supplement can be obtained from the same source for £25+£3 postage and packing.

Mr G. BOYD reported that the second supplement to the Society's hoverfly book was now available at the members' price of £4 (plus 50p postage).

Mr C. HART, Mr R. UFFEN, Mr J. BADMIN, Mr A. J. HALSTEAD, Mr R. SOFTLY, Dr I. MCLEAN and Mr N. A. CALLOW gave details of the remarkable migration of moths and butterflies that took place during the first and second week of June. Painted lady butterflies, silver-Y moths and diamond-back moths were abundant and of widespread occurrence. Two clouded yellow butterflies were seen at Wisley Garden and silver-striped hawk-moths had been reported by R. McCormick in Devon. Mr Softly said he had caught 54 silver-Y moths on the night of 9/10.vi in two actinic traps (37 in the balcony trap, 17 at ground level). This compares with his previous best of 19 in a single night and a best annual total of 74.

Mr M. ELVIDE said he had taken 20 maybugs *Melolontha melolontha* (L.) in a light trap in Co. Clare. These were marked with Tippex and released. Ten were taken the next night but none were the marked specimens. Mr K. MERRIFIELD said that he had found a seven-spot ladybird that had been killed by the parasitic wasp *Perilitus coccinallae* (Schrank). Dr I. MCLEAN reported seeing a holly blue butterfly ovipositing on alder buckthorn at Chippenham Fen, Cambs. on 9.vi.

Dr IAN WALLACE then spoke on catching, rearing and identifying caddis flies. He reviewed the literature for identifying the adults and larvae of British species. Genitalia are important for naming some species and so it is best to preserve adults in alcohol as the genitalia can become distorted in dry specimens. Caddis adults can be attracted to lights and sugar patches; they can also be taken by beating or sweeping vegetation. Beware of using a pooter—caddis flies release a phenolic odour. Most species breed in water, some requiring permanent water while others use temporary pools. There are also some which occur in specialist habitats such as rock seepages.

Most caddis larvae feed on algae but some will feed on higher plants, or decaying vegetation, or are predatory species. Some larvae are free-living but many construct cases which largely enclose their bodies. Case-bearing types have spurs on their first abdominal segment which enable them to hold on to their case. The cases vary in size and shape and are constructed of gravel, shells or plant fragments. Apart from providing the larva with a protective camouflaged shelter, it is possible that the case helps to funnel water over the insect's gills. It is likely that caddis flies evolved in running water and the development of larval cases may have enabled caddis flies to colonize less well oxygenated still waters.

Caddis flies are not difficult to rear. They are tolerant of crowding and do not seem to suffer disease or parasite problems. They can be reared in bowls of aerated water. Case-bearing types are generally easy, although the caseless species can be more difficult, especially river species which may require a directional water flow.

Dr Wallace concluded his talk by indicating some areas and habitats where some further recording work would be desirable. These include the Thames, small streams, water meadows, wet Surrey heaths and the fens. Dense reed beds, such as occur in fens, are difficult to work and so the use of light traps may be the best method in that situation.

9 July 1996

Mr R. SOFTLY showed a slide of a larva of the painted lady *Cynthia cardui* L. together with two freshly collected thistle stems with larvae in tents. The recent large migration has given an opportunity to find the early stages this year. The larvae were found on Hampstead Heath, the first time that they had been observed breeding there since 1982. The species requires dry, hot weather for breeding in this country; conditions in the tent would become unpleasant in damp situations, with accumulation of frass at the base of the structure..

Dr J. MUGGLETON exhibited two beetles associated with the wood ant *Formica rufa* L.: *Coccinella magnifica* Redt. (Coccinellidae) and *Clytra quadripunctata* L. (Chrysomelidae). These species were found in the same Surrey locality on 4.vii.1996, while looking for ladybirds for the identification day at Dinton Pastures. *C. magnifica* is one of our most local ladybirds, being confined to habitats within a few yards of nests of *F. rufa*. *C. magnifica* is ignored by the ants and probably gains some protection from predators and parasites due to the presence of the ants. Both adults and larvae of *C. magnifica* feed on aphids and neither stage is found in the ant nests. *C. magnifica* is very similar in colour and size to our most widely distributed

ladybird, *Coccinella septempunctata* L., which is readily attacked by *F. rufa*. The most reliable character distinguishing the two species is the colour of the epimera. *C. magnifica* has both the mesosternal and metasternal epimera white, whereas *C. septempunctata* has only the mesosternal epimera white (an example of the latter species was exhibited for comparison). *Clytra quadripunctata* is a chrysomelid whose larvae feed on vegetable material and ant excreta within *F. rufa* nests. The adult beetle, which is elongate and orange-red with black spots and head, is found on vegetation surrounding *F. rufa* nests and can occur with *C. magnifica*. The larva protects itself within the ant nest by building a case from a mixture of its own excreta and soil particles. Donisthorpe, who made careful observations on both species in the first two decades of this century, suggested that the two species may be Müllerian mimics, the adults of both being warningly coloured and distasteful.

Mr S. MILES outlined a successful day meeting at Dinton Pastures between the Conservation Working Group and BBONT members on insect identification. Similar events are planned for 1997 in collaboration with other Wildlife Trusts.

Mr J. BADMIN announced the publication of a book on the *Butterflies of Tunbridge Wells and district*, price approximately £5.

Dr LENA WARD of the Institute of Terrestrial Ecology, Furzebrook Research Station spoke on the 'Conservation of the New Forest cicada'. The New Forest cicada *Cicadetta montana* (Scop.) is given Red Data Book 1 (endangered) status in Britain, being currently only known from the New Forest, Hampshire, though there are also old records for Surrey. Dr Ward illustrated her talk with excellent colour slides taken by her late husband, Jim Grant, who had undertaken detailed studies of the life history and biology of the species at a time when it had a larger population in the New Forest. She began by summarizing the distribution and habitats of the insect, which, as its specific name suggests, is more associated with mountains and is found less in Mediterranean regions. It requires hot summer weather and is found on sunny, south-facing slopes in France and Germany (as well as in the New Forest). It occurs on chalk downs in Belgium and Germany.

Dr Ward then described the fascinating life history of *C. montana*, commencing with oviposition which occurs in stems near the ground. The eggs are inserted in a series of cuts in the stem of bracken or a sapling tree (such as small-leaved lime, *Tilia cordata* Miller, which may have been more common in the New Forest in the past). The latter species is an important host plant in some parts of its range, such as the Caucasus. The eggs are laid in June–July, remaining in the egg nests until September–December when they mature. Fast-growing birch can form a callus around the eggs, preventing them from hatching. The first instar nymph is very small and has front legs modified for digging. Feeding takes place underground, on grass or possibly tree roots latterly, with development taking about seven years. The burrow is from 0.3 to 1 metre in length, with a turret built at the top of the burrow about 25 to 75 mm long. The turret can be vertical or aligned along the ground surface; its function is unknown, though it may serve as some protection against predators.

The adult cicadas can fly well, though the distance they can disperse is unknown. They have good eyesight and are adept at avoiding people! Dr Ward played a tape recording of the song, which is of high frequency and hence people lose the ability to hear the species as they get older. Singing occurs in hot weather and a modified bat detector has been used to locate singing adults.

She described the New Forest habitat and showed the approaches being used to develop appropriate site management techniques. There are problems in clearing overgrown scrub and coppice to regenerate suitable sunny habitat for the species to

thrive. The management adopted for the New Forest cicada, under the auspices of the English Nature Species Recovery Programme, is beneficial for other insects including butterflies. Monitoring of the species indicates that it has declined from its former status and every effort is being made to secure its future as a British insect.

10 September 1996
Joint Meeting with the London Natural History Society

The President, Mr C. HART, and Mr. K. HYATT of the LNHS jointly took the chair for this joint meeting held at the rooms of the Royal Entomological Society. The President welcomed members of the London Natural History Society.

The death was announced of Mr L. YOUNG, who had been a member since 1952.

Mr C. PLANT showed a specimen of the noctuid moth *Cryphia algae* F. This infrequent migrant to Britain was taken in early August at Bishop's Stortford, Herts. and the exhibitor believed this to be only the ninth British record. However, Dr P. Sterling informed the meeting that there had been a good migration of this species and a number of other records had been made this year in Hampshire.

Mr A. J. HALSTEAD showed a live late-instar nymph of the fly bug, *Reduvius personatus* (L.) (Hemiptera: Reduviidae). This was found in a kitchen in a house at Brentford, Middlesex. An interesting feature of the nymphs is their sticky cuticle which results in the insect being covered in dust and fluff. It preys on the larvae of household insects and will eventually be a dark brown bug some 16–17 mm in length.

Mr G. BOYD showed a larva of the pine hawk moth *Hyloicus pinastri* L. collected ten days previously near Brandon Woods, Cambs.

Col. A. M. EMMET showed a copy of the recently published Volume III, Yponomeutidae to Elachistidae, in the *Moths and Butterflies of Great Britain and Ireland* series, of which he is both editor and contributor. This volume includes the Coleophoridae and illustrates the larval cases.

Mr C. HART showed some larvae of the plume moth, *Capperia britanniodactyla* (Gregson). This is a difficult species to find; adults occasionally come to light or are netted at dusk, but the traditional means of obtaining it is to search for the late-instar larvae in May. The larvae occur on woodsage and in late spring they bite part way through the stems, about 5 cm from the shoot tips, and feed on the withered leaves. However, larvae are uncommon (about one every half mile) and suffer heavily from parasites. Thirteen larvae collected by the exhibitor at Dungeness a few years ago yielded 13 parasites. Mr Hart has observed that the moths lay eggs singly on woodsage flower buds. The larva bores into 4–5 buds before forming a hibernaculum in early September. It enters a flower and, after eating the contents, seals the mouth with silk and frass. Searching for these young larvae in early autumn is likely to be more productive than looking for late-instar larvae in the spring.

The applications by Mr John S. Badmin, Dr David A. Barbour, Mrs Louise Bird, Mr A. J. L. Coates, Miss Andrea G. Cullis, Mr Leonard K. Slack, Mr Phillip A. Ward and Mr David J. White to become ordinary members of the BENHS have been approved by Council.

Mr R. HAWKINS reported seeing clouded yellow butterflies in the Gower and flying with them was a paler yellow specimen, which on closer observation turned out to be a brimstone butterfly.

Mr K. H. HYATT said he was able to observe at close quarters three humming-bird hawk-moths that were feeding from pink valerian flowers growing next to a window in his garden at Rhandirmwyn, Carmarthenshire.

The Brad Ashby Memorial Lecture. In place of the advertised speaker, Dr Philip Sterling spoke on the Microlepidoptera of Dorset, where he has been employed for the last three years as county ecologist. He noted that although the Dorset coast and some noted inland sites had been well recorded by entomologists, there has been little recording effort in recent years for Lepidoptera outside these popular areas. He has set up a network of county moth recorders and currently has about 130 contributors, with about 40 people running lights on most nights.

Dorset has a largely undeveloped coast that is rich in wildlife and the county has good areas of nationally scarce habitat types. The Dorset heathland is much reduced in area since the last century but some good areas remain, such as at Canford Heath and Studland. Dorset heaths are a stronghold for the large heather-feeding bagworm, *Pachythelia villosella* (Ochs.). This has a strong colony at the nudist beach on Studland but is also found on relic heathland, such as by a roadside near Poole.

Coleophora genistae Staint. feeds on petty whin but this plant has declined since grazing stopped on the heaths and it is now known from only one site. On the rabbit-grazed heather at Studland, caterpillars of *Scythris empetrella* Karsholt & Nielsen can be found. These live within silk tubes mixed with sand grains which extend from the soil surface up to young shoots on the plant. The plume moth, *Capperia britanniodactyla* (Gregson) occurs on woodsage at the edge of the heathland areas.

On areas of chalk downland there are several species of case-bearing caterpillars, including *Coleophora discordella* Zell. on bird's foot trefoil, *C. lixella* Zell. on thyme and grasses, *Metriotes lutarea* (Haw.) on stitchwort, *C. anatipennella* (Hübn.) and *C. siccifolia* Staint. on hawthorn and blackthorn. Dr Sterling showed slides of the larval cases and explained how they were constructed. *Coleophora hemerobiella* (Scop.) also occurs on hawthorn and is a biennial species.

The Dorset coast has many interesting habitats including land slips, chalk cliffs and Chesil beach. *Coleophora ochrea* (Haw.) occurs there on rock rose. Parts of the Dorset coast are noted sites for intercepting migrant moths. 1996 has been a good year for migrants and the speaker noted that the rush veneer, *Nomophila noctuella* (D. & S.) had been exceptionally abundant.

SHORT COMMUNICATION

***Dolichovespula saxonica* (F.) (Hymenoptera: Vespidae) reaches Gloucestershire.**—A single male of this species was taken from an angelica flowerhead in a large clearing in the bottom of the well-wooded Frome valley near Sapperton in E. Glos., 25.viii.1996. Since its discovery in Surrey in 1987, it has spread from the south-east of England westwards as far as Dawlish, Devon, and northwards into East Anglia (Else, pers. comm.). This is the first report from Gloucestershire.

My thanks to George Else both for confirming my identification and for providing me with an up-to-date report on its progress across the country.—K. N. A. ALEXANDER, 14 Partridge Way, Cirencester, Glos. GL7 1BQ.

OBITUARY

Les Young

With Les Young's passing, British entomology has lost one of its most skilful and dedicated practitioners. Those who knew him well have lost a valued friend. Little known aspects of Les's honourable service record are given in the appreciations below. It says much of his nature that although I knew him well for fourteen years, he alluded to this part of his life perhaps twice. He would rather talk of butterflies and particularly aberrations of the Lycaenidae.

He was a very successful field-worker and built up a marvellous collection of aberrations. But his main love was the breeding of butterfly aberrations and this he advanced to a level almost of artistry that may be unrivalled in the history of amateur entomology. His first great successes were with the small copper. It is a species that had a notorious reputation for being difficult to pair and even harder to overwinter. It defeated even the great L. W. N. Newman. Les, however, achieved almost total success, rearing brood after huge brood and revealing the genetics behind a number of its forms. I am glad to say I am far from alone in confirming that failure remains a more frequent outcome for most of us with this species.

In later years he turned his attention to the common blue (*Polyommatus icarus*) and, beginning in 1984 with two very insignificant aberrations, eventually produced a pure strain of the striking ab. *radiata*. In doing so he showed that this very rare and most characteristic of lycaenid aberrations was, in some cases, at least, under genetic rather than environmental control. With his attitude in life that a thing worth doing is worth doing properly, he devoted himself to the task and his house and garden became a butterfly-producing conveyer-belt. He would rear four broods a year with up to one thousand butterflies per brood. A highly practical man, his solutions to the many problems he encountered, whether it be inbreeding weakness, predators,

Les Young in Hartley Wood, Hampshire, June 1981.

climate or the problems of poisonous foodplants (characteristic of birdsfoot trefoil, the main food of the caterpillar), were often ingenious and always successful. In fact I believe he derived as much pleasure from developing a successful technique as he did in the results it produced.

An outward manner that might appear abrupt belied the man. Certainly he did not suffer fools, but to those who became his friends he was generous to a fault with his time, knowledge and, indeed, the concrete results of his hard work—his butterflies. On occasion he would open a cabinet drawer of selected, and perfectly set, specimens and invite a friend to take home the one that most took his fancy. He was, to borrow the description he bestowed upon others for whom he had respect, very much a "good sort".

His standing among entomologists was indicated by the fact that he was often the first to receive a call when a special butterfly had been captured or bred. If the news elicited an indifferent 'humph' one knew the time invested in this insect had not been wasted. A change in tone to a 'Humph' betraying interest, suggested you were onto something really good. He leaves a gap that will not easily be filled—a gap of real ability and of personality.

R. D. G. BARRINGTON

Les was well known in the British Entomological and Natural History Society, especially for his breeding experiments on British Lycaenidae, but few of us were aware of his other life interest, in flying.

Joining the infantry early in World War II, Les answered a call for volunteers for pilot training. After rigorous training he qualified as a pilot and navigator and became a member of the Glider Pilot Regiment. He piloted a towed heavy glider to Normandy on D-Day, and later took part in the ill-fated Arnhem landings. On demobilization from the Army he entered civil aviation and acted as pilot/navigator in the early days of renewal of civil airline activities in India and elsewhere. As the Cold War led to attempts by the Russians to close access to West Berlin, Les took part in the Berlin Airlift, itself a hazardous operation. On his retirement from civil flying in about 1963, Les had accumulated over 5000 hours in his service and civilian log books.

Most of us knew Les's dry humour—"I was the most frightened man of all in the D-Day operation". When I heard him reply to an enquiry from a stranger about his service career that he "was Air Vice-Marshal Bennett's navigator" I thought it was typical Young humour, but later found, on studying Les's flying log books that he had in fact acted as second pilot/navigator to D. C. T. Bennett (*the* most famous navigator of WWII) on the Berlin airlift, when Don Bennett had his own airline. Although Les was one of the many who received no special decoration, he had a distinguished service career, and his flying log books reflect the same dedication and attention to detail that were apparent in his entomological pursuits.

Les rather purported to dislike his fellow men, but this was a pose. Nobody could have been more helpful than Les to entomologists or others who needed advice or moral support.

T. S. ROBERTSON

In the summer of 1945, final preparations were being made by a joint task force of army and RAF units in Central India to invade Singapore and to drive out the occupying Japanese forces. Les Young was a member of that task force. During the first week of September, Les visited an army friend in the field hospital. I occupied the next bed being unable to walk due to a severe case of foot rot. At that time, there

was a healthy rivalry between the Army and the RAF which precluded much social contact. Les was an Army glider pilot and I was an RAF pilot. However, being a friendly man, Les had a chat with me. He said that it was rotten luck being stuck "in dock" when everyone else was celebrating the end of the Japanese war. However, we both agreed that we had been lucky because the atom bombs had probably saved our lives. Les asked me what I was going to do when I got home. I said my hobby was collecting butterflies. He said that was his hobby too. We talked of bugs and localities. He visited me again for another chat and, although he spoke little about his life in the army, I gathered that he had been associated with the Arnhem landings. Two days later, I was posted to Madras and I didn't see Les again for a long time. Being an "early release" man, Les was entitled to fly home to "Blighty"; later releases had to travel home by ship.

Seven years later, I was collecting butterflies near Bookham Common with my young family when a man came over to talk to us: it was Les! We became good friends and I introduced him to the South London Entomological and Natural History Society (now the British) and he became a member. He was still flying for a living. He worked for many different commercial airlines as air crew doing whatever job that they required. He was particularly proud of his navigational skills which got his aircraft to the destination by quicker and shorter routes than had been anticipated. At that time, the sophisticated computer/radar systems were not always available.

Les lived just outside the perimeter of Heathrow where he owned a house which he called "Dim View". Here he started breeding butterflies. Les and I had several trips out to obtain stock and he was expert at finding the eggs of the butterflies. He taught me how to find the eggs of various hairstreaks. We had one notable trip to Norfolk in search of *P. machaon*, long before present restrictions were implemented. After two days of searching, we found a new breeding location in a fen several miles from the *P. machaon* reserve. My wife was off the path in this fen when a local man called out in alarm. He then explained to us that the place was known locally as a mud hole and that cattle and people had been sucked down, disappearing without trace. Once more we had been lucky. Fine colonies of this superb insect, including a few vars, were bred giving countless pleasure to many people. It was not easy keeping the caterpillars alive because of the difficulty in obtaining suitable food plant near London and in the event they had to be fed on fennel which was found growing wild near Sandwich in Kent. After several years, Les returned the butterflies to the fen where we had found them.

With the increase in air-traffic, the perimeter boundary at Heathrow was extended to allow for a lengthening of the runways. Les was forced to sell "Dim View" and he had a hard time ensuring that he was paid a fair price for the property. Whether this was the cause or not, he started to suffer from angina and this limited his activities. However, by now, his experience in breeding was, beyond doubt, exceptional. He produced superb bred vars of *L. phlaeas*. Some of these are illustrated in T. G. Howarth's *South's British Butterflies*. Later he specialized in the selective breeding of *P. icarus* variations with great success. He exhibited many of these at numerous annual exhibitions of the Society and they are illustrated in the proceedings and journal.

Les remained a bachelor—he was very much a man who called a spade, "a spade". He moved to Hampshire where he spent his retirement breeding British butterflies. Les's vocabulary might have been termed colourful but he was a kind man who could be affectionately termed as a "rough diamond" and he will be missed.

DON WALKER

Past Presidents

1872–4 J. R. Wellman (dec.)
1875–6 A. B. Farn, f.e.s. (dec.)
1877 J. P. Barrett, f.e.s. (dec.)
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1989 Mrs F. M. Murphy, b.sc. (dec.)
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1992 J. Muggleton, m.sc. ph.d. m.i. biol., f.r.e.s
1993 D. Lonsdale, ph.d, b.sc.
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1996 C. Hart, b.sc.

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Public liability insurance.—It has come to the notice of the Society that some organizations issuing permits to enter their land to study insects are now asking that all those issued with such a permit should have public liability insurance, typically for two million pounds cover.

This may at first sight seem a somewhat daunting requirement. The Society has consulted its insurance brokers and it emerges that many members who have household insurance may already have public liability insurance included. It is suggested that if in doubt the policy document should be consulted. We discovered however that for a nominal sum the Society could extend its own public liability insurance to cover members of the Society while engaged on entomological pursuits. We have taken this option and are pleased to inform all members that they now have public liability cover of two million pounds while engaged on their own field work, research and entomological study in addition to such activities arranged by the Society. Typically this would give cover against claims by third parties for injury caused in the course of such pursuits. A copy of the schedule to the policy is available for inspection at Dinton Pastures. — A. J. Pickles, Hon. Treasurer, 2a Park Avenue, Lymington, Hampshire SO41 9GX.

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ORTHOCHAETES SETIGER (BECK) (COLEOPTERA: CURCULIONIDAE) LEAF-MINING *ALLIUM URSINUM* IN SOUTHERN SCOTLAND

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National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF

AND J. M. NELSON

70 Hainburn Park, Edinburgh EH10 7HJ

Ramsons or *Allium ursinum* L. is a plant that is avoided by most animals, both large and small (Tutin, 1957). Thus, the discovery of an occupied leaf-mine in *A. ursinum*, by the Water of Leith (OS. Grid ref NT1867), Midlothian (VC 83) on 26 June 1996 is worth recording. Initially, the mine was a small blotch occupying only the extreme apex of the leaf. Subsequently, the beetle larva mined down the midrib of the leaf for about 3 cm before mining out into the lamina of the leaf where a complex series of short forays occurred (see Fig. 1). The larva left the leaf-mine on 1 July 1996 and burrowed down into the sandy substrate for pupation. In due course an adult of *Orthochaetes setiger* (Beck, 1817) emerged on 8 July 1996. The specimen was kindly identified by Mr Magnus Sinclair.

O. setiger is listed by Hyman & Parsons (1992) as nationally scarce (Nb), but some regard it as a common weevil. There are several previous records from southern Scotland (Crowson, 1971); in fact its first Scottish record was from Dalmeny Park, Midlothian in 1841 (Greville, 1841). The life-history of *O. setiger* in Britain is unclear. Joy (1932) states that the genus *Orthochaetes* is associated with the roots of plants, an association echoed by Cooter & Cribb (1975) who specify "at roots of *Rumex acetosella*" for *O. setiger* but who in addition note an association with *Senecio* spp. (part of plant not specified). Surprisingly Bullock (1992) makes no mention of the species.

Consultation of the European literature tells quite a different story. *O. setiger* is recorded by Hering (1957) as forming leaf-mines in some 19 genera of plants. Sixteen

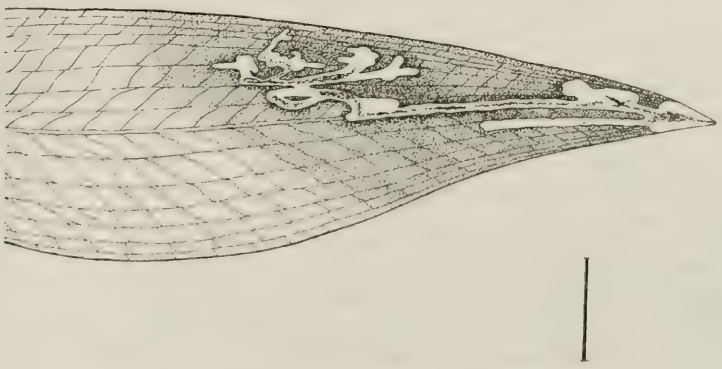

Fig. 1 Drawing of the leaf-mine of *Orthochaetes setiger* (Beck) in *Allium ursinum* L. Scale-bar represents 1 cm.

of the genera belong to the family Asteraceae (= Compositae), with single genera only being recorded from Lamiaceae, Boraginaceae and Plantaginaceae. However, Hering (1957) makes no mention of *Allium* or any other monocotyledon as a food plant.

The present rearing of *O. setiger* from ramsons would at first seem to be a case of very deviant host-selection by the weevil were it not for another observed association of this species with *A. ursinum*. A collection of seedheads of *A. ursinum* from Temple (O.S. Grid ref NT3158), Midlothian (VC 83) on 30 June 1991 produced an imago of *O. setiger* some while later. No leaf material was included in this collection. Larval workings could not be found as the material was badly decayed by the time the beetle was discovered. The entering of the seedheads for pupation by a wandering larva, prior to the collection of the seedheads, seems unlikely in view of the site of pupation recorded above. Furthermore, it is also unlikely that the adult beetle was concealed amongst the seedheads as these were carefully inspected soon after collection and looked at daily from then on. Thus in view of the strong association of the illustrated leaf-mine with the midrib it seems probable that the larva was mining the flower stem of the *Allium* when the heads were collected.

The present associations of *O. setiger* with a monocotyledonous host in Britain, whereas in mainland Europe it has a strong affinity for the dicotyledonous Asteraceae, is curious. However, there is some indication that *A. ursinum* may have a similar defence chemistry to many species of Asteraceae. Circumstantial evidence for this is as follows.

(A) The hoverfly genus *Cheilosia* has some 26 species in Europe—22 of these mine the stems or roots of dicotyledons, mostly Asteraceae (14 spp.), while three have transferred to fungi and one has successfully transferred to *A. ursinum* (Rotheray, 1993).

(B) The tortricid moth *Cnephasia interjectana* (Haw., 1811) has twice been reared from the flowerheads of *A. ursinum* (Bland, unpublished). It is a polyphagous species recorded feeding on some 121 genera of dicotyledons but only on six genera of monocotyledons (Hering, 1957).

(C) The agromyzid fly *Chromatomyia horticola* (Goureau, 1851) is polyphagous on many species of Asteraceae. However, its hosts include some 30 genera of dicotyledonous plants but only one species of monocotyledon, namely a species of *Allium* (Spencer, 1990).

Only future phytochemical studies will establish whether such a chemical similarity exists or whether the above observations are just coincidence.

Acknowledgement

We are very grateful to Mr Magnus Sinclair for identifying the weevil for us.

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BOOK REVIEWS

A review of the scarce and threatened ethmiine, stathmopodine and gelechiid moths of Great Britain (UK Nature Conservation No. 16) by M. S. Parsons. Joint Nature Conservation Committee, Peterborough, 130 pages, softback, £13.40.—Lists of scarce species can be dangerous. They are something which politicians can seize upon and abuse to "protect" from collectors under the guise of promoting a pro-conservation image. Happily there are no likely candidates for this treatment among the smaller moths considered in this book.

When habitats are assessed, the occurrence of scarcer species can be a sensitive indicator of the intrinsic quality of a site. Fortunately the importance of invertebrates, and in particular insects, is being more widely recognized in the conservation world. In order for this kind of assessment to have value there needs to be an authoritative listing which takes account of all available data.

Parsons (1984) was a first attempt to provide a measure of the status of many less common microlepidoptera; it was achieved by obtaining the opinion of specialists in various groups. This report, following that on the pyrales (Parsons, 1993), gives much more detailed hard data in support of the appropriate status for the 83 species considered. The families of moths included are comparatively poorly known, with scarcely any species having received detailed treatment in the British literature since Meyrick (1928), with the exception of those Gelechiid species covered by short papers in the *British Journal of Entomology and Natural History*.

The introductory sections describe the scope of the information contained; the format of the datasheets is set out under sensible headings: species name, species status, identification, distribution, habitat and ecology, status, threats, management and conservation, and published sources. The method and sources of information are carefully set out and it is stated that Parsons (1984) was taken as the baseline for the list of species with additions and deletions as suggested by the data.

The various categories of status: endangered (RDB1) etc are then spelt out with the addition of two categories: RDBI—indeterminate, and RDBK—insufficiently known, which allows avoidance of a decision being made on inadequate information. The species are then listed by status category, as well as in taxonomic sequence. It is of interest to note that seven species within these families are described as extinct. To make such a declaration about small and obscure moths requires courage, for there is always the chance that such a species may be lurking undiscovered somewhere in the British Isles. However, this judgement is to be welcomed; we cannot wait a century in times of rapid change and the rate of extinction of species needs to be brought to people's attention. Of similar interest is the listing of nine species as endangered, which might make them candidates for legal protection if they were not so small and apparently insignificant.

The main part of the book consists of the datasheets for each of the species considered. Each one is packed with information which appears to have been very

thoroughly researched, and as well as making the book a useful conservation tool makes it a valuable compilation of our knowledge of the biology and distribution of these insects. It is inevitable that one or two records may have been overlooked, but if this is so it will not detract from the value of this book. It is highly commended to all microlepidopterists, and to those working in the sphere of conservation as a document giving reliable RDB status to the moths of these families.

DAVID AGASSIZ

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A guide to moth traps and their use by Reg Fry and Paul Waring. The Amateur Entomologist volume 24, 1996, 64 pp, card covers, £5 (£5.50 overseas).—This new booklet supersedes AES leaflet 33 first written by John Heath in 1970 and long out of print. It begins with a brief history of light trapping, from the report of the Roman author Columella who, writing in AD 60–65, described the use of a flame in a narrow-mouthed tin pot to trap wax moths. After a short introduction to some of the technicalities of light measurement, the main part of the booklet examines different types of light traps. The various types of lamp and bulb are discussed and various wiring diagrams are given to show how they should be utilized. Following this, various trap designs are given from the simple hanging sheet through the various commercially available traps to home-made varieties. Finally the efficacy of the different traps is discussed, with tips on weather, siting and relative performances. Other lures such as wine ropes and bait traps are briefly considered and finally lists of suppliers, references and components are given. Anyone can run a light trap of some sort without too much research, but this book will help put a perspective on any results and will give plenty of ideas for improving home-made models.

The economic importance of insects by Dennis S. Hill. London, Chapman & Hall, 1996, x + 369 pp, hardback, £75.—This book follows in a broadly similar style from the same author's *Agricultural entomology* reviewed in 1995 (*Br. J. Ent. Nat. Hist.* **8**: 160), but extending its coverage to include medical, veterinary, household, stored product and forestry pests as well as those afflicting agriculture. Under each of these headings, selected important insect pests are listed and some are illustrated and brief details of their life history and economic impact are given. The book begins with a chapter on beneficial insects and examines, for example, pollination, bee-keeping, silk production, insect farming and biological control of pests. And a final chapter considers insect pest control. As the author states in his preface, the book is very much an introduction to applied entomology; it is rather brief in its broad coverage, but nevertheless represents a useful synopsis of all types of insect pest species.

RICHARD A. JONES

VERUANUS SCHMITZ (DIPTERA: PHORIDAE)

R. H. L. DISNEY

Field Studies Council Research Fellow, University Department of Zoology, Downing Street, Cambridge CB2 3EJ.

On 5 June 1996 Jürgen Gadau (Universität Würzburg, Germany) collected a female phorid about 10 cm from the entrance of the nest of the ant *Camponotus ligniperdus* (Lat.) at Neuhütten (Spessart, Kreis Aschaffenburg, Germany). The identity of this specimen initially posed problems but was eventually attributed to a species currently called *Megaselia oldenbergi* (Schmitz) after comparison with a specimen from Austria (Winklern, 1300 m, 26 July 1946) in Beyer's collection in the Museum Koenig (Bonn). However, the generic assignment of species has been unsatisfactory for a long time and the specimen from Austria possessed a feature that caused me to re-examine this problem and conclude that its assignment once again to *Veruanus* Schmitz is the conclusion that best fits the known facts.

VERUANUS SCHMITZ, 1927

Schmitz (1927, 1929) erected the genus *Veruanus* for a single peculiar male from Finland, *V. memorabilis*. Subsequently a single female of the species *Megaselia oldenbergi* (Schmitz, 1919) from Germany was provisionally assigned to *Apocephalus* Coequillett (Schmitz, 1929) before being transferred to *Veruanus* (Schmitz, 1940). By this act Schmitz amended the diagnosis of the genus to allow for vein 3 being either forked (as in *V. oldenbergi*) or unforked (as in *V. memorabilis*). The addition of two further species to the genus by Beyer (1965) and Borgmeier (1971) radically altered the diagnosis of the genus to the point that it was no longer easily characterized. In order to bring some order to this state of confusion the genus was reduced to the type species only, by transferring two species to *Megaselia* Rondani and leaving the generic assignment of *V. vereus* Borgmeier unresolved (Disney, 1990).

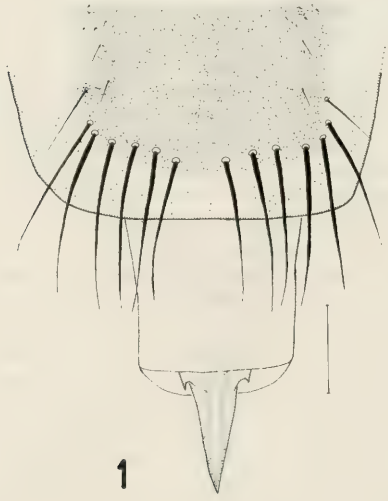
The fresh female from Germany, Beyer's specimen from Austria and a further female collected at a window in Sweden (by S. O-Ulefors at Tärendö, 25 June 1986) are clearly conspecific. However these specimens reveal some degree of variation in details of the wing measurements and ratios. Furthermore the Austrian specimen has vein 2 (R_{2+3}) incomplete, as its tip is missing so that it does not reach the costa. The specimen from Scandinavia further suggested the possibility that *V. memorabilis* and *M. oldenbergi* might be the males and females of a single species, whose vein 2 might be present, absent or incomplete – as is the case with *Triphleba gracilis* (Wood) (Disney, 1983). Detailed comparison of the description of *V. memorabilis* with the three females of *M. oldenbergi* available to me force the conclusion that this hypothesis is the best explanation of the facts. The consequent synonymy is formally proposed below, along with a clarification of the recognition of *Veruanus*.

VERUANUS OLDENBERGI (SCHMITZ, 1919)

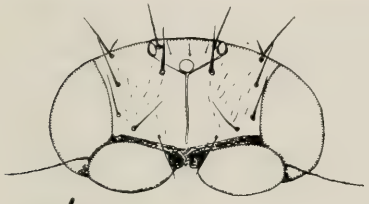
Aphiochaeta oldenbergi Schmitz, 1919: 191.
Apocephalus oldenbergi (Schmitz) Schmitz, 1929: 184.
Veruanus oldenbergi (Schmitz) Schmitz, 1940: 96.
Megaselia oldenbergi (Schmitz) Disney, 1990: 21.
Veruanus memorabilis Schmitz, 1927: 99. **Syn. nov.**

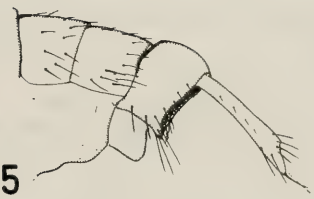
This currently monotypic genus resembles *Megaselia*. In both sexes the frons is distinctly broader than high and bears only a single pair of supra-antennal bristles

(Fig. 4). Otherwise frontal chaetotaxy typical of *Megaselia*. The third antennal segment is clearly longer than broad and bears a subapical short-haired arista (Figs 2 and 4). The palps and proboscis are relatively short. Mesopleuron bare. Scutellum with four bristles, but anterior pair shorter and weaker. Abdomen of female with tergite 6 greatly reduced (Fig. 3) and tending to be concealed by invagination within end of segment 5. Sternite 6 present and with strong bristles at rear margin (Fig. 1). Segments 7 and 8 elongated and retractile. Segments 9 and 10 modified into a dorsoventrally flattened, sharply pointed, ovipositor (Fig. 1), with cerci reduced to a pair of minute hairs on dorsal face before tip. Internally no Dufour's crop mechanism has been found. Paired dorsal glands discharge from short common duct at rear of tergite 5 (Fig. 3). Male hypopygium with slender anal tube that is clearly longer than length of epandrium, which is higher than long (Fig. 5). Hypandrium without obvious posterior lobes. Legs as *Megaselia*. Hind femur with hairs below basal half not differentiated from those on anterior face. Hind tibia with differentiated postero-dorsal hairs and with simple spines in comb at tip of posterior face. Segment 5 of front tarsus longer than 4. Wing with vein 3 forked or unforked or with vein 2 with distal part missing. No hair at base of vein 3. Sc well developed and



Figs. 1–3. *Veruanus oldenbergi* female. 1: ventral face of abdominal segment 6 and ovipositor. 2: right antenna. 3: abdominal tergites 5 and 6 and internal paired dorsal glands (indicated by dots). Scale bars = 0.1 mm.





Figs. 4–5. *Veruanus oldenbergi* male. 4: frontal view of head. 5: left face of abdominal segments 5–6 and hypopygium. (After Schmitz, 1927).

its top confluent with vein 1. Costa about half length of wing (costal index of females examined is 0.48–0.52) and costal cilia short (0.07–0.09 mm long). Costal section 1 subequal to sections 2 + 3 (0.9–1.1 times as long in females examined and 1.21 times as long in only known male). The wing length of the females examined is 1.9–2.3 mm.

The females will run to couplets 178 or 209 in the key to world genera (Disney, 1994). The combination of the wing being more than 1.5 mm long, the costal index more than 0.4, the front metatarsus being longer than segment 5, which is longer than segment 4, will distinguish *Veruanus* from *Pseudacteon* Coquillett and *Synclinusa* Borgmeier.

The form of the ovipositor in *V. oldenbergi* is indicative of parasitoid habits. Whether its host is *Camponotus ligniperdus* remains to be demonstrated.

Acknowledgements

I am grateful to Dr Hans Ulrich (Museum Koenig, Bonn) for allowing me to borrow and remount a specimen from the Beyer Collection. My studies of Phoridae are funded by the Isaac Newton Trust (Trinity College, Cambridge).

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BOOK REVIEWS

Modeling biological systems: principles and applications by James W. Haefner. Chapman & Hall, New York, 1996, £49, xvii + 473 pp, hardback.—This textbook provides an extensive introduction to the world of developing and using models in the biological sciences. It is clearly written and enlivened by some welcome touches of humour and occasional epigrammatic quotations which jog the reader's attention. The first part of the book comprises ten chapters which deal with principles. These should give a good grounding to anyone wishing to understand general approaches to modelling biological systems. I liked the early evaluation in the book of two alternative approaches to modelling which are outlined in chapter 2. Here a "classical" method, where alternative models are developed one at a time contingent upon the failure of a previous model, is contrasted with a modelling process where alternative hypotheses and their models are tested simultaneously, but independently. In practice, I suspect that modellers may often adopt more "messy" tactics, switching between these approaches as intuition and experience guide them in search of profitable modelling outcomes. Nevertheless, this clear exposition on how to set about modelling should help those first starting on this enterprise in biology. The second part of the book consists of a further ten chapters where a range of applications are explored in sufficient detail to enable a reader to commence constructing models in their chosen discipline. Again, the book succeeds in its aims as an introductory text, giving a basic foundation which can be built on subsequently by reading papers and more advanced texts on any of the biological disciplines covered. I would recommend this publication to those wishing to learn how to model biological systems, though at £49.00, with a paperback not yet available, I suspect that sales to students and general biologists will be limited.

I. F. G McLean

The ecology of agricultural pests—biochemical approaches, edited by W. O. C. Symondson and J. E. Liddell, Chapman and Hall, 1996, xiv + 517 pp, hardback, £75.—The title of this book might suggest that the contents will be of little interest to entomologists other than those concerned with crop protection. This is far from true and the clue to this is given in the book's subtitle, "biochemical approaches". Genetic fingerprinting is now a well-known technique through its use in criminal investigations, but this and other examples of molecular biology are bringing about a quiet revolution in taxonomy and the study of insect behaviour in the field. The twenty-one chapters in this book produced by the Systematics Association describe a variety of practical situations where biochemical studies have been used. These include separating species complexes and sibling species, identifying species difficult to separate by conventional identification means, identifying insects at the egg, larval or pupal stage instead of waiting for adults to emerge, immunoassay tests on gut contents to determine what predatory insects have been feeding on, and measuring genetic biodiversity and gene flow between isolated populations. Each chapter is supported by many references to other research publications.

Techniques such as enzyme electrophoresis, DNA sequencing, random amplified polymorphic DNA tests and enzyme-linked immunoassays are generally beyond the means of entomologists who do not have access to laboratory facilities. Because of this, and the greater expense involved, biochemical approaches to taxonomy and studies of insect behaviour will not replace traditional methods. There is, however, fertile ground for collaboration between field and laboratory entomologists to solve problems in a new way. This book describes a rapidly developing field of biological science and gives a fascinating insight into what has become possible in recent years.

A. J. Halstead

ANTICHAETA ATRISETA (LOEW) (DIPTERA: SCIOMYZIDAE) IN BRITAIN, AND ITS OCCURRENCE WITH OTHER SCARCE MALACOPHAGOUS FLIES

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A single female *Antichaeta atriseta* (Loew) was captured in a pitfall trap between 10 and 24.vi.1988 at Botany Bay, West Suffolk (VC 26), grid ref. TL675854, and constitutes the first British record for this rare Palaearctic species.

Botany Bay was one of many sites sampled within an East Anglian Fenland Invertebrate Survey funded by the former Nature Conservancy Council between 1988 and 1991. Despite the examination of many samples from 72 trapping stations located in the Norfolk, Suffolk and Cambridgeshire fens during this period, no other specimens of *A. atriseta* have been discovered. However, in addition to the discovery of *A. atriseta*, an outstanding assemblage of other scarce Sciomyzidae was recorded from Botany Bay.

Botany Bay site and sample methods

Botany Bay, located within the Stallode Wash SSSI on the eastern margins of the fens near to the western edge of the Breckland, is an area of washland which is seasonally flooded from the Little Ouse River. Thus it is often inundated during the winter though much of the site is prone to drying out in summer—there may be some similarity to the vernal swamps in Denmark described by Knutson (1966) as a habitat for *A. atriseta*. Two trapping stations were operated during the summer of 1988, each consisted of five pitfall traps placed in a line at 1-metre intervals, and two water traps (one at ground level, the other on a 0.5 m tall stake)—one located at each end of the line of pitfalls. The traps contained preservative (30% ethylene glycol = dilution of commercial antifreeze) and were left *in situ* for three sampling periods each of 14 days: 10–24.vi.1988, 24.vi–8.vii.1988 and 30.viii–13.ix.1988.

Sample station 1 was situated in an almost pure stand of *Glyceria maxima* (Hartm.), and sample station 2, where *A. atriseta* occurred, located approximately 100 metres away, in a sward dominated by *Carex riparia* Curt., with *G. maxima* and *Polygonum lapathifolia* (L.) both frequent. At each sample station the vegetation was rank and unmanaged and a dense layer of vegetation litter covered the ground. Though flooded during the winter of 1987/88 prior to sampling, both sample stations lacked surface water in the summer of 1988, apart from a few small puddles during the first sample period.

Identification, distribution and ecology of *A. atriseta*

A. atriseta is distinctive and can be readily identified using Rozkošný (1984), one of its most striking features being the markedly thickened and velvety black basal third to the arista. The insect is predominantly black, immediately distinguishing it from the reddish-brown *A. analis* (Meig.), and it is structurally different from the

similarly black *A. brevipennis* (Zett.) by having larger wings and possessing two pairs of dorsocentral and postalar setae. *A. obliviosa* Enderlein, another mainly black species, was added to the British list by Cole (1988) but *A. atriseta* differs in only having one orbital seta on each side. Rozkošný (1984) provides figures of the male genitalia for *A. analis*, *A. brevipennis* and *A. atriseta*, though males of the latter have yet to be found in Britain.

Rozkošný (*in litt.* 1990) notes that *A. atriseta* seems to be an exceptionally rare member of the Sciomyzidae and is usually found only as one or a few individuals. Nevertheless he reports that it has been widely recorded: Scandinavia (Denmark, Finland and Sweden), Germany, Poland, Italy, Estonia, Latvia, Lithuania and Russia (in the vicinity of Moscow, and as far east as Zeya in the Amur area and Ussuriysk in the southern Maritime Province—confirming the species from Asia). Knutson (1966) also reports that *A. atriseta* has been recorded from Austria, and has observed it by sweeping adults from two localities only 1.5 kilometres apart in Denmark during the early 1960s. Both sites were vernal swamps, one with sparse vegetation shaded by a dense canopy, the other a dense stand of sedges and rushes. The life history of *A. atriseta* is unknown, though it may be similar to other species of the genus. Studies by Knutson (1966) show the related *A. analis* and *A. brevipennis* to have larvae that feed solely on the eggs of snails. In the case of *A. analis*, eggs and larvae were found in the wild only on and in the egg capsules of the snail *Lymnaea truncatula* (Müll.), though in the laboratory female *A. analis* would also oviposit on the egg capsules of *L. stagnalis* (Müll.) and egg masses of *Succinea* sp. Eggs and larvae of *A. brevipennis* were only found on the egg masses of *Succinea* sp. in the wild, though a few eggs were laid on the capsules of *L. truncatula* in the laboratory. Larvae of neither *Antichaeta*, however, would attack newly hatched or mature snails.

Even though our sampling techniques are not the most effective for recording Mollusca, four species were present in the Botany Bay samples: *Lymnaea palustris* Müll. (Lymnaeidae), *Succinea putris* (L.) (Succineidae) and *Oxyloma pfeifferi* Rozsmässler (Succineidae) at both sample stations; and *Carychium minimum* Müll. agg. (Ellobiidae) at sample station 2 only. In view of the association with lymnaeid and succineid snails demonstrated by Knutson (1966), the first three of these species would appear probable hosts for the various *Antichaeta* larvae at Botany Bay.

The sciomyzid assemblage at Botany Bay

Thirteen species of Sciomyzidae were recorded. Table 1 shows the total numbers captured at both trapping stations during each sample period.

In addition to the discovery of *A. atriseta*, an outstanding assemblage of other scarce Sciomyzidae were represented in the samples, including five species which have qualified for Red Data Book status (Shirt, 1987): *A. analis*, *A. brevipennis*, *Colobaea bifasciella* (Fall.), *Pteromicra pectorosa* (Mendel) and *Sciomyza simplex* Fall. In a more recent review, Falk (1991) has reassessed the status of *C. bifasciella* and *S. simplex* and assigned them to the nationally scarce* category—supported by our studies in the East Anglian fens where both species were widely recorded, though predominantly from ancient wetland sites of recognized nature conservation value. *Psacadina verbekei* Rozkošný, a further nationally scarce species, was also present at Botany Bay. Falk (1991) reviews the known occurrence of these scarce species in Great Britain, all of which have been previously reported from East Anglia.

*Species which are estimated to occur within the range of 16 to 100 10-km squares in Great Britain.

Table 1. Numbers of Sciomyzidae captured during 1988 at Botany Bay, Suffolk

	Station 1			Station 2		
	10–24 June	24 June–10 July	30 Aug.–13 Sept.	10–24 June	24 June–10 July	30 Aug.–13 Sept.
Antichaeta analis	0	0	0	7	12	1
A. atriseta	0	0	0	1	0	0
A. brevipennis	1	0	1	0	0	0
Colobaea bifasciella	0	0	1	0	0	0
Ilione albiseta	0	0	0	0	0	4
Pherbina coryleti	3	0	3	0	0	13
Psacadina verbeckei	0	0	0	0	1	0
Pteromicra angustipennis	0	0	1	0	0	2
P. pectorosa	95	18	62	34	12	74
Sciomyza simplex	0	3	52	3	6	63
Tetanocera arrogans	0	0	1	0	1	1
T. ferruginea	1	0	5	2	4	5
T. robusta	6	8	1	6	46	1

Recording three species of *Antichaeta* at a single wetland system is certainly unusual, though not altogether unexpected if their life histories are broadly similar. Both *A. analis* and *A. brevipennis* have been reported from East Anglia in the past; Falk (1991) reports the former from Chippenham Fen, Cambridgeshire, and the latter from various sites in Suffolk and Whitwell Common, Norfolk. In our study *A. analis* occurred in 15 of 72 trapping stations operated in East Anglia with most occurrences in the Norfolk Broadland, though it was also present at Chippenham Fen, Cambridgeshire, and Walberswick on the Suffolk coast. *A. brevipennis* was present at six sample stations in Norfolk and Suffolk and was predominantly associated with sites dominated by tall, dense fen vegetation that were subjected to periodic flooding. The two species occurred together at Sutton Broad Marshes, Norfolk.

The abundance of *P. pectorosa* at both Botany Bay stations is somewhat remarkable, particularly as it has not occurred in samples examined from the 70 stations operated elsewhere in the East Anglian fens. This is a very rare species in Great Britain—both Shirt (1987) and Falk (1991) afford it RDB2 (vulnerable) status. Falk (1991) reports two confirmed records in recent years: Wicken Fen, Cambridgeshire, and a site in Essex; with other records from dune slack pools at Braunton Burrows, Devon (1989), and Pembury, Carmarthenshire, south Wales (1986). More recent studies by Holmes *et al.* (1995a,b,c), which used pitfall and water trapping techniques similar to those at Botany Bay, provide modern records for *P. pectorosa* in Wales: Carmarthenshire in 1987, Anglesey in 1988 and Pembrokeshire in 1989. Other published records are: Rozkošný & Knutson (1970), providing two old records, from Clifford's Castle, Hereford, and Port Talbot, Glamorgan, both collected by Yerbury in vii-viii.1908; and Collin (1966) who reports 'I have taken it freely at Barton Mills (Suffolk) in May'—this Breckland locality is only a few miles away from Botany Bay. It has also been taken at Mungell's Pond, Dinton Pastures, Berkshire (1993, P. J. Chandler).

Rozkošný & Knutson (1970) describe the life history of *P. pectorosa* and record that larvae actively search for, and kill, a variety of aquatic snails. Non-aquatic *Succinea* spp. have also been killed and eaten. Puparia, in which the species is

thought to over-winter, have been found in the wild floating in vernal pools and in the laboratory have been formed within snail shells. The adults are not long-lived and Rozkošný & Knutson (1970) have bred several generations in a year under laboratory conditions—the large numbers of individuals occurring in our traps in both June and September would suggest that there are at least two generations in England during the summer months.

The nationally scarce *C. bifasciella*, *P. verbekei* and *S. simplex* all occurred widely in our east Anglian survey—in 32, 29 and 33 sample stations respectively of the 72 operated. Although the majority of sites included within the study were of high nature conservation value, it may be significant that all the rare species discussed above were absent, albeit from a low number, of the drier and more degraded sites.

Acknowledgements

The East Anglian Fen Invertebrate Survey was funded by English Nature (formerly Nature Conservancy Council). We are indebted to Dr I.F.G.McLean for confirming the identity of *A. atriseta*, Dr I.J.Killeen who determined the Mollusca, Prof. R. Rozkošný for information on the Continental occurrence of *A. atriseta*, and the landowner Mr R. Sizer for permission to conduct the survey at Botany Bay.

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SHORT COMMUNICATION

Red admiral in February.—I would like to report the discovery of the eaten-out cadaver of a newly-emerged red admiral (*Vanessa atalanta*) with wings not yet fully-inflated, found in my kitchen garden on 9 February 1997 following bouts of warm weather. This adds credence to the idea of a home grown supply of red admirals though their survival through the winter and spring may be problematical.—John Feltwell, Marlham, Henley's Down, Battle, East Sussex TN33 9BN.

LEPIDOPTERA IN HONG KONG, APRIL 1993

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From 5–26 April 1993 we visited friends who had recently settled in Hong Kong. The chance to get to grips with the southern Chinese Lepidoptera which occupy this area was too good to miss, so arrangements were made for light-trapping as well as day-time recording during our stay. In a previous paper resulting from this expedition (Waring *et al.*, 1994) we reported on the Hawk-moths (Sphingidae) recorded and made the point that there is much more to Hong Kong than overcrowded cities of skyscrapers and traffic. That paper includes a map showing the localities we visited. The aim of this paper is to report the rest of the Lepidoptera we recorded and to describe some of the habitats in more detail.

GENERAL HABITAT NOTES

Much of Hong Kong is mountainous and urban development is concentrated in the few level areas, mainly around the coast and on man-made platforms of land created by infilling bays. Large areas of hillside are free of development and set aside as catchwaters to meet the demands of the urban population. Water collecting channels follow contours around the hills and channel rain water into the reservoirs. Each channel is equipped with a path to facilitate servicing and these paths make excellent walking and insect collecting routes.

Elsewhere most of the lower hillsides are covered in shrubby vegetation. These hillsides are probably richer in butterfly and moth species and numbers now than they have been since the British acquired Hong Kong in 1842. At that time most of the natural forest had already been cleared by the Chinese, and nineteenth century photographs and accounts report hillsides largely devoid of shrubs and converted into open grassland and rock by clearance, domestic livestock and fires. With the move from a rural farming way of life to an urban lifestyle dependent on imports, the native flora has been left to develop on the hills and these places are valued by local people who use them for weekend walks away from the crowded city. Forty per cent of the total area of the territory is country parks, although building and other developments have taken place within them. Many areas which were previously paddy fields or other farmland have now been abandoned or are rented out as dumping grounds for broken-down vehicles and other waste products of the consumer society, or as lorry parks for the vast number of trucks moving goods between Hong Kong and China. This is particularly the case in the New Territories near the border with China.

As neglected farmland becomes invaded by native herbs, forbs, shrubs and trees, it can become of great value to wildlife. Many former crops, including various fruit trees, are native to Hong Kong or are related to native species, and these provide a wide variety of larval food plants concentrated into relatively small areas. Such places can be most productive of Lepidoptera. One such, at Fung Yuen, was kindly shown to us by Mike Bascombe and provided our best butterfly-watching day of the visit.

Site details

The location of these sites within Hong Kong is shown in the map which accompanies our previous paper (Waring *et al.*, 1994).

Tai Po Kau Special Conservation Area (TPK)

The best of our moth-trapping nights were in the woodland at Tai Po Kau. This is apparently the most species-rich and well developed area of native woodland in Hong Kong, in terms of trees and shrubs, with some reaching over 10 m in height, but even this has been heavily managed in the past. Very little if any of the original forest cover survives in Hong Kong, except perhaps in a few ravines and gorges inaccessible to domestic stock and fire. Much of the woodland at Tai Po Kau was cleared and planted with the native Chinese pine *Pinus massoniana* in the 1940s and 1950s (Thrower, 1984) or earlier. The plantings have largely failed but the protection they received has allowed native trees and shrubs to grow up amongst them. Pockets of native forest probably survived as well because there is currently a rich variety of flora and fauna on the site. Thrower (1984) lists the wide range of oaks (Fagaceae) and laurels (Lauraceae) characteristic of the original forest remnants and still present today, along with lists of the shrubs, climbers and herbs. The large mammals such as the South China tiger *Panthera tigris amoyensis* and the leopard *Panthera pardus* were lost in the original clearances but various forest birds appear to have recolonized. We had only two evening sessions (19.00–22.00 hrs) with a light trap here, but this proved to be easily the most productive site for moths, in terms of numbers of individuals and species of those we visited, and included most of the largest species we saw. If only it had been possible to trap all night at this wonderful site.

Tau Po Kau is at least starting to look like mature woodland again. Much of the New Territories outside the country parks looks grossly degraded and is littered with debris and junk, but even here there is the pleasure of seeing several species of swallowtail butterflies such as *Papilio polytes* and *P. paris* which are common. We saw *P. helena* visiting flowers of the introduced *Lantana* by an open sewer littered with refuse at the foot of skyscrapers, and *Graphium agamemnon* in the botanic gardens in the middle of central Hong Kong amid the urban highways and flyovers.

Fung Yuen Site of Special Scientific Interest (FY) (Fig. 1)

This is a largely abandoned formerly cultivated area by remnant woodland. It includes orchards of overgrown fruit trees including tangerine and other citrus trees, banana, papaya and lychee among others, with rambling native shrubs, climbers such as *Aristolochia*, and invading wild herbs and grasses. All of these plants combine to produce a very nectar-rich and structurally diverse habitat. We had only a single daytime visit here and no opportunity for night work, but we saw more butterflies here than anywhere else and found two species of day-flying ctenuchid moths.

Mai Po Marshes Ramsar Site and Nature Reserve of the World Wide Fund for Nature (MP) (Fig. 2)

In addition to visiting the special areas at Fung Yuen and Tai Po Kau we light-trapped at Mai Po Marshes. This is an internationally important wetland site for migratory birds, and the only substantial area of mangrove swamp remaining in

Fig. 1. Overgrown orchards at Fung Yuen.

Fig. 2. The light trap site by the mangroves at Mai Po.

Hong Kong. As such it is managed as a reserve by the Hong Kong branch of the World Wide Fund for Nature and it has recently been declared a Ramsar site. The ecology and management history of this nature reserve have been documented and illustrated in detail by Irving & Morton (1988). Compared to the Tai Po Kau woodlands the vegetation is much less diverse in structure and species composition. The main elements are the mangrove trees, of which there are six species present, and zones of emergent plants, particularly the common reed *Phragmites australis*,

together with ruderal plants on the banks and dyke edges. We were able to run a light trap here for two full nights and the catches reflect the vegetation, with very large numbers of the mangrove-dependent polymorphic geometrid *Cleora injectaria* (Plate I. Fig 1) and the reed-dependent pyralid *Chilo luteellus*, and small numbers of a rather narrow range of other species. Butterflies were infrequent compared with other sites, only the lycaenid *Zizeeria maha* being common on our visit.

Wardhaven, Long Harbour, Sai Kung Country Park (LH) (Fig. 3)

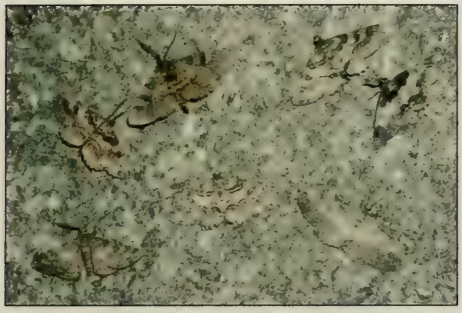
Our third main area of light-trapping was at Wardhaven, Long Harbour, where we were able to stay in a bungalow with a boathouse, situated on a severely denuded hillside of scrubby grazed vegetation typical of much of Hong Kong. This base had mains electricity and we were able to operate a Robinson trap all night for three nights running between the boathouse and the bungalow. This gave an insight into the typical moth fauna which presumably occupies much of Hong Kong. A wider variety of moths was captured than at Mai Po but the wetland specialists were notable by their absence, as were the very large species we found at the Tai Po Kau woodlands.

From the Wardhaven bungalow we were able to walk up into the open rocky grassland on the higher slopes and ridges to the summit of Sharp Peak/Nam She Tau (468 m) (Fig. 4).

Repulse Bay (RB)

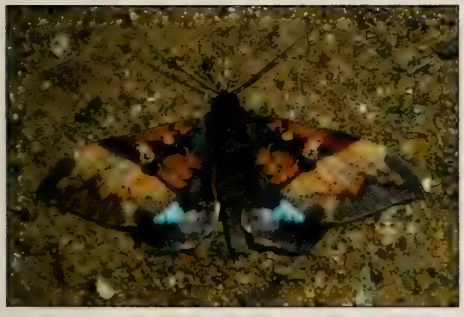
At the start of our visit we were based at Repulse Bay on Hong Kong Island around which some limited recording was done. This included some walks through scrubby vegetation on the catchwater between the town and the nearest reservoir, and the operation of a Robinson trap on the top-storey balcony of our apartment building for a couple of nights. The trapping resulted in only two macro-moths: a

Fig. 3. The light trap site between the bungalow and the boathouse at Long Harbour.



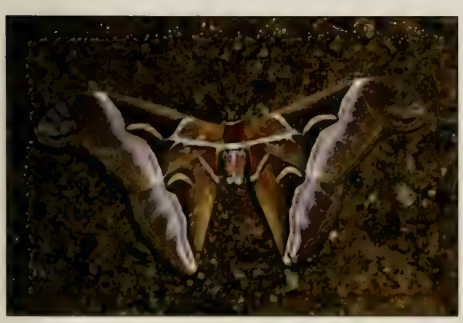
1. Polymorphic *Cleora injectaria* from the mangrove swamp at Mai Po.

2. The Hong Kong fritillary, *Argyreus hyperbius* on Sharp Peak.



3. *Ischyja manlia* from the woodland at Tai Po Kau.

4. *Cerura priapus* from the scrubland at Long Harbour.



5. The saturniid moth *Samia cynthia* in the Tai Po Kai woodlands.

6. Paul Waring by a light trap in the Tai Po Kau woodland. On hand *Actias selene*, on jacket *Lyssa zampa*.

Fig. 4. The trail to the summit of Sharp Peak (468 m).

single swallowtailed geometrid *Ourapteryx clara* and the noctuid moth *Hypocala deflorata* with yellow hindwings. At least it was a start!

Other areas visited, but not recorded entomologically, included Lantau Island, parts of which look very promising for Lepidoptera but which may suffer a great deal of change as a result of the new airport under construction on the north side of Lantau, and the associated developments which include a new town for 200,000 people.

Seasonal details

Our arrival in Hong Kong on 5 April coincided with that of a cold front from the north-east over the land mass of China, and temperatures were 14 to 17°C. For most of the following three weeks of our stay they were between 20 and 30°C. The weather was predominantly dry and calm during the day but relative humidity was high and many days started or ended cloudy. Near the coast, such as at Repulse Bay, mists and low cloud were frequent and there was often a wind from the hills. There were two thunderstorms during the nights. While we were at Mai Po there was a light shower by day. In the last week after we had finished light trapping, there was some heavy rain on two days. March and April mark the beginning of the summer rains in Hong Kong and are usually unsettled. Temperatures and rainfall increase dramatically in May and continue high into September and October. November to February is cooler, dry and sunny. In 1993, March and most of April were drier than average.

Much of the foliage on the native trees and shrubs is evergreen but the new spring growth on a number of species was unmistakable because the leaves begin red, turning green only when growth is well advanced. New light green shoots were apparent on other shrubs and trees and many species were in bud or coming into flower. The pink and white flowered *Bauhinia* were in flower along the streets or were going over. This is the national flower of Hong Kong and it now replaces the Queen's

head on some of the new coinage. John Tennent (pers. comm.) had found that some of his largest catches of moths at light occurred during March and April.

The butterflies

Butterfly identification is easy in Hong Kong. Marsh (1960) and Johnston & Johnston (1980) provide colour identification guides covering the majority of species and the former also reports on world-wide distribution. In Hong Kong there are just over 200 species belonging to nine families. The distribution and habits of the adult and immature stages of the butterflies received much study during the 1970s and 1980s by Mike Bascombe, the Johnstons and others, the results of which have been written up by Mike and will be published soon. Our visit to Fung Yuen on 11 April coincided with superb sunny weather and demonstrated the range of species on the wing. Several swallowtails *Papilio* spp. were well out, including numbers of *P. polytes* which flitted around the abundant *Lantana* blossoms, seemingly without ever settling. *P. paris* put in several fleeting appearances, flashing the turquoise blue patches on its black hindwings in the process. *P. helena*, *P. memnon*, *P. agamemnon* and *P. protenor* were also seen and several *Lampropteryx curius* were observed. The latter is apparently scarce and restricted to just a few sites in Hong Kong (Johnston & Johnston, 1980; M. Bascombe and A. Galsworth (pers. comm.). Several adults were seen flying around the tops of trees, their long tails streaming behind while they visited the blooms of citrus for nectar. They occasionally flew lower and settled on vegetation to rest.

We were also fortunate to see one of the two Hong Kong birdwing species, *Troides helena*, which was just beginning its flight season. We saw this large black and yellow butterfly on two or three occasions, possibly more than one individual, flying high up around the tree-tops, occasionally coming lower, but never in range of the camera. Also seen briefly was *Graphium antiphates*, a white swallowtail streaked with black.

Two other species of large butterflies with wing-tails also seen were the nymphalids *Polyura athamas* and *Charaxes polyxena*. Both species were seen feeding at sap running from wounded *Citrus* trees in a shady overgrown orchard grove by the allotments. The *Polyura* returned several times to different trees and was relatively easy to approach. The *Charaxes* was much more wary but eventually a male and female settled on the same sap run and it was possible to approach and photograph them once they were engrossed in their meal. Neither was disturbed by the light of the flash.

The large blue and black, "tortoiseshell"-like nymphalid *Polygonia canace* was also seen and photographed feeding at sap in the same citrus grove.

The most numerous butterfly was the pierid *Pieris canidia*, both adult and larvae of which closely resemble those of our small white *P. rapae*. The much larger orange-tipped pierid *Hebomoia glaucippe* was seen, flying fast across the allotments, on a couple of occasions.

Also seen were single individuals of the nymphalids *Neptis hordonia* and *Precis lemonias*, both basking in the sun, and the satyrids *Melanitis leda*, seen drinking at damp mud, and *M. phedima*, disturbed from amongst leaf-litter, both within the shade of the *Citrus* grove.

Two of the black and white hesperiid *Tagiades litigiosa* were seen, both settling with wings spread flat on the upper surfaces of leaves, and the dusky brown skipper *Odontoptilum angulata* was noted visiting citrus flowers.

On many other days the weather was much less sunny and few butterflies were seen. At Mai Po for example, the only butterfly at all in evidence was the lycaenid

Zizeeria maha, which was quite numerous, flying near the ground around trefoils (*Trifolium*/*Lotus* spp.) by the paths. It was also an abundant butterfly at Repulse Bay, where a considerable increase in numbers was noted during the course of our stay, presumably the result of fresh emergences.

At Tai Po Kau rather few butterflies were seen on walks around the paths through the woodland. No doubt the cloudy weather on both days we visited played a part in this. Most frequently seen was the amathusiid *Faunis eumeus*, a number of which were encountered singly, flitting about between the low plants among the trees on each side of the rather shady paths. The satyrids *Lethe confusa* and *Ypthimna lisandra* were also fairly common along the woodland paths and also in more open scrub and grassland on the hillsides wherever we went in the New Territories, Hong Kong Island and Lantau.

A visit to the island of Tap Mun on 15 April was notable for the sight of the danaid *Euploea midamus*, a female of which was seen laying eggs on an unidentified palm. *Papilio polytes* was common on this island and was undoubtedly the most frequently seen *Papilio* species during our time in Hong Kong, occurring throughout the New Territories, on Lantau and even in the middle of Hong Kong Central among the skyscrapers.

A day spent walking to and climbing up Sharp Peak from Wardhaven, Long Harbour, on 14 April was memorable for two encounters with the Hong Kong fritillary *Argyreus hyperbius*, both males (Plate I, Fig. 2). The first was seen in open rocky grassland on a ridge looking up to Sharp Peak and the second was on the very summit. On both occasions the butterfly appeared to be "hill-topping", i.e. flying about the highest point of ground in the vicinity, restricting its activity to this area and returning to the same high spots repeatedly, and investigating other butterflies which came near. Both individuals were photographed basking on rocks. Violet *Viola* sp., upon which the larvae of this species feed, was frequent amongst the grass in this area. Also on the trek to Sharp Peak we saw a single specimen of the black and orange hesperiid *Ampittia dioscorides etura*, the only one we found. It was basking on a path through grassland but near scrub. Throughout this day the weather was cloudy with intermittent sun, but we all got well and truly sun-burned.

We saw the black, white, yellow and red pierid *Delias pasithoe* at Hong Lok Yuen and Tai Po Kau, and several of the distinctive pale yellow and black larvae of the papilionid *Chilasa clytia* at rest on the upper sides of leaves of *Litsea glutinosa*, a plant with leaves which look somewhat like a laurel (*Laurea*), growing through a fence along the main road at Repulse Bay.

The moths

Our previous paper (Waring *et al.*, 1994) dealt with the hawk-moths (Sphingidae) which we recorded. Little information has been published on the other groups of moths in Hong Kong and no systematic review has appeared so far. Some of the larger and more attractive species are mentioned in more general works on the natural history of Hong Kong, and Hong Kong is the type locality for a few species described by Walker and others in the 1860s, so there has evidently been sporadic collecting of moths in Hong Kong for over a hundred years.

Identification of moths from Hong Kong requires recourse to texts on neighbouring areas (such as Barlow, 1982; Holloway, 1983 onwards, and Seitz, 1908–1928) to make approximate determinations, followed by comparisons with named specimens and their genitalia in museum collections, chiefly, in this case, the national collections of the Natural History Museum (BMNH), London. Difficulties of identification and the time required for this job may have deterred earlier

collectors from writing up their material. Now is an exciting time for work on the moths of Hong Kong. Several collections have been made recently and these stand a good chance of being worked up and the results published, largely due to the efforts of Tony Galsworthy (AG), who is working on a check-list for Hong Kong. Recent collections which the present authors have seen include those of John Tennent (1992), much of which is now being mounted by Clive Turner for identification, Kent Li, who was inspired by John Tennent and carried on collecting moths after John's departure, Mike and Freida Bascombe, who collected, reared and photographed many moth larvae over an 18-month period, Tony Galsworthy, who collected moths at light on Victoria Peak over a 3-year period and who later trapped extensively in the Tai Po Kau woodlands after our departure, and Roger Kendrick, who visited Hong Kong and collected with Kent Li in July 1994. There is also a collection of unnamed moths made during an Oxford University Expedition to Hong Kong in 1981 and now housed in the BMNH.

In spite of the above collecting effort, some of the species we found during our visit appear to be the first records for Hong Kong, and in some cases the only ones so far. Many of our records are for localities from which these moths have not been recorded previously, indicating how imperfectly known the moth fauna and its distribution remains.

A list of the species we recorded, with sites and dates, is given in the accompanying Table, as our contribution to the growing body of data. Efforts were made to obtain identifications for all macrolepidoptera seen. Some microlepidoptera were also collected and a few of particular interest to us are included. All the identifications have been made in close collaboration with Tony Galsworthy, who has checked the genitalia against material in the BMNH wherever necessary and almost as a matter of course for some taxa.

The notes and observations which follow have been compiled in the limited time available since our return to the UK. Our aim is to provide some background information on the moths and to put our records into the context of the developing understanding of the moths of Hong Kong. The check-list being prepared by Tony Galsworthy will provide further details and indeed the first part of this list, on the ennomine geometrids, will soon be ready for publication.

Our most productive and exciting nights of light-trapping were in the Tai Po Kau woodlands (Plate I, Fig. 6) and some species were only seen here. It was a spectacular sight to see such large species as the Atlas moths *Attacus atlas* and *Samia cynthia* (Plate I, Fig. 5), the moon moth *Actias selene* and the oriental noctuid moths *Ischyja manlia* (Plate I, Fig. 3) and *Hypopyra ossigera* flying down from the forest trees soon after dark. Trapping at other sites helped to establish what could be expected in the open scrubby habitats that are more widespread in Hong Kong, and the sessions at Mai Po revealed some of the specialities of mangrove swamp.

Accounts by family

Cossidae

Only one cossid was seen, *Zeuzera coffeae*. The larva is a well-known stem-borer of coffee and cocoa but it has been reported from many other host-plants of at least 38 genera in 20 families, according to a literature review by Arora (1976). The moth occurs throughout the lowlands of the Indo-Australian tropics, especially in disturbed habitats such as secondary forest and in agricultural areas (Holloway, 1986).

Zygaenidae

The one zygaenid we saw was *Cyclosia papilionarius*, which is quite unlike any British species. It is a large black and white day-flier which resembles a danaid butterfly but also flies at night. Larvae in the genus are said to feed on the Solanaceae (Barlow, 1982).

Limacodidae

Limacodids were quite frequent in our light traps, both as individuals and species, some much larger than the British species. The group includes a number of species which are major pests of coconut and other crops in South-East Asia (Holloway, 1986). One we recorded was *Thosea sinensis* which is sometimes a pest of oil palms *Elaeis* spp. (Musaceae) according to Barlow (1982). Other closely related species have been recorded from tea *Camellia* (Theaceae), *Citrus* (Rutaceae) and a wide range of other hosts (Holloway, 1986).

Thyrididae

A singleton of the distinctive *Calindoea argentalis*, a silver moth with large brown patches on the forewings, was captured at light in the Tai Po Kau woodlands on 18 April. The larvae occur in rolled leaves on *Syzygium jambos* (Myrtaceae), a common cultivated fruit tree, of which there are several by streams at Tai Po Kau (Li, 1996).

Drepanidae

Just one species was encountered, *Oreta insignis*, over twice the wingspan of any British drepanid but with the characteristic hooked forewing tips of the group. It was only seen in the woodland at Tai Po Kau where it seemed to be common, with four in one evening.

Lasiocampidae

Three brownish "lappets" came to our lights. *Euthrix isocyma* was seen only in the Tai Po Kau woodlands, at the beginning and end of our visit; a total of four individuals. Singletons of *Dendrolimus punctatus* and *Kunugia divaricata* were noted in the open scrubland at Long Harbour. The larvae of *Kunugia* spp. have been recorded from trees of the Dipterocarpaceae while records for those of *Dendrolimus* are mainly from conifers and for *Euthrix* from grasses (Holloway, 1987).

Geometridae

A wide range of geometrid moths was encountered, the largest number of which belong to the subfamily Ennominae. A number were very similar in appearance to species in Britain, including *Abraxas amicula*, *Ourapteryx clara* and three *Cleora* species. Others were much larger than any British geometrids, such as *Chorodna ochreimacula* and *Chorodna strixaria* with wing-spans of 70 and 80 mm respectively. Some were very strikingly and exquisitely marked such as the yellow and red *Plutodes* species and the bold leopard-spotted *Obeida tigrata*. The majority were cryptically marked and would blend in when at rest on the trunks and branches of

trees or amongst leaf litter. Though cryptic from above, *Pachyodes* (*Terpna*) *calaurops* has a strikingly bold black and white underside.

The next most numerous sub-family was the Geometrinae, and among the many green species were the almost fluorescent day-glo green *Agathia carissima* and *A. lycaenaria*. Members of the genus feed on plants of the Apocynaceae such as *Carissa* spp., according to Barlow (1982).

We recorded two species of emerald green *Thalassodes*. One is *T. immissarius* but the other has defied identification so far. Tony Galsworthy and Jeremy Holloway are working on this problem.

The gaudy blue, yellow and black *Dysphania militaria* has a 70-mm wingspan. Several were seen resting in prominent positions on the upper surface of leaves in scrubby habitat in a number of places on the hillsides and water-catchments. The moths were ready to fly if disturbed and were also seen frequently on the wing by day. In the woodland at Tai Po Kau we saw a large number of these moths flying in a group around a single high branch of a tree in the afternoon. It was a spectacular sight. We presume they were males assembling to a female concealed somewhere amongst the leaves. The larva has been reared from *Carallia* (Rhizophoraceae) in Hong Kong (M. Bascombe, in Holloway 1996).

Other subfamilies of the Geometridae were poorly represented. Among the Sterrhinae were the distinctive *Somatina anthophilata* and *S. obscuriciliata*, the red mocha-like *Anisodes absconditaria* and several nondescript *Idaea* and *Scopula* spp. The strikingly angular fawn *Heteralex unilinea* was the only member we saw of the Oenochrominae. The peculiar translucent *Pseudeuchlora kafebera* and familiar gem *Orthonama obstipata* were all we saw of the Larentiinae. *O. obstipata* is quite common in Hong Kong (AG pers. comm.)

Uraniidae

The striking large swallow-tailed brown moth *Lyssa zampa* was our sole introduction to the Uraniidae in Hong Kong. A single worn individual came to the light trap in the Tai Po Kau woodlands on each visit, suggesting our expedition was at the end of an adult generation. According to Barlow (1982) the species is widespread in the Indo-Australian region and is not confined to woodlands, occurring also in cultivated and built-up areas, the larvae feeding on *Eugenia malaccensis* (Myrtaceae). Formerly the Uraniidae were included in the Geometroidea, partly because they have abdominal tympanal organs like the Geometridae. However the detailed structure of these organs is different and no other defining characters are shared with the geometrids, so they are currently given their own superfamily Uranioidea (Scoble, 1992). Some members of this group have beautiful iridescent markings and look superficially like large butterflies.

Saturniidae

The saturniids we encountered were the moon moth *A. selene*, in the entirely different habitats of the Mai Po swamps and the Tai Po Kau woodlands, and two Atlas moths, *Attacus atlas* and the smaller mauve and brown *Samia cynthia*, both only seen at the Tai Po Kau woodlands. It was a great thrill to see these large moths come to light. On the night of 18 April in the woodland glade at Tai Po Kau we had two *A. atlas* and one each of *S. cynthia* and *A. selene* flying around the trap at the same time, flapping large wings and dipping into the grass around the light.

Attacus atlas is not confined to the Tai Po Kau woodlands. AG has not seen it on Victoria Peak, neither in his trap nor at house lights, but he is aware of occasional individuals reported by people who have chanced upon them by day, on both Hong Kong Island and the New Territories. Herklots (1951) reports finding a number of cocoons on a small tallow tree *Sapium sebiferum* on Lantau island on 10 March 1935. The adults had emerged from all but two. The last two hatched early in April and one, a female, attracted a worn male on her third evening, at Herklots' house. These paired and the resulting larvae were reared on *Hibiscus*.

The larvae of *Actias selene* have been recorded in Hong Kong feeding on ivy tree *Heptapleurum octophyllum*, tallow *S. sebiferum* and *Hibiscus* by Herklots (1951). He reported finding cocoons of this species hanging from branches of the deciduous tallow after the leaves had fallen. He found the adults frequently attracted to light on Victoria Peak. They were seen in October and produced at least three generations per year, with further adults in February, May and August, overwintering as cocoons.

Sphingidae

The sphingids we recorded are dealt with in detail in the previous paper by Waring *et al.* (1994). Sixteen species were recorded, including one, *Sataspes infernalis*, which was new for Hong Kong.

Notodontidae

Three species of notodontid were encountered. A singleton of *Netria viridescens* was seen at Tai Po Kau. This is a large cryptic prominent moth which looks like old brown bark mottled with green algae. AG has recorded this species frequently on Victoria Peak. It occurs from the oriental tropics to New Guinea but appears to be a complex of several species, the taxonomy and distribution of which requires further study (AG pers. comm.). According to Moore & Bell (cited in Holloway, 1983), based on observations in India, all larval records were from the Sapotaceae, including *Bassia*, *Mimusops*, *Sideroxylon* and *Achas sapota*, the larvae living on the undersides of the leaves and feeding only on the youngest ones.

A pair of the slim-winged fawn *Turnaca ernestina* turned up at Long Harbour on 14 April but were not seen on the same site on 13 and 15 April and at no other site.

Five individuals of a *Cerura* species (Plate I, Fig. 4) came to light at Long Harbour. These were first thought to be *C. kandyia tattakana*, which is rather similar in appearance but, on the basis of their genitalia, AG found them to be a new species, which has now been described as *C. priapus* (Schintlmeister, in prep). Specimens conforming to this new species have also been found in Thailand and Vietnam.

Lymantriidae

The most numerous members of this family were small yellow moths of the genus *Euproctis*, of which we had at least three distinct species. Specific identifications have proved difficult to obtain so far. One species, close to *E. recurvata*, was only seen at Long Harbour, where it was frequent. Another, close to *E. seitzi*, was found in three separate habitats (see Table).

The other lymantriids have been easier to identify. They range from the large grey *Lymantria dissoluta* to the peculiar *Perina nuda*, in which the female is a nondescript white or yellowish moth but the male has transparent wings virtually bare of scales

except for black areas near the body. The thorax and tip of the abdomen viewed from below are orange.

Arctiidae

Of particular interest among the eight species of Lithosiinae encountered was *Paraona fukiensis*. This moth has uniform black forewings and body, with a red collar on the thorax, just like the red-necked footman *Atolmis rubricollis* in Britain, but it is much larger, at over 60 mm in wingspan, and has white hindwings. It was encountered only in the Tai Po Kau woodlands. The larva feeds on lichens according to S. Sugi (pers. comm.). Perhaps it will prove to be an indicator of the less disturbed woodlands in the region.

The Aganainae, represented in particular by the genus *Asota*, are better known as the Hypsidae, but are considered by Holloway (1988) to be noctuid moths misplaced in the Arctiidae. Three species of *Asota* were found during light-trapping in the Tai Po Kau woodlands. This is a genus of large distinctive moths. All three have yellow bodies spotted with black, suggesting they are distasteful, and the yellow and black spotting extends to the base of the forewings in most members of the genus and sometimes to the hindwings. The larvae of this genus are also black and yellow (Bell in Holloway, 1988) suggesting that both larva and adult are distasteful. They are common in most habitats in Hong Kong, including urban areas (AG pers. comm.). The genus is associated with figs, *Ficus* spp. (Moraceae). *A. caricae* has been recorded on *Ficus oppositifolia* and as a pest on papaya *Carica* sp. Holloway (1988) adds foodplants from several other families.

Two species of the genus *Nyctemera* (considered members of the Arctiinae rather than Aganainae in Holloway, 1988) were also seen. These black and white moths also appear to accumulate toxins (Holloway, 1988). They fly by day and night and look somewhat like pierid butterflies. *N. adversata* (formerly *plagifera*) has been reared from various Compositae and occurs in open and secondary forest habitats from the Himalayas to Japan and Borneo (Holloway, 1988).

Nolidae

Two species of the Nolidae were encountered, both in the Tai Po Kau woodlands and both as singletons.

Ctenuchidae/Syntomidae

Three species of these wasp-like moths were found. An orange-banded *Syntomis* sp. near *formosae* was found on a field edge by scrub at Fung Yuen at rest by day. The yellow-banded *Syntomoides imaon* was found actively moving through grass only a few metres away. Three individuals of the smaller and drabber *Eressa confinis* later turned up at the light trap among scrub at Long Harbour, all on the same night. The larva of *S. imaon* has been noted feeding on *Anacardium* (Anacardiaceae) and on *Citrus* (Rutaceae) in India (Holloway, 1988).

Noctuidae

A wide variety of noctuid moths, of 12 subfamilies, were encountered during our time in Hong Kong including some very large ones. More species belonged to the Ophiderinae than any other subfamily and only one to the Noctuinae, the familiar

dark swordgrass *Agrotis ipsilon* which is almost cosmopolitan, excepting high latitudes, arid areas and lowland rainforests (Holloway, 1989).

The most spectacular of the noctuid moths we saw was a singleton of *Ischyja manlia* to light in the Tai Po Kau woodlands. This is a moth with pointed chocolate forewings over 90 mm in span, and black hindwings with iridescent blue central flashes. The larvae of *I. manlia* feed on the foliage of trees of several families. They have been reported on leaves of the lychee, *Litchi chinensis* (Sapindaceae), and mango, *Mangifera indica* (Anacardiaceae), in Thailand (Kuroko & Lewvanich, 1993) so the tallow, *S. sebiferum*, is a likely host in Hong Kong. AG often saw this moth at lights on Victoria Peak so the species is not confined to mature woodland in Hong Kong. The adults have been reported piercing the fruit of guava, *Psidium guajava* (Myrtaceae) and longan, *Dimocarpus longan* (Kuroko & Lewvanich, 1993). The moth is widespread in India and China.

A single individual of the ophiderine noctuid moth *Tinolius hypsana* came to the light trap at Tai Po Kau in the company of five *Asota* individuals (see Arctiidae above). This moth looks superficially like *Asota* which it is assumed to mimic, being similar in size, shape, general colouring and patterning, though the yellow body is banded rather than spotted.

The catocaline noctuid moths were well represented, particularly in the woodland but with some also in scrub, and comprised large generally cryptic species, some with brightly marked hindwings.

A number of hypenines and herminiines were encountered, particularly in the woodland.

The amphipyrines were well represented in the open habitats at Mai Po and Long Harbour and less so in the woodland, including various species of *Spodoptera* and *Athetis*.

By contrast, the Hadeninae was poorly represented in all habitats compared with Britain and continental Europe. One of these was the "wainscot" moth *Leucania compta* which was found in the reedbeds of Mai Po, along with large numbers of the reed-dependent pyralid *Chilo luteellus*.

Only two species of the Plusiinae were seen, perhaps due to the time of year.

A single adult of the striking *Mimeusemia postica* came to light at Tai Po Kau. This is a member of the former Agaristidae, which is now regarded as a subfamily of the Noctuidae (e.g. Holloway, 1988; Scoble, 1992). Many members of this group are as brightly coloured and rather similarly marked to the arctiid or tiger moths.

Conclusions

Just over one hundred species of macro-moths were recorded during our visit to Hong Kong, which involved only five complete nights of light-trapping (three at Long Harbour, two at Mai Po) with partial nights at Tai Po Kau (twice), Hong Lok Yuen (once) and unproductive sessions on an upper balcony at Repulse Bay. This total is an indication of the species-richness of the moth fauna of Hong Kong. The large differences between the types of moths captured at the various sites indicate that there is considerable local variation between sites and habitats within Hong Kong. In particular there are early indications that the moth fauna of the Tai Po Kau woodlands is particularly rich in species and may be a stronghold for species not seen elsewhere. On the basis of the limited available data, including the as yet largely unpublished results of fieldwork by Mike Bascombe, Tony Galsworthy, Roger Kendrick, Kent Li and John Tennent, it appears that certain species are localized habitat specialists, such as *Paraona fukiensis* in mature semi-natural woodland and

the mangrove form of *Cleora injectaria* at Mai Po. That several of the species we found were either undescribed or new to science at the time we found them and that others are the first records for Hong Kong is an indication of how much work still remains to be done to evaluate the moth fauna of Hong Kong and how even a brief visit such as ours can make an important contribution to the available knowledge.

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Good news for the moths of Hong Kong

Since the above work, it is pleasing to report that Roger Kendrick has secured a position at the Department of Ecology and Biodiversity, University of Hong Kong, to study for a PhD on the zoogeography and phenology of the moths of Hong Kong. This will involve extensive light-trapping and other methods of sampling in different habitats all over the Territory, which will greatly improve our knowledge of the moth fauna and its conservation requirements. The University of Hong Kong are to be congratulated for making this appointment possible. The project is due to begin in January 1997.

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APPENDIX. Macro-moth species and a few micros recorded in Hong Kong 7–18 April 1993 (excluding the Sphingidae published in Waring *et al.*, 1994). The generic names in parentheses after the authors are the names under which the species were first described. This format has been adopted in several recently published lists as a means of helping keep track of species in the face of numerous taxonomic revisions and unstable nomenclature. Key to table, site codes (as shown in text): RB = Repulse Bay, Hong Kong Island; TPK = Tai Po Kau Country Park, New Territories; HLY = Hong Lok Yuen, New Territories; FY = Fung Yuen, New Territories; LH = Long Harbour (Wardhaven), New Territories; the catch on 15th was not recorded in full, only the new species being noted; MP = Mai Po Marshes, New Territories. The numbers in parentheses after the site codes indicate the number of individuals seen.

	April	7–9	10	10	13	14	15	16	17	18
	Site	RB	TPK	HLY	LH	LH	LH	MP	MP	TPK
COSSIDAE										
Zeuzera coffeae Nietner, 1861		-	-	-	LH(12)	-	-	MP(3)	-	-
ZYGAENIDAE										
Cyclosia papilionarius (Drury, 1773) (*Noctua*)		-	-	-	-	-	-	-	-	TPK(1)
LIMACODIDAE										
Cania bilinea Walker, 1855 (*Neaerna*)		-	TPK(1)	-	-	-	-	-	-	TPK(1)
Miresa near *metathermistis* Hampson, 1910		-	-	-	-	-	-	-	-	TPK(1)
Narosa nigrisigna Wileman, 1911		-	-	-	-	-	-	-	-	TPK(1)
Phlossa (*Iragoides*) *conjuncta* (Walker, 1855)		-	-	-	-	LH(1)	-	-	-	-
Quasithosea obliquistriga (Hering in Seitz, 1931)		-	-	-	LH(1)	-	-	-	-	TPK(1)
Thosea sinensis (Walker, 1855)(*Anzabe*)		-	-	-	-	-	-	-	-	TPK(1)
THYRIDIDAE										
Calindoea argentalis Walker, 1866 (*Rhodoneura*)		-	-	-	-	-	-	-	-	TPK(1)
GEOMETRIDAE										
Oenochrominae										
Heteralex unilinea (Swinhoe, 1902) (*Epidesma*)		-	TPK(1)	-	LH(2)	-	-	-	-	TPK(1)
Geometrinae										
Agathia carissima Butler, 1848		-	-	-	-	-	-	-	MP(1)	-
Agathia lycaenaria (Kollar, [1844] 1848)		-	-	-	LH(1)	-	-	-	MP(2)	-
Eucyclodes infracta (Wileman, 1911) (*Thalassodes*)		-	-	-	LH(2)	LH(1)	-	-	-	-
Dysphania militaris (L. 1758) (*Phalaena*)		RB(2)	TPK(several by day)		-	-	-	-	-	TPK(1)

Maxates prob. *dissimulata* (Walker 1861) (*Thalassodes*)	-	TPK(1)	-	-	-	-	-	-	TPK(4)
Hemithea marina (Butler 1878) (*Thalassodes*)	-	-	-	-	-	-	-	-	TPK(2)
Rhomborista monosticta (Wehrli, 1924) (*Thalera*)*1	-	-	-	-	-	-	-	-	TPK(1)
Pachyodes (*Terpna*) *calaurops* Prout 1912 (*Lophophelma*)	-	TPK(2)	-	-	-	-	-	-	TPK(5)
Thalassodes immissaria Walker, 1861, 4 April Victoria Peak	-	-	-	-	-	-	-	-	-
Thalassodes maipoensis Galsworthy in MS	-	-	-	-	-	-	-	MP(2m1f)	-
Sterrhinae									
Anisodes absconditaria (Walker, 1862)	-	-	-	-	-	-	-	-	TPK(1)
Anisodes minorata (Warren, 1897) (*Brachyola*)	-	-	-	LH(1)	LH(1)	-	-	-	-
Idaea vacillata (Walker, 1862) (*Acidalia*)	-	-	-	-	-	-	-	-	TPK(2)
Idaea phaeocrossa (Prout, 1932) (*Sterrha*)	-	-	-	-	-	-	-	-	TPK(1)
Idaea taiwana Wileman & South, 1917 (*Pytchopoda*)	-	-	-	-	-	-	-	-	TPK(3)
Idaea sp. unidentified	-	-	-	-	-	-	-	-	TPK(1)
Scopula fibulata Guenée [1858]	-	-	-	-	LH(1)	-	-	-	-
Scopula personata Prout, 1913	-	-	-	-	-	-	MP(3)	-	-
Scopula haematophaga Banziger & Fletcher, 1985	-	-	-	-	-	-	-	-	TPK(3)
Small grey *Scopula*	-	TPK(1)	-	LH(2)	-	-	-	-	TPK(2)
Somatina anthophilata Guenée, 1857	-	-	-	-	LH(1)	-	-	-	-
Somatina obscuriciliata Wehrli, 1924	-	-	-	-	LH(1)	-	-	-	-
Larentiinae									
Orthonama obstipata (Fabricius, 1794)	-	-	-	-	LH(1)	-	-	-	-
Pseudeuchlora kafebera Swinhoe, 1894 (*Eucrostes*)	-	TPK(1)	-	-	-	-	-	-	-
Ennominae									
Abraxas amicula Wehrli, 1935		-	-	-	LH(1)	-	-	-	-
Amraica recursaria (Walker, 1860) (*Boarmia*)	-	TPK(1)	-	-	-	-	-	-	-
Buzura suppressaria (Guenée, 1858)	-	TPK(3)	-	-	LH(1)	-	-	-	TPK(2)
Chorodna ochreimacula Prout, 1914	-	-	-	-	-	-	-	-	TPK(2)
Chorodna strixaria (Moore, 1807) (*Medasima*)	-	TPK(1F)	-	-	-	-	-	-	TPK(1M)
Cleora alienaria (Walker, 1860) (*Boarmia*)	-	-	-	-	-	-	MP(1)	-	-
Cleora fraterna Moore, 1888	-	TPK(1)	-	-	-	-	-	-	TPK(1)
Cleora injectaria (Walker, 1860) (*Boarmia*)	-	-	-	-	-	-	MP(148)	MP(109)	-
Corymica deducta (Walker, 1866) (*Caprilia*)	-	-	-	-	-	-	-	-	TPK(1)

Appendix continued

	April Site	7–9 RB	10 TPK	10 HLY	13 LH	14 LH	15 LH	16 MP	17 MP	18 TPK
Corymica specularia (Moore, 1868)		-	-	-	-	-	-	-	-	TPK(1)
Ectropis intermedia (Warren 1899) (*Psilalcis*)		-	-	LH(1)	-	-	-	-	-	TPK(1)
Fascellina chromataria Walker, 1860		-	-	LH(1)	-	-	-	-	-	-
Fascellina plagiata (Walker, 1866) (*Geometra*)		-	-	-	LH(1)	-	-	-	-	-
Gonodontis pallida (Butler, 1880) (*Orsonoba*)		-	-	-	-	LH(1)	-	-	-	-
Hypomecis transcissa (Walker, 1860) (*Boarmia*)		-	-	-	-	-	-	-	-	TPK(2)
Hyposidra infixaria (Walker, 1860) (*Lagyra*)		-	-	LH(3)	-	-	-	-	-	-
Krananda oliviomarginata Swinhoe 1894		-	TPK(1)	-	-	-	-	-	-	TPK(3)
Obeidia tigrata (Guenée, 1857) (*Abraxas*)		-	11 April Fung Yuen			-	-	-	-	TPK(1)
Ophthalmitis herbidaria Guenée, 1858 (*Ophthalmodes*)		RB(1)	-	-	-	-	-	-	-	-
Ourapteryx clara Butler, 1880		RB(1)	TPK(1)	-	-	-	-	-	-	TPK(7)
Plutodes costatus (Butler, 1886) (*Garaeus*)		-	TPK(1)	-	-	-	-	-	-	TPK(2)
Plutodes exquisita Butler, 1880		-	-	LH(3)	LH(2)	-	-	-	-	-
Pseudonadagara semicolor (Warren, 1895) (*Osteodes*)		-	-	-	-	-	-	-		TPK(2)
Pseudothalera carolinae Galsworthy MS[*2]			-	-	-	-	-	-	-	TPK(2)
Racotis boarmiaria (Guenée, 1857) (*Hypochromia*)		-	TPK(1)	HLY(1)	-	-	-	-	-	TPK(1)
Rhynchobapta flaviceps (Butler, 1881) (*Nadagara*)		-	-	-	-	-	-	-	-	TPK(1)
Rutellerona pseudocessaria (Holloway, 1993)		-	-	-	LH(1)	-	-	-	-	-
Scardamia metalaria (Guenée)		-	-	-	LH(1)	-	-	-	-	-
Semiothisa lacriphaga Banziger & Fletcher 1988		-	-	-	-	LH(1)	-	-	-	-
Serratophyga xanthospilaria (Wehrli, 1925) (*Hypephyra*)		-	TPK(1)	-	-	-	-	-	-	TPK(1)
URANIIDAE										
Lyssa zampa docile Butler 1869 (*Nyctalemon*)		-	TPK(1)	-	-	-	-	-	-	TPK(1)
DREPANIDAE										
Oreta insignis Butler, 1877		-	-	-	-	-	-	-	-	TPK(4)
LASIOCAMPIDAE										
Dendrolimus punctatus (Walker, 1855)		-	-	-	LH(1)	-	-	-	-	-
Euthrix isocyma (Hampson, 1892) (*Odonestis*)		-	TPK(3)	-	-	-	-	-	-	TPK(1)
Kunugia divaricata (Moore, 1884) (*Gastropacha*)		-	-	-	-	-	LH(1)	-	-	-

SATURNIIDAE									
Actias selene (Hübner, [1802])	-	TPK(1)	-	-	-	-	-	MP(1)	TPK(1)
Attacus atlas (Linnaeus, 1758)	-	-	-	-	-	-	-	-	TPK(2)
Samia cynthia (Drury, [1773])	-	-	-	-	-	-	-	-	TPK(1)
SPHINGIDAE (see Waring *et al.* 1994 for details)									
Sphinginae 4 species recorded									
Magroglossinae 12 species recorded									
NOTODONTIDAE									
Cerura priapus Schintlmeister (in MS)	-	-	-	LH(2)	LH(3)	-	-	-	-
Netria viridescens Walker, 1855 (a sp. complex)	-	-	-	-	-	-	-	-	TPK(1)
Turnaca ernestina (Swinhoe 1885) (*Corma*)	-	-	-	-	-	LH(2)	-	-	-
LYMANTRIIDAE									
Aroa substrigosa (Walker, 1855) (*ochripicta* of Moore 1879)	-	-	-	-	LH(3)	-	MP(1)	-	-
Dasychira chekiangensis Collenette, 1938	-	-	HLY(1)	-	-	-	-	-	-
Dasychira costalis Walker, 1855 (*Melia*)	-	-	-	LH(2)	-	-	-	-	-
Dasychira nigritula Walker, 1865	-	-	-	-	-	-	-	-	TPK(1)
Euproctis sp.A = *E. recurvata* Leech or close	-	-	-	LH(6)	LH(7)	LH(sev)	-	-	-
Euproctis sp.B = *E. seitzi* Strand, 1910 or close	-	-	-	-	LH(6)	-	MP(2)	MP(2)	TPK(15)
Laelia anamesa Collenette, 1934	-	-	-	-	LH(1)	-	-	-	-
Possible *Laelia* female[*4]	-	-	-	-	LH(1)	-	-	-	-
Lymantria dissoluta Swinhoe, 1903	-	-	-	-	-	-	-	-	TPK(1)
Orgyia postica Walker, 1855 (*Lacida*)	-	-	-	-	-	-	-	MP(1)	-
Perina nuda (Fabricius, 1787)	-	-	-	-	-	LH(1M2F)	MP(1M)	-	-
Pantana close to *sinica* Moore, 1877	-	-	-	-	-	-	-	-	TPK(1)
ARCTIIDAE									
Lithosiinae									
Asura arcuata (Moore, 1882) (*Lyclene*)	-	-	-	LH(1)	-	-	-	-	-
Chionaema fasciola (Elwes, 1890) (*Bizone*)	-	TPK(1)	-	-	-	-	-	-	-
Chionema quadrinotata (Walker, 1869) (*Bizone*)	-	-	-	LH(1)	-	-	-	-	-
Eilema 3 spp.	-	TPK(1)	-	-	-	LH(1)	MP(4)	-	TPK(1)
Paraona fukiensis Danielle, 1952	-	TPK(1M1F)		-	-	-	-	-	TPK(9)
Stigmatophora flava (Bremer, 1852)	-	-	-	-	-	LH(1)	-	-	-

Appendix continued

	April 7–9	10	10	13	14	15	16	17	18
	Site RB	TPK	HLY	LH	LH	LH	MP	MP	TPK
Arctiinae									
Creatonotos gangis (Linnaeus, 1763) (*Phalaena*)	-	-	-	LH(2)	LH(3)	-	-	-	-
Creatonotos transiens (Walker, 1855) (*Spilosoma*)	-	-	HLY(1)	-	LH(2)	-	-	-	-
Aganainae									
Asota heliconia (Linnaeus, 1758) subsp. *clavata* Butler	-	TPK(6)		-	-	-	-	-	TPK(1)
Asota caricae (Fabricius, 1775)	-	TPK(3)	-	-	-	-	-	-	TPK(3)
Asota plaginota Butler 1875 (*Hypsa*)	-	TPK(1)	-	-	-	-	-	-	TPK(1)
(*Asota* now sometimes grouped in Hypsidae or within Noctuidae)									
Macrobrochis gigas (Walker, 1854) (*Lithosia*) 4 April Victoria Peak	-	-	-	-	-	-	-	-	-
Nyctemera adversata (Schaller, 1788)	-	-	HLY(1)	-	-	-	MP(1)	-	-
Nyctemera mulleri Snellen, 1863 ssp. *carissima* Swinhoe 1891	-	-	-	-	-	-	-	-	TPK(1)
(*Leptosoma*)									
CTENUCHIDAE									
Syntominae									
Eressa confinis (Walker, 1854)	-	-	-	-	LH(3)	-	-	-	-
*Syntomis ? formosae** or *lucerna*, but most like unnamed series with *formosae* 11 April Fung Yuen-					-	-	-	-	-
*now named *Amata edwardsii* (Butler, 1876)									
Syntomoides (*Ceryx*) *imaon* Cramer 1780 (*Sphinx*)	-	11 April Fung Yuen-			-	-	-	-	-
NOLIDAE									
Celama taeniata Snellen, 1875	-	-	-	-	-	-	-	-	TPK(1)
Melanographia flexilineata Hampson, 1898 (*Nola*)	-	TPK(1)	-	-	-	-	-	-	-
NOCTUIDAE									
Agaristinae									
Mimeusemia postica (Walker, 1862) (*Aegocera*)	-	TPK(1)	-	-	-	-	-	-	-
Noctuinae									
Agrotis ipsilon (Hufnagel, 1766)	-	-	-	LH(1)	-	-	-	-	-

Hadeninae									
Aletia formosicola Yoshimatsu, 1992	-	TPK(2)	-	-	-	-	-	-	-
Hypopteridia reversa (Moore [1885], 1844)(*Aletia*)	-	TPK(3)	-	LH(1)	-	-	-	-	TPK(2)
Leucania compta Walker, 1862	-	-	-	-	-	-	MP(3)	-	-
Tiracola aureata Holloway, 1989	-	TPK(5)	-	-	-	-	-	-	TPK(2)
Amphipyrinae									
Athetis sincera (Swinhoe, 1889) (*Spaelotis*)	-	-	-	-	-	-	MP(6)	-	TPK(3)
Athetis stellata (Moore, 1882) (*Graphiphora*)	-	TPK(19)	-	LH(1)	-	-	-	-	-
Aucha villiana (Swinhoe, 1893) (*Dinumma*)	-	-	-	-	-	-	MP(5)	-	-
Callyna semivitta Moore, 1882	-	TPK(3)	-	-	-	-	-	-	TPK(1)
Condica conducta (Walker,[1857] 1856) (*Caradrina*)	-	-	-	-	-	-	MP(2)	-	-
Feliniopsis indistans (Guenee, 1852) (*Hadena*)	-	TPK(2)	-	-	-	-	-	-	TPK(3)
Sasunaga longiplaga Warren, 1912	-	TPK(1)	-	-	-	-	-	-	-
Sphragifera rejecta (Fabricius, 1775) (*Noctua*) (was *Chasmina*)	-	-	-	-	LH(1)	-	-	-	-
Spodoptera cilium Guenée, 1852	-	-	-	-	-	-	MP(1)	-	-
Spodoptera exigua (Hübner, 1808)	-	-	-	-	LH(1)	-	-	-	-
Spodoptera litura (Fabricius, 1775) (*Noctua*)	-	-	-	-	-	-	MP(1)	-	-
Spodoptera pecten Guenée, 1852	-	-	-	-	-	-	MP(6)	-	-
Acontiinae									
Cerynea contentaria (Walker, 1861) (*Ephyra*)	-	-	-	LH(1)	-	-	-	-	-
Flammona trilineata Leech, 1900	-	-	-	LH(3)	-	-	-	-	-
Perynea ruficeps (Walker, 1864) (*Thermesia*)	-	-	-	-	-	-	-	-	TPK(2)
Chloephorinae									
Carea angulata (Fabricius, 1793) (*Bombyx*)	-	-	-	-	-	-	MP(1)	-	-
Carea varipes Walker [1857]1856	-	-	-	-	-	-	-	-	TPK(1)
Earias flavida Felder, 1861	-	-	-	-	-	-	MP(2)	-	-
Negeta sp.[*3]	-	-	-	-	-	-	-	-	TPK(1)
Sarrothripinae									
Lamprothripa scotia Hampson, 1902 (*Ptisciana*)	-	-	-	-	-	-	-	-	TPK(1)
Risoba basalis Moore, 1882	-	-	-	-	-	-	-	-	TPK(1)
Selepa sp. (2 similar spp. in HK) (near to *S. celtis* in BM)	-	TPK(1)	-	-	-	-	-	-	-

Appendix continued

April Site	7–9 RB	10 TPK	10 HLY	13 LH	14 LH	15 LH	16 MP	17 MP	18 TPK
Plusiinae									
Chrysodeixis eriosoma (Doubleday, 1843) (*Plusia*)	-	-	-	-	-	LH(1)	-	-	-
Zonoplusia ochreata (Walker, 1865) (*Plusia*)	-	-	HLY(1)	-	-	-	MP(2)	-	-
Catocalinae									
Achaea serva (Fabricius, 1775) (*Noctua*)	-	-	-	-	-	-	-	-	TPK(1)
Anomis longipennis Sugi, 1982	-	-	-	-	-	-	-	-	TPK(1)
Dysgonia fulvotaenia (Guenée, 1852) (*Ophiusa*)	-	-	-	LH(1)	-	-	-	-	-
Dysgonia praetermissa (Warren, 1913) (*Ophiusa*)	-	-	-	-	-	-	-	-	TPK(1)
Dysgonia stuposa (Fabricius, 1794) (*Noctua*)	-	-	-	-	LH(1)	-	-	-	-
Dysgonia umbrosa (Walker, 1865) (*Ophiusa*)	-	-	-	-	-	-	-	-	TPK(1)
Entomogramma fautrix Guenée, 1852	-	TPK(1)	-	-	-	-	-	-	-
Hypopyra ossigera (Guenée, 1852) (back to orig. name, from *Enmonodia*)		TPK(2)	-	-	-	-	-	-	TPK(2)
Metopta rectifasciata (Menetries, 1863) (*Spirama*)	-	-	HLY(1)	-	-	-	-	-	-
Mocis undata (Fabricius, 1775) (*Noctua*)	-	-	-	LH(1)	LH(1)	-	-	-	-
Ophiusa triphaenoides (Walker, 1858) (*Ophiodes*)	-	TPK(1)	-	-	-	-	-	-	-
Spirama retorta (Clerck, 1759) (*Phalaena*)	-	-	-	LH(2)	-	LH(1)	-	-	-
Ophiderinae									
Belciana scorpio Galsworthy (in MS)	-	-	HLY 11/4	-	-	-	-	-	-
Bocula marginata (Moore, 1882) (*Borsippa*)	-	-	-	-	-	-	-	-	TPK(1)
Cyclodes omma (Hoeven, 1840) (*Erebus*)	-	TPK(1)	-	-	-	-	-	-	-
Ericeia eriophora (Guenée, 1852) (*Hulodes*)	-	TPK(1)	-	-	-	-	-	-	TPK(1)
Ericeia pertendens (Walker, 1858) (*Remigia*)	-	-	-	LH(3)	LH(1)	-	-	-	TPK(1)
Hypocala deflorata (Fabricius, 1794) [=*moorei* (Butler, 1892)] (*Hyblaea*)	RB 8 April (1)		-	-	-	-	-	-	-
Hypocala subsatura Guenée, 1852	-	TPK(2)	-	-	-	-	-	-	-
Ischyja manlia (Cramer, 1766) (*Phalaena*)	-	-	-	-	-	-	-	-	TPK(1)
Lacera procellosa Butler, 1879	-	-	-	-	-	-	-	-	TPK(1)
Lycimna polymesata Walker, 1860	-	-	-	-	-	-	-	-	TPK(1)

Oraesia excavata (Butler, 1878) (*Calpe*)	-	-	-	-	-	LH(1)	-	-	-
Oxyodes scrobiculata (Fabricius, 1775) (*Noctua*)	-	TPK(1)	-	-	-	-	-	-	-
Pangrapta obscurata (Butler, 1879) (*Marmorinia*)	-	-	-	LH(1)	-	-	-	MP(1)	-
Pangrapta perturbans (Walker,1858) (*Zethes*)	-	-	-	-	-	-	MP(2)	-	TPK(1)
Pseudosphetta moorei (Cotes & Swinhoe, 1887) (*Sphetta*)	-	TPK(1)	-	-	-	-	-	-	-
Psimada quadripennis Walker, 1858	-	-	-	LH(1)	-	-	-	-	TPK(1)
Rema costimacula (Guenée, 1852) (*Toxicampa*)	-	TPK(2)	-	-	-	-	-	-	TPK(1)
Rivula ochracea (Moore, 1882) (*Pasira*)	-	-	-	-	-	-	-	-	TPK(1)
Singara diversalis Walker, 1865	-	TPK(1)	-	-	-	-	-	-	-
Thalatta fasciosa Moore, 1882	-	TPK(1)	-	-	-	-	MP(2)	-	TPK(1)
Throana pectinifer (Hampson, 1898) (*Zethes*)	-	-	-	-	-	-	-	-	TPK(1)
Tinolius hypsana Swinhoe, 1889	-	-	-	-	-	-	-	-	TPK(1)
Ugia purpurea[*5] Galsworthy (in MS)	-	-	-	-	-	-	-	-	TPK(2)
Hypeninae									
Hadennia jutalis (Walker [1859], 1858) (*Bocana*)	-	-	-	LH(1)	-	-	-	-	-
Hypena sagitta (Fabricius, 1775) (*Noctua*)	-	-	-	-	LH(1)	-	-	-	-
Hydrillodes repugnalis (Walker, 1863) (*Hypochalcia*)	-	-	-	-	-	-	-	-	TPK(1)
Hydrillodes abavalis Walker 1858 (*Echana*)	-	TPK(1)	-	-	-	-	-	-	-
Hypena ophiusoides Moore, 1882	-	-	-	-	-	-	-	-	TPK(1)
Herminiinae									
Adrapsa ablualis Walker, [1859] 1858	-	-	-	-	-	-	MP(1)	-	-
Adrapsa quadrilinealis Wileman, 1914	-	TPK(1)	-	-	-	-	-	-	-
Bertula retracta Galsworthy (in MS)[*6]	-	TPK(1)	-	-	-	-	-	-	-
Nodaria fusca Hampson (*Herminia*)	-	-	-	-	-	-	-	-	TPK(1)
Simplicia butesalis (Walker, [1859] 1858) (*Libisosa*)	-	-	-	-	-	-	MP(2)	-	-
PYRALIDAE (a selection only)									
Crambinae									
Chilo luteellus (Motschulsky 1866) (*Schoenobius*)[*7]	-	-	-	-	-	-	MP(291)	MP(5)	-

Appendix continued

	April Site	7–9 RB	10 TPK	10 HLY	13 LH	14 LH	15 LH	16 MP	17 MP	18 TPK
Galleriinae										
Galleria mellonella (Linnaeus 1758)[*8]		-	-	-	-	-	-	MP(2)	MP(1)	-
Pyraustinae										
Sclerocona acutellus (Eversmann 1842) (*Nascia*)[*7]		-	-	-	-	-	-	MP(10)	-	-
Bostra indicator (Walker 1863) (*Arippara*)		-	-	-	-	-	-	-	-	TPK(1)
Arctioblepsis nigrivena (Walker 1863) (*Propachys*)[*9]		-	TPK(1)	-	-	-	-	-	-	TPK(2)
Scopariinae										
Heliothela sp.[*10]										

Notes:

[*1]*Rhomborista* (*Spaniocentra*) *monosticta* — no specimen in BMNH.

[*2]*Pseudothalera carolinae* — is a new species, similar to *P. simpliciaria* (Leech, 1897) and named by Galsworthy after his daughter Caroline who collected a long series at the Tai Po Kau woodlands after our visit.

[*3]*Negeta noloides* occurs in China, but is not represented in the BMNH. Near to African *N. phaeopalpa*.

[*4]The only completely unidentified puzzle among the macro-moths is a female ?*Laelia* sp. (Lymantriidae) with a yellow head.

[*5]Two *Ugia* spp. have now been recorded in Hong Kong. This one is to be named *purpurea* Galsworthy. The other is quite different and is being named *inspecta* Galsworthy.

[*6]*Bertula retracta* was described as *Bleptina retracta* by Hampson in manuscript c1920 but was never published, hence it is not on the systematic BMNH card index or in Poole, 1989.

[*7]both clearly abundant wetland species like their near relatives in Britain, which they resemble closely in appearance.

[*8]The Wax moth, the same species as in Britain.

[*9]A striking large red pyralid with black venation.

[*10]Several of a white-spotted black pyrale were seen and photographed on the wing on the summit of Sharp Peak. One was presented to M. Schaffer (BMNH) who recognized it as a member of the genus *Heliothela*. One of the closest to it in the BM collections is *H. nigralbata* Hampson, but the specimens from Hong Kong are not this species because they have a white spot on the forewing. *H. nigralbata* was described from China, with relatives in Japan and Burma. Also close in appearance is *H. praegalliensis* but it is not an exact match. The genus is an Old World group with representatives in Europe, Africa, Asia, Australia and New Zealand. Both of the two specimens I collected are females. With thanks to Mike Schaffer.

SHORT COMMUNICATIONS

Metal-eating by *Stegobium paniceum* (Linnaeus) (Coleoptera: Anobiidae).—For some time during the summer of 1996, I had been finding biscuit beetles (*Stegobium paniceum*) floating in the milk of my early morning breakfast cereal. I gave it little thought until I discovered, one evening, that almost every packet of flour and sugar was to some extent infested. My enthusiastic examination of the entire contents of the pantry showed that *Stegobium* had found its way into much else besides my whole-wheat malted shreddies. It had invaded various types of pasta, jars of pine kernels, sesame seeds and dried beans and the egg noodles had been riddled to look like ticker-tape. Even the cat biscuits, knocked underneath the gas boiler by hungry felines, showed the characteristic round exit holes. However, the most astonishing target of their attentions was a foil-wrapped stock cube.

The metal foil had been neatly nibbled away in several places (Fig. 1). Most of these would have been exit holes, but at least one hole must have been the entrance by which the first female got inside to oviposit—apart from the chewings of the beetles, the foil wrapping seemed to be intact.

Metal-eating in insects is not often reported, but Paclt (1956) lists several beetles (notably cerambycids and the domestic woodworm beetle *Anobium punctatum* (Degeer)) known to have attacked metals. As with the *Stegobium*, the cases were mainly of beetles gnawing their exit holes through some metal casing or lining. White (1851) reported *Anobium* chewing its exit holes through first 2-mm and then 4-mm lead lining on a wooden cistern. Paclt recorded that in most cases, the metals attacked by these wood-boring insects were of a similar hardness to the wood they normally ate and thus presented little problem for their strong mandibles. *Stegobium* is closely related to *Anobium*, but nevertheless it would seem that metal-eating for the biscuit beetle was quite a change from its normal soft and crumbly diet.—RICHARD A. JONES, 13 Bellwood Road, Nunhead, London SE15 3DE.

REFERENCES

Paclt, J. 1956. Animals attacking metals. *Ent. Ber., Amst.* **16**: 175–178.

White, A. 1851. [Lead perforated by *Anobium striatum* (=*punctatum*), exhibit at Linnean Society meeting of 18 November 1851.] *Proc. Linn. Soc. London* **2**: 153–154.

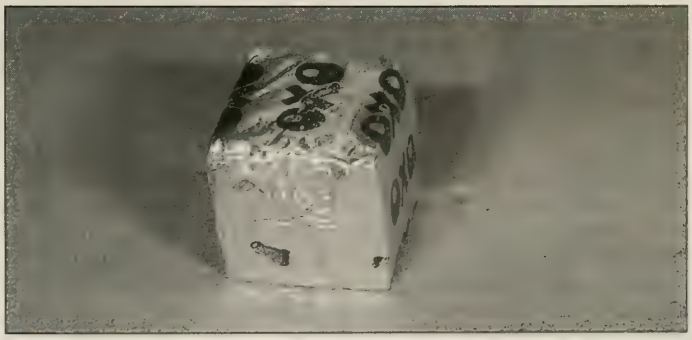

Fig. 1. Oxo stock cube attacked by the biscuit beetle, *Stegobium paniceum*. The cube has been turned over revealing an elongate hole made against the bottom of a tin container. A specimen of the beetle is just visible in this groove.

Unusual feeding behaviour by an adult seven-spot ladybird *Coccinella septempunctata* L.—On the morning of 30 July 1994 I observed an adult *C. septempunctata* rapidly consuming an alate aphid which was trapped in a spider's web, close to the surface of a window pane. This took place on the outside of an east-facing window of The Lodge, Erpingham House Farm (TG199321), East Norfolk. The aphid was entangled in the sparse remains of the web, and was presumably moribund or dead before the ladybird began consuming this unlikely breakfast! The beetle soon finished feeding and moved away in search of further prey. This observation followed a period of hot and largely dry weather, with many adult *C. septempunctata* and adult *Episyrphus balteatus* Deg. in evidence around the North Norfolk area, presumably following their mass emergence from local cereal fields where their larvae had been feeding on cereal aphids.—IAN F. G. MCLEAN, 109 Miller Way, Brampton, Huntingdon, Cambs PE18 8TZ.

The cicada and the copper underwing. I would like to report a remarkable interaction between a cicada (*Cicadetta* sp.) and a copper underwing moth (*Amphipyra pyramidea*) witnessed during August 1996 in the Cévennes mountains of France. It was whilst I was videoing a singing (male) cicada on a lichen-encrusted bole of a cherry tree that I realized that I was also videoing a cryptically camouflaged copper underwing at rest. I had had the cicada filling the frame for a few minutes, when it flew off and alighted about 25 cm away on a side branch to the rear of the resting moth, about 1 cm away. With the video still running, and the cicada still singing, it remained on the branch next to the moth, then slowly walked alongside. After a few minutes it then flew to the main trunk, and then again back to the branch by the moth whilst turning a full 360 degrees pirouetting beside it. All this behaviour was carried out whilst the cicada continued to sing. Its representations to the moth were repetitive and extraordinary to the extent that it appeared to override its usual behaviour of distancing itself from someone such as myself and my whirring machine getting too close. Cicadas are usually very difficult to approach and will slink away from the observer, gliding over the surface of the bark in the opposite direction with ease, but in this case it was moving past me, whilst I was filming this bizarre sequence only 50 cm away. The video sequence ran virtually continuously with only two cuts whilst I changed my position, and stands as a record of this totally unpredicted event.

On reflection it is uncanny that there are four points of similarity between the cicada and the moth: (i) they are both approximately the same length at rest (the cicada is slightly longer); (ii) they are both the same grey colour at rest; (iii) they both show off a fairly similar profile on the bark when at rest, and (iv) they both fly showing orange (in the case of the cicada its abdomen is clearly orange in flight as recorded on the video). One is left with finding a suitable explanation. Perhaps the cicada mistook the moth as a competitor or partner, since it appeared to be the same size, colour and shape, or was the cicada trying to object to the moth being on its own patch? In any case the tree trunk where this occurred could not have been any better for the moth, for it was on the north side and 90% covered in lichen such that it was remarkably camouflaged. Despite its amazing camouflage, the cicada had obviously seen the moth. If anyone has heard of a cicada–moth interaction I would like to hear of it. JOHN FELTWELL, Marlham, Henley's Down, Battle, East Sussex TN33 9BN.

OFFICERS' REPORTS FOR 1996

Council's report

The Society's membership stood at 761 at the end of the year, a small increase on the numbers for the previous year. Seventy-four new members were elected during the year, 21 were struck off for non-payment and 7 members resigned. There are 4 members who have served 50 years in the Society and are now special life members. Eight deaths were reported to the Society during 1996/97.

The Council met 7 times during 1996 and, on average, 15 members attended each meeting. Less of the Council's time was taken up discussing Dinton Pastures (The Pelham-Clinton Building). We are in the process of changing our air-conditioning engineers—the original installers having their services with us terminated. The system is working relatively well at the moment and the alarm system (renewed last year) is still giving a few problems, but is otherwise working well.

Council members who have taken the brunt of attending for engineers' visits have been our Curator, Mr Peter Chandler, our Building Manager, Mr Peter Baker and our Distribution Secretary, Mr David Young. Our thanks go to these hard-working members of Council, and to any other members who have helped with this work. Other things that have taken up the Council's time are the possible speeding up and simplification of admitting new members, the introduction of 'Student' subscriptions, the affiliation of the Bees, Wasps and Ants Recording Society (BWARS) on similar lines to the affiliation of Dipterists Forum, our inclusion on to the Internet, a way to speed-up (rationalize) Council meetings, the purchase of new equipment for The Pelham-Clinton Building and the publication, in May 1996, of the Hoverfly Second Supplement.

There were 11 indoor meetings held at the rooms of the Royal Entomological Society and these introduced a wide spectrum of interesting topics. In general, attendances at indoor meetings were slightly lower with around 23 people coming to each meeting; the reasonable numbers attending are most likely due to the hard work put in by our Indoor Meeting Secretary, Dr McLean, in arranging speakers for these events. Nine workshops and meetings with a specific topic were arranged at The Pelham-Clinton Building with one workshop at the Natural History Museum; these proved to be very popular. Along with the indoor events, one moth-trapping evening at Dinton Pastures was carried out in order to increase our knowledge of the Lepidoptera, and other orders, of the area. The Pelham-Clinton Building was opened on a weekend, either Saturday or Sunday, 24 times during 1996/97. It was decided during 1995 to try opening on both days of the weekend in order to encourage better attendances, but this strategy did not work well so it was decided to stop Saturday openings after May 1996. Nevertheless, the interest of the membership in the organized events makes it rewarding for the hard-working Council Members involved and our premises at Dinton Pastures a success. A full programme of meetings and events is being prepared for 1997/98.

The Society continued to represent members' interests in the field of conservation and Mr S. R. Miles has taken an active part as the Society's representative on the Joint Committee for Conservation of British Invertebrates; Mr A. Stubbs will be assisting Mr Miles for the foreseeable future. Topics that occupied our representatives were the Biodiversity Action Plan and how the Society could be integrated into a proposed organization for invertebrate conservation; it is envisaged that the local county representatives will become involved.

Thirty-seven field meetings were held in wide-ranging areas of the countryside, including the moth-trapping event at Dinton Pastures Country Park. The 1996 meetings were aimed mainly at National Trust sites. Attendance at these varied widely. We would like to thank our Field Meetings Secretary, Dr Paul Waring, for all his hard work in arranging these meetings; a full programme of Field Meetings is already in hand for 1997. A second special field expedition to Belize was agreed and will be partly funded by the Society; it is hoped that this will be a continuing theme of the field meetings. A full report will appear in the Journal. The first expedition was reported in Volume 9 part 4 (1996), of the Journal.

A successful Annual Exhibition was organized by Mr Michael Simmons and was attended by 225 members and 80 visitors, a slight decrease in the numbers who attended the previous year. There were around 200 exhibits with the usual slant on the Lepidoptera, and with the 'other' orders remaining around the same as last year. The Council reinforced its guidelines to stop controversial exhibits from being shown at our Exhibition. The aim is to stop long series of any species from one locality, unless for a special reason, from being shown. Mr Michael Simmons organized the Annual Dinner for the third time and made a great success of a job that was thrust upon him in 1994; an increased number of members and companions sat down to a meal that was enjoyed by all.

One final point: I have found the job of Secretary very interesting and, sometimes, hard work but my five years have brought rewards. In the best traditions of keeping our green image, I will be handing over to a recycled Secretary, Dr John Muggleton.

ROY MCCORMICK

TREASURER'S REPORT

This year has seen the implementation of that part of the 1993 Charities Act which concerns the preparation and examination of accounts. As a result our accounts look very different. The familiar income and expenditure account has been replaced with an inflexible statement of financial activities; all items within the accounts are grossed up, so we can no longer show a net cost of producing the Journal, for example, and perhaps most controversially the investments are carried at market value rather than historical cost. We have also been required to bring into account a value for books and equipment not previously included in our accounts but, because of the perceived difficulty in disposing of such items, it has still been possible to be prudent and these items have been introduced into the accounts at a net value after depreciation of £36 000.

It is thought by some that many of the new requirements are designed for fund-raising charities and are imprudent and inappropriate to learned societies such as ours. This view has been made known to the Minister responsible through the Foundation of Science and Technology, of which we are members.

There have also been changes affecting our Auditors, not least their metamorphosis into independent examiners. They now have a statutory work programme to complete as well as carrying out those tests they consider necessary. Mr Bell and Mr O'Keeffe have undertaken this with their usual diligence and good humour. I thank them.

That said, the Society has prospered financially this year. The net value of our assets has risen by £52,723 to £448,290. £36,000 of this is attributable to the revaluation of assets mentioned previously and £3,518 is unrealized investment gains. We have received £11,000 bequeathed by Eric Bradford and £1,000 from the estate of

Humphrey Mackworth-Praed. We are extremely grateful to these gentlemen. We have earned a surplus from the sale of publications of £4,982.

Overall our revenue expenditure was within £120 of last year but we spent £8,000 on additional microscopes and equipment to improve the facilities at Dinton Pastures which under the new regime has been capitalized and is being depreciated at 10% per annum.

We have arranged the way in which we designate our funds and these are now as follows. The Hering Fund is unchanged and appears under Endowment Funds in the accounts, only its income can be used. Restricted Funds are those where it is possible to use the capital but for a designated purpose only. We have the Housing Fund consisting of our premises and money put aside to finance and ultimately replace them, and the Special Publications Fund set up to finance our future publications out of the profit of sale. The old Bequest Fund, which principally represented the balance of bequests from the Duke of Newcastle and Mr Crow, was closed by transfer to the Housing Fund and a new fund, the Grant Fund. The Unrestricted Funds are the Grant Fund, details of which will appear in the Journal, and our General Fund from which the running expenses of the Society are met.

Independent Examiners' Report

We report on the accounts of the Society for the year ended 31st December 1996, which are set out as follows.

Respective responsibilities of trustees and examiners

As the Charity's Trustees you are responsible for the preparation of the accounts; you consider that the audit requirement of Section 43(2) of the Charities Act 1993 does not apply. It is our responsibility to state, on the basis of procedures specified in the General Directions given by the Charity Commissioners under Section 43(7)(b) of the Act, whether particular matters have come to our attention.

Basis of independent examiners' report

Our examination was carried out in accordance with the General Directions given by the Charity Commissioners. An examination includes a review of the accounting records kept by the Charity and a comparison of the accounts presented with those records. It also includes consideration of any unusual items or disclosures in the accounts, and seeking explanations from you as Trustees concerning any such matters. The procedures undertaken do not provide all the evidence that would be required in an audit, and consequently we do not express an audit opinion on the view given by the accounts.

Independent examiners' statement

In connection with our examination, no matter has come to our attention:

(1) which gives us reasonable cause to believe that in any material respects the requirements (a) to keep accounting records in accordance with Section 41 of the Act; and (b) to prepare accounts which accord with the accounting records and to comply with the accounting requirements of the Act have not been met; or

(2) to which, in our opinion, attention should be drawn in order to enable a proper understanding of the accounts to be reached.

R. A. Bell and D. O'Keeffe

Statement of Financial Activities
for the year ended 31st December 1996

Incoming resources	Unrestricted funds	Restricted funds	Endowment funds	Total funds 31.12.96	Total funds 31.12.95
Subscriptions	10123	–	–	10123	8641
Investment income	7579	3784	1190	12503	11497
Bequests & donations	12203	–	–	12203	234
Trading income note 2	–	11429	–	11429	8775
Sundry income note 3	40604	–	–	40604	4129
Total incoming resources	70459	15214	1190	86862	33276
Direct Charitable Expenditure:					
Cost of Journal	9417	–	–	9417	9188
Members meetings & exhibitions	1937	–	–	1937	1791
Library & curation	1580	–	–	1580	6126
Grants	10	–	600	610	2700
Depreciation	4809	–	–	4809	–
	17753	–	600	18353	19805
Other expenditure					
Headquarters costs	–	5265	–	5265	7592
Management costs	5382	–	–	5382	3726
Trading costs note 2	–	6447	–	6447	4438
Depreciation	–	2210	–	2210	2210
	5382	13922	–	19304	17966
Total resources expended	23135	13922	600	37657	37771
Net resources before transfers	47324	1291	590	49205	(4495)
Transfers between funds	30000	(30000)	–	–	–
Net incoming/outgoing resources	77324	(28709)	590	49205	(4495)
Gains & Losses on Investment assets					
Realized	–	–	–	–	–
Unrealized	2119	1064	335	3518	45267
Net movement in funds	79443	(27645)	925	52723	40772
Fund balances brought forward at 1st January 1996	83820	298498	13249	395567	354795
Fund balances carried forward at 31st December 1996	163263	270853	14174	448290	395567

Summary Income and Expenditure Account

	1996 £	1995 £
Gross income of continuing operations	86862	33276
Total expenditure of continuing operations	37657	37771
Net income/outgoings for the year	49205	(4495)

Balance Sheet as at 31st December 1996

	Notes	1996 £	1996 £	1995 £	1995 £
Fixed assets					
Tangible assets	4		189156		148106
Investments	5		215601		212083
			404757		360189
Current assets					
Stocks		12441		11992	
Debtors	6	4119		4679	
Cash at bank and in hand	7	31062		26342	
		47622		43013	
Creditors: amounts falling due within one year	8	4089		7635	
Net current assets			43533		35378
Net assets			448290		395567
Funds	9				
Endowment funds–Hering Fund			14174		13249
Restricted funds–Housing Fund		218891		148106	
Restricted funds–Bequest Funds		–		108260	
Restricted funds–Special Publications Fund		51962	270853	42132	298498
Unrestricted Funds:					
Grant Fund		30000		–	
General Fund		133263	163263	83820	83820
			448290		395567

The accounts were approved by the Council of Trustees on 6th February 1997 and signed on its behalf.

Notes to the accounts for the year ended 31st December 1996

1. Accounting Policies

The Accounts of the Charity are prepared in accordance with the Charities (Accounts and Reports) Regulations 1995, the statement of recommended practice, Accounting by Charities, and with applicable accounting standards. They are drawn up on the historical accounting basis except that investments held as fixed assets are carried at market value.

1.1 Income
Donations and legacies are accounted for as soon as their amount and receipt are certain. In the case of donations this is usually when they are received. All other income is accounted for under the accruals concept. Gifts in kind are valued at their estimated value to the Charity.

1.2 Expenditure
Expenditure is accounted for under the accruals concept. The irrecoverable element of VAT is included with the item of expense to which it relates. Depreciation is allocated over the expenditure headings on the basis of the use of the assets concerned.

1.3 Tangible Fixed Assets
Tangible fixed assets are stated at cost or trustees' valuation, less depreciation which is calculated at rates to write off the excess of cost over estimated residual values of individual assets over their estimated useful lives as follows:

Leasehold Buildings at Dinton Pastures	1/70th of cost
Fixtures and Equipment	10% of written down value

1.4 Investments
Fixed asset investments are stated in the balance sheet at mid market value at the balance sheet date.

1.5 Stock
Stock is valued at the lower of cost, including irrecoverable VAT, and market value and consists of publications and sundries held for resale.

1.6 Restricted Funds
Restricted funds are subject to specific conditions laid down by the donors as to how they may be used.

1.7 Comparative Figures
The figures in the accounts to 31st December 1995 have been restated in line with the requirements of the Charities (Accounts and Reports) Regulations 1995.

2. Trading Income and Expenditure
Trading income is derived from the sale of the British Journal of Entomology to non members of the Society and from sale of the Society's other publications, costs are those of printing and distributing these items.

3. Sundry Income
Sundry income is derived from the sale of ties, Christmas cards and surplus insects and equipment. In this year equipment not previously valued in the accounts has been introduced at a value of £40,000 and is included here. This is to comply with the requirements of the Charities (Accounts and Reports) Regulations 1995.

Tangible fixed assets

	Leasehold property £	Fixtures & equipment £	Total £
Cost			
At 1 January 1996	154736	–	154736
Additions & Revaluations	–	48069	48069
Disposals	–	–	–
At 31 December 1996	154736	48069	202805
Depreciation			
At 1 January 1996	6630	–	6630
Charge for year	2210	4809	7019
On disposals	–	–	–
At 31 December 1996	8840	4809	13649
Net book values			
At 31 December 1996	145896	43260	189156
At 31 December 1995	148106	–	148106

Leasehold property represents the cost of building and equipping the headquarters at Dinton Pastures Country Park. The total cost of these premises which were completed during the year to 31st December 1993 are being amortized over the seventy-year term of the lease.

A value for the library, collections, furniture and computer system has been assessed during the year in line with new accounting requirements and is included in fixtures and equipment.

5. Investments

In accordance with new accounting requirements investments are now shown in the balance sheet at market value. The FTSE All Shares index stood at 2013.66 (1995 1804.30)

	1996		1995	
	M.V.	Cost	M.V.	Cost
1230 Shell T & T	12441	1250	10356	1250
750 Unilever	10624	248	10320	248
M & G Charifund	50483	20238	52720	20238
Treasury 1999 9½ %	2568	2392	2653	2392
Treasury 1997 8¾ %	3922	3688	4018	3688
Hendersons Bond	57568	58000	55320	58000
Sun Life Bond	55190	56000	53748	56000
Barings Bond	22805	25000	22948	25000
	215601	166816	212083	166816

6. Debtors

Due within one year		
Trade debtors	781	852
Recoverable taxation	2238	2939
Prepayments and accrued income	1100	888
	4119	4679

7. Cash at Bank and in Hand

National Westminster Bank		
Capital Reserve	29035	20002
Societies Reserve	73	4643
Current Account	1750	1377
Eurocheque Account	129	320
Cash waiting to be banked	75	–
	31062	26342

8. Creditors: amounts falling due within one year

Trade Creditors	1852	220
Accruals	2237	7415
	4089	7635

9. Funds

Analysis of net assets between funds

	Tangible Fixed Assets	Investments	Net Current Assets	Total
Endowment Funds				
Hering Fund	–	14174	–	14174
Restricted Funds:				
Housing Fund	145896	72995	–	218891
Special Publications	–	39252	12710	51962
Unrestricted Funds:				
Grant Fund	–	30000	–	30000
General Fund	43260	59180	30823	133263
	189156	215601	43533	448290

The Hering Fund was endowed to make grants out of income for research in specific areas of entomology.

The Housing Fund consists of the property at Dinton Pastures and money put aside to finance its upkeep and eventual replacement. The funds were derived principally from bequests from the late Duke of Newcastle and Mr Crow.

The Special Publications Fund finances the Society's publications other than the Journal and surpluses from such publications are credited to this fund to finance future publications.

The Grant Fund was set up in 1996 with funds derived from part of the old Bequest Fund which was closed with the intention of financing future grants for entomological research which would be authorized by Council but not so narrowly defined as those made by the Hering Fund.

A. J. PICKLES

PROFESSOR HERING MEMORIAL RESEARCH FUND

The Committee received bids for funding in excess of its income with three applications falling into the highest priorities of the fund. Two of these were supported this year, and it is intended to fund the third next year.

Mr Robert Hoare, a member of the Society, who is studying for a PhD degree at the Australian National University, and is based at the Australian National Insect Collection in Canberra, was awarded £370 as a contribution towards the costs of an expedition to New Caledonia to collect specimens of the leaf-mining moth family Nepticulidae. He has reared 65 nepticulid species from Australia and is keen to explore the New Caledonian fauna. While no nepticulid has been recorded from the island, the family is likely to be well represented and the fauna interesting biogeographically.

Dr Margaret Redfern, associated with Sheffield University, and also a member of the Society, was granted the sum of £300 to cover travel costs to enable her to attend and contribute to an international symposium on the biology of gall-inducing arthropods in Hungary. Dr Redfern has carried out important research over many years on insects associated with galls. She intends to present a paper in Hungary on her long-term work on the cecidomyid yew gall midge, *Taxomyia taxi*. Her attendance at this symposium will also help with her plans to write a book on plant galls. Dr Redfern gave a talk on her work on plant–insect interactions, with particular reference to galls, at an indoor meeting of the Society in April 1996.

The grant made last year to Dr Alan Gange, of Royal Holloway College, to support his work on endophytic fungi in *Cirsium arvense* has resulted in some very interesting findings. Not only have 20 different fungal species been found in the thistle, many of them new hostplant records, but also it appears that endophytic fungi inside thistle gall tissue may inhibit establishment of the thistle gall fly *Urophora cardui*.

I am grateful to the members of the Hering Fund Committee for their valued support over the year.

MALCOLM J. SCOBLE

LIBRARIAN'S REPORT

1996 has been a quiet year on the library front. A gratifying outcome has been the return of several long over-due items that I feared had been lost. Part of any librarian's duties involves the recall of overdue books and I approached this task with some trepidation. May I take this opportunity to remind members that only five items may be loaned at any one time and that loans should be returned or renewed within six months. All items loaned must be entered in the loans book, along with the

date of their return. This arrangement helps avoid unnecessary recall letters being sent.

A major objective this year has been the addition to the computerized database of the bequests from the estates of Eric Bradford and Humphrey Mackworth-Praed. I wish to thank Stephen Miles for his assistance with this continuing project.

Another aim I set myself for this year was arranging for the binding of journal back issues and the restoration of damaged books. This has taken longer than expected but I am pleased to report that a selection of these items have recently been sent to a reputable firm of book binders. Subject to a satisfactory result, further such items will be dealt with as time allows. I approached the British Library for a grant to assist with this project, something that we have received in the past, but unfortunately this was not forthcoming as they have changed their eligibility rules. The time taken in making this application is one of the reasons that progress in this area has been slower than anticipated.

This year we have added two new journal titles to our shelves, *Fragmenta Faunistica* on an exchange basis for our journal, and *Atropos* which we shall be purchasing. I must thank John Muggleton for his continued efforts in cataloguing our journals. Thanks to his diligence the database is currently up to date in this respect. Using the services of Matthew Smith, your society, in response to a request, has made some surplus copies of the *Bulletin of the Amateur Entomologist's Society* available to a Polish entomologist, Krzysztof Lewandowski.

I shall be convening a meeting of the Library Committee during the coming year, with the aim of producing a list of newly published titles for purchase. Finally, I wish to thank Alan Stubbs and Tony Parsons for donating books during this period.

IAN SIMS

CURATOR'S REPORT

There has been less curatorial activity during the past year, but it has been directed towards certain areas. Owing to the success of the workshops and the increased use of the collections that has ensued, it was decided that we would enhance the facilities for this as far as practicable within the confines of the building. Hence the purchase of 10 additional Meiji microscopes and illuminators, together with the provision of a further 10 assorted chairs and another table. These are now installed and available for use.

Following the donation of a substantial number of British and exotic Neuroptera by Bert Hynd, the Society's collections of these and of allied orders (i.e. Megaloptera, Raphidioptera and Mecoptera) have been arranged, making use of the cabinets newly purchased last year; we now have most British species of these groups. The Trichoptera, which had been in a chaotic state for some years, have also been transferred to these cabinets. All these groups have been arranged according to the latest checklists. There is now space for donations of further specimens to fill the gaps! We have also received some further sawflies from Andrew Halstead, adding more species to the collection, from Andrew Halstead and I am grateful to him for his ongoing contribution to this group.

David Moore has continued arrangement of the macro moths and has now completed the Geometridae and he hopes to make further progress during the coming year. Peter Baker has continued repapering drawers as required.

For the most part we have remained free of pest problems since moving to Dinton Pastures, but I am grateful to Raymond Uffen for drawing my attention to renewed

Anthrenus activity amongst the hornets. The construction of the Hymenoptera cabinet has been a problem, and the rehousing of the Hymenoptera, as mentioned last year, will proceed in due course.

As predicted last year, the collection of European butterflies and moths, bequeathed to us by Humphrey Mackworth-Praed, has now been installed at Dinton Pastures and I am grateful to Tony Harman for the assistance given in transporting it. It has not yet been possible to begin the re-arrangement of the European butterflies but this will be a priority for the future and should begin later this year. The European moths received in store boxes will be transferred to a cabinet when one becomes available.

Further cabinets will become available for sale in the future; at present there is one 16 drawer cabinet which is immediately available and open to offers from members. For the moment the building is full and I am grateful to members for achieving the lull in bequests, which will hopefully continue for a while yet.

The maintenance of the air-conditioning system is not yet fully resolved and it is expected that this will be given consideration in the coming year, but in general there have been few problems. There have only been two false alarms with the new alarm system installed at the beginning of last year. On the second occasion, I was asked by the engineer whether there was a moth in the building. I said that I hadn't seen *one*. When he arrived, he opened the cover of the sensor that had been activated and found a small spider within; he declared that this was the cause of the problem. Keeping the building spider-free was evidently a priority. I didn't tell him that Frances Murphy had collected up all the spiders from the Alpine Club and carefully nurtured them, then a few years later releasing them or their descendants in the new building. It seems that she has made sure her contribution will not be forgotten.

On 2 February this year, another call-out was narrowly averted when I discovered an immature stick insect slowly walking up the wall of the building about two inches from the floor. It was moving at an ideal rate to have triggered a sensor just in time for my arrival home. This is a new record for Dinton Pastures. It remains to be seen whether a colony will become established—it may not be the only one!

PETER CHANDLER

EDITOR'S REPORT

First let me reassure everyone—I'm not ill. There's been a rumour going round that I've succumbed to some dread disease. This isn't so. I felt slightly queasy for a single day and retired to bed for a snooze rather than marking up some manuscripts for the journal. But it happened to be at a delicate stage in the schedule and consequently I was a few days late in getting material to the typesetters. This was compounded by other delays so the journal missed a vital publication slot and wasn't quite ready for the 1996 exhibition. Very helpfully, Roy McCormick published a short apology on my behalf at the foot of the annual exhibition notice. But a single word in that apology—the word 'illness'—seems to have got everyone worried. For several months afterwards people would continue to come up to me and ask me very earnestly whether I'd recovered. Some almost looked a bit disappointed that I had no outward signs of major injury: no limp, no scars, no pale and fragile demeanour. As you can see I am very well thank you very much.

My health aside, what's been going on with the journal this last year? It's always amusing to sit down and try to analyse what has gone on in the 12 months past so that this report should reflect what the editor has been up to. Unfortunately, it

usually boils down to some variation or other on "more of the same". There's a certain routine—papers are submitted, they get published; it's all very simple really. So I've been scratching my head trying to think of some other theme for this report.

I've been editor now for over 10 years and much though I enjoy the honour, I'm finding it difficult to set aside the necessary time to do the job to my own satisfaction. I would like someone else to take over. When I first mooted this idea I thought there would be a rush of volunteers to take over from me. There has been none. And it suddenly struck me that maybe members don't realize quite how exciting the post of Editor is. All that business about editing, marking up copy, proof-reading and the like is really just the external gloss. There are far more profound ways to exercise editorial power. For instance, choosing a picture to adorn the front cover is actually the single most important task facing me each issue. It is, after all, the first thing which anyone picking up the journal actually looks at. And it's refreshing to be able to publish a picture of an insect with absolutely no qualification other than that it be somehow attractive or aesthetically appealing. There are no worries about whether it's scientifically meritorious or shows anything new or different. It's just a pretty picture.

Such is technology nowadays that almost any photograph will suffice, be it black and white or colour, print or transparency. And that same technology also means that the job of editor is much easier than people might imagine. There's no need for any in-depth knowledge of typesetting and printing processes, these take care of themselves. Don't think that any supposed editorial burden has worn me down over the years until, now, at last, I'm desperate to shed the weight from my shoulders and retire exhausted to my bed. This just isn't the case.

I've enjoyed the honour of being the Society's Editor and I've even had fun with it. My knowledge of entomology has increased exponentially with every issue I've been involved with. I've learned about whole orders of insects I'd never considered before. I've learned about their behaviour, their ecology and their taxonomy, and also especially about the entomologists who study them. I really have had a grand time of it. But now it's time for me to move on, to stop hogging the limelight and to let some else have their go on the editorial merry-go-round.

RICHARD A. JONES

THE 1996 PRESIDENTIAL ADDRESS—PART 1 REPORT

COLIN HART

Fourpenny Cottage, Dungates Lane, Buckland, Betchworth, Surrey RH3 7BD

Little did I suspect when Paul Waring invited me to be President of the BENHS what an interesting and varied time was in store for me. Although I have been a member of the Society for over 20 years I have, until now, had little knowledge of Council matters, and I would have found my year as President a much harder job were it not for the help and encouragement of my fellow Council members. The President has to listen attentively to every speaker and is expected to be pleased or to offer sympathy at appropriate points. I find an ability to nod with understanding and conviction is invaluable at Council meetings. The BENHS relies heavily on its

Council and the many activities which make for the smooth running of the Society normally occur with the split-second timing necessary to get the job done; the problems created by just a single day's sickness have already been mentioned by our editor.

As a charity the Society will have to abide by new rules and methods of accounting which come into force in 1998. The huge task of rearranging the accounts has been virtually completed by Tony Pickles, our Honorary Treasurer, a year before the deadline, leaving minimal changes to be made in the next 12 months.

The strength of this Society lies in the entomological expertise of its members, both in the field and indoors. I am convinced that the Society's future lies in developing this role further and becoming a recognized and respected authority on gathering and presenting field data. These activities include running field meetings, identification workshops and lectures, and also publishing identification handbooks. For the past two years Paul Waring has been our Field Meetings Secretary, and he has provided a list of field meetings which, in number and range, is unparalleled in the history of the Society. Paul has given us an excellent start in developing the Society's role and I thank him for this.

Richard Jones has been our editor for over 10 years, and like a good marriage the time has passed in a flash. It is clearly an exacting and time-consuming job which Richard has done extremely well. Like a breath of fresh air he has brought his own style to the Journal without affecting its entomological integrity one bit. He has already made known his wish to boldly pass this job to a successor in 1997. If any member wishes to enjoy this interesting post, would he or she please contact the Secretary.

Roy McCormick has been the Society's Secretary for the past five years and retires this year. Roy has borne the brunt of dealing with the large amount of correspondence we receive, the wayward antics of the various tape recorders used to help with Council minutes, and producing the minutes themselves.

All members of Council have done sterling work in the past year and I ask you to join me in thanking them in the usual way.

During the course of my year of office it has been my sad duty to report the deaths of eight members or former members of the society.

Peter Forder, a member from Ilkley, died in mid-February 1996 having been a member since 1989. A seed merchant by trade, his interest in insects stemmed from his early years but lay dormant for much of his life. In recent years he became more active and was known as a jovial and friendly character on field trips. He is remembered for his discovery and naming of the Irish Annulet (*Odontognophos dumetata* Treitschke ssp. *hibernica* Forder) in August 1991. (*Entomologist's Rec. J. Var.* **105**: 201).

Stephen Pooles, who died in July 1996, was universally known as 'Tim'. He was one of our most senior members having joined the Society in 1933 and he was a well-known entomologist of the 1950s and 60s. Most of his working life was spent as a solicitor in Peterborough and he came to know the fenlands intimately. He gained a reputation as an expert lepidopterist, and his kind and gentle manner ensured that he held the respect of all who met him. In recognition of his support for fifty years he was made an Honorary member of the Society in 1984.

Helen Howarth, who died in July 1996, was the wife of T. G. Howarth. Helen was a member of the Council for a number of years in the 1950s and 60s and her friendly manner and enthusiastic support of indoor meetings and the annual dinner helped to ensure the success of these events. Helen kept a tablecloth which she asked visiting

entomologists to sign, later embroidering over the signatures to make a permanent record.

Les Young, who joined the Society in 1952, died in August 1996. He was interested in the Lepidoptera and in recent years concentrated on breeding large numbers of common blue and small copper butterflies and investigating the genetics of their varieties. He had two greenhouses dedicated to this task and his garden was said to be a mass of bird's foot trefoil and black medick, which were used as foodplants. Nine of his small copper varieties are illustrated in *South's British butterflies* by T. G. Howarth, and he published an article on breeding varieties of the common blue in the *British Journal of Entomology and Natural History* **3**: 3; 1973.

Ralph Tubbs, who died in November 1996, achieved fame as the architect of the Dome of Discovery, a major part of the Festival of Britain in 1951. He joined the Society in 1947 and was an active and respected member for nearly 50 years. Ralph supported the Society at meetings, the annual exhibition and the dinner. In 1977 he was elected President. He served a spell on Council and later chaired the publications committee. In 1959 Ralph was the architect for Baden-Powell House which has been the venue for Council meetings for several years.

Mr B. J. Dudbridge joined the Society in 1930 and lived for many years in Topsham, near Exeter. When he died in December 1996 he had been a member for 67 years. He formed a collection of butterflies and moths but had not taken an interest in entomology for some years.

Ron Dyson had been a member of the Society for nearly 50 years when he died in January 1997. Ron was a keen entomologist specializing in butterflies and moths both in this country and in France. He lived for most of his life in Brighton and was widely known and respected for his knowledge. Ron supported field meetings in his early days and visited the annual exhibition regularly in recent years. He was known as a first-class joiner and made all his own insect cabinets.

Lieut. Col. W. A. C. Carter, who was always known as 'Sam', died in February 1997. He joined the Society in 1959 and had a collection of Microlepidoptera and Macrolepidoptera. I have been unable to find out any more details about him.

The past year has been one of steady progress. Thanks to the efforts of David Young and his son Andrew we have a series of pages on the Internet which publicize forthcoming events, the Society's publications, aims and a contact address. For interested members the Internet address will be published in Vol. 10, Part 1 of the Society's journal.

Two societies have affiliated with the BENHS in the last year. These are the Bees, Wasps, Ants and Allied Insects Recording Society (usually known as BWARS) and, secondly, Dipterists Forum. These affiliations are already bringing benefits in the shape of joint field meetings to be held in 1997.

After the success of the first expedition to Belize led by Paul Waring, a second is planned for late April 1997. An open day at Dinton Pastures featuring slides and specimens from Belize proved very popular. So many members were interested in the second expedition that all the places were booked within a few days, and the expedition will be twice the size of last time. Finally, the Society has purchased a number of microscopes and chairs that will enable larger groups to undertake laboratory work at Dinton Pastures. We are also in the process of buying video display equipment for demonstrations and lectures. This equipment will enable small specimens including genitalia mounts to be seen on a large television monitor.

BENHS INDOOR MEETINGS

8 October 1996

Mr R. W. J. UFFEN showed a female *Stigmus pendulus* Panz. (Hymenoptera: Sphecidae) taken at Danesbury Park, Welwyn, Herts on 20.ix.96. This was one of two found on bare wood on a dead oak bole with beetle holes. Also shown was a male *Stigmus solskyi* Morawitz taken 18.vi.96 from the same tree, and a female taken at Tyttenhanger Pits, Colney Heath, Herts. on 19.vii.94. These are the first Hertfordshire records for these tiny solitary wasps. In the note by G. W. Allen adding *S. pendulus* to the British list (*Entomologist's Gazette* **38**: 214), the character states of the upper mesosterna were transposed between the two species.

Mr C. HART stated that he had that morning seen a privet hawk moth attracted to an M. V. light in his garden. This was either a very late sighting or evidence of a second brood.

Dr LINDA PITKIN spoke on 'Photographic exploration of life in the sea'. She opened her talk by explaining some of the techniques and procedures necessary for producing good underwater photographs. Dr Pitkin then showed a superb series of slides of fish and marine invertebrate animals. Many fish are predators; some, like grouper fish and moray eels, hide in reefs and wait for their prey to approach. Others, like jack fish and barracudas, are oceanic fish that hunt in shoals for smaller fish. Their streamlined shape enables them to swim rapidly through the water. Other predators shown included hawksbill turtle, sea lions and sharks. The hammer-head shark uses its snout as a sonar device to detect the rays, on which it feeds, on the sea bottom.

Sea animals have various means by which they avoid capture. Fan worms, which are found throughout the tropics, withdraw into tubes which they seal with opercula when threatened. The Puget Sound king crab has a very heavy carapace and when under threat it folds its legs so that all its vulnerable parts are protected. Hermit crabs seek shelter by living inside empty mollusc shells. Some fish, sea urchins and sea slugs have defensive spines and some of these animals can discharge venom through their spines. Hydroids have stinging cells with which they disable their prey. Some sea slugs that feed on hydroids can accumulate these stinging cells in their spines and use them for their own defence.

Coral reefs are rich havens for marine animal life. In the shallower water, branched corals predominate. They are tolerant of wave action, and although knocked over by storms, can continue growing. Their rate of growth is greater than the more massive forms of coral found in deeper waters. Various molluscs, fish and starfish feed on coral. The crown of thorns starfish has periodic population explosions that can result in extensive coral destruction. Some marine animals have yellow and black or red and black colour patterns on their bodies which are warning colours to indicate their toxic or unpalatable nature. Others have cryptic coloration that enable them to blend in with the sea bottom or reef. Some fish and shrimps are virtually transparent and this helps to make them invisible to predators. Colour is sometimes used to indicate sexual maturity and there may be colour differences between the two sexes. Cuttle fish appear to have a form of language based on colours. They can rapidly change their colour through the expansion and contraction of pigment spots.

Some types of marine life have developed mutually beneficial relationships. Clown fish and furtive shrimps are able to live and feed amongst the tentacles of sea

anemones without being harmed. Some species of hermit crabs regularly carry sea anemones on their shells and will transfer their passengers when they move into a larger shell. Some fish act as cleaners for other fish and remove pieces of dead skin and parasites from their bodies. They are allowed to feed unharmed, even inside the mouths of predatory fish.

At the end of her talk, Dr Pitkin showed some of her diving and photographic equipment.

12 November 1996

Mr R. D. HAWKINS showed male and female specimens of *Malachius bipustulatus* (L.) and *M. viridis* F. (Coleoptera: Melyridae) and commented on the difficulties in separating these species, especially the females. The structure and colour pattern on the face is a more reliable character than the appearance of the pronotum and antennae.

Mr A. J. HALSTEAD showed live specimens of *Tetratoma fungorum* F. (Coleoptera: Tetratomidae) and *Mycetophagus multipunctatus* F. (Coleoptera: Mycetophagidae). Both were found in old birch polypore brackets, *Piptoporus betulinus*, growing on birch trunks on Wisley Common, Surrey.

Dr R. KEMP reported that he had seen a female brimstone butterfly, a red admiral and small copper during November in his garden at Ford, Bucks.

The Annual Exhibition and Dinner. The 1996 Exhibition was considered a success which was organized with its customary smoothness. Migrant moths were well represented in many of the displays. The number of members and guests attending the Dinner was up on recent years. The high cost of parking at Imperial College, especially for those staying on for the Dinner, was noted.

Dr R. KEMP showed a cine film of a wide range of butterflies he had filmed in Britain. These included the purple emperor, white admiral, white-letter hairstreak, marbled white, small copper, comma, dark green fritillary, silver studded blue, painted lady, clouded yellow, Lulworth skipper, silver-spotted skipper and grayling.

Mr N. A. CALLOW showed slides of a wide range of insects, spiders and other animals, some of which were photographed in Bulgaria.

Mr C. HART showed slides of plume moths and their host plants.

Mr G. BOYD showed some slides of wild flowers including herb Bennet, water avens and wood vetch.

Mr K. MERRIFIELD also showed slides for wild flowers taken in Norfolk and Yorkshire. These included herb Bennet, water avens and their hybrid, Cornish moneywort, red rattle and a white-flowered form of self-heal. Also shown were reed buntings at their nest, some hoverflies, dragonflies, green tiger beetle and a hornets' nest.

Dr I. F. G. MCLEAN showed slides of longhorn moths in flight: the empid fly *Dryodromia testacea* (Rondani), the psyllid *Trichochermes walkeri* (Forster) on purging buckthorn, and the tephritid fly, *Acanthiophilus helianthi* (Rossi).

19 December 1996

The President, Mr C. HART, announced the death of former BENHS President Ralph Tubbs who had been a member since 1947.

Mr J. BADMIN showed a specimen of the tachinid fly *Phasia hemiptera* (F.) swept from flowers of *Bupleurum fruticosum* in his garden at Selling, Kent, on 20.viii.96. It develops as a parasitoid of various Heteroptera, including the shield bugs *Pentatoma*

rufipes (L.) and *Palomena prasina* (L.), and the mirid bug *Leptopterna dolobrata* (L.). *Phasia hemiptera* is sexually dimorphic and the shape and colour of the wings on the male give it a shield bug-like appearance.

Mr R. D. HAWKINS noted that he had reared many shield bug nymphs but had not found tachinid flies in any of them. He asked if *Phasia hemiptera* lays its eggs in the adult or nymphal stages, as the two shield bugs quoted as hosts for this fly have different life cycles. *Palomena prasina* overwinters as adults, whereas *Pentatoma rufipes* does so as young nymphs. Mr R. UFFEN said that some of the parasite information given in Southwood and Leston's *Land and water bugs of the British Isles* was suspect.

Mr C. HART exhibited several live male and female specimens of the gem, *Orthonama obstipata* F. (Lepidoptera: Geometridae). These were bred from a female that came to light on 25.ix.1996 at Buckland, Surrey.

The following persons have been approved by Council as ordinary members: Dr Robin P. Attrill, Mr Arthur J. Baldwin, Ms Rosalind E. Berrington, Mr Ian Boler, Mr J. P. Bowdrey, Dr Richard J. Bullock, Mr Kevin Chuter, Mr Adrian Colston, Mr Melvyn Crow, Mr Robert D. Edmunds, Mr Neil D. Frankum, Mr Anthony C. Galsworthy, Mr J. Golding, Miss Emma-Jane Hodges, Mr David Horsfield, Mr Andrew H. Ingram, Mrs Suzanne E. Jordan, Dr Angus W. R. McCrae, Mr John W. Philipson, Mr Phillip J. Proctor, Mr Alan Raymond, Mr Charles S. Robbins, Mr Peter Skidmore, Mr Rhodri W. Thomas and Mr Richard A. Tribbeck. The National Museum of Ireland, Dublin, has become a corporate member.

Dr Paul Eggleton spoke on termites and global warming. Termites are tropical and subtropical social insects that can cause damage to crops and timber in buildings. While it is the wood-feeding types that cause most economic damage, there are others that may contribute to the production of greenhouse gases, especially methane, and may be a factor in global warming. The types of termite that produce the greatest amounts of methane are soil-dwelling species that feed by ingesting soil particles from which they extract the organic matter. The speaker took part in a five-year project in Cameroon to investigate termites and their possible role in global warming. Previous attempts by other workers to estimate methane production by termites had produced widely different results, ranging from 2–5 to 75–3100 Tg/year (a terragram is 10^{15}g).

The Cameroon project aimed to look at termite species assemblages in tropical forest, and to relate changes in methane production with changes in the termite biodiversity. Five types of experimental plot were used to investigate termite biodiversity under various degrees of habitat disturbance. These were complete forest clearance, weeded fallow, young plantation, mature secondary forest and near-primary forest. One hundred and thirty-one species in 63 genera were recorded in the plots, with 80 being soil-feeder types. Thirty-seven of the species and six genera were new to science. Termite abundance ranged from 3000–10 000/m^2 and the termite biomass was 20–100 g/m^2.

As might be expected, newly cleared forest had the lowest termite biodiversity and the highest occurred in mature secondary forest. Soil-feeder types tend to increase when the canopy closes. It is the soil-feeder types that produce most of the methane, especially in primary forest where they are abundant. Wood-feeding types produce little methane by comparison. Estimates based on the Cameroon study suggested that termites could be responsible for as much as 20% of the world's production of 500 Tg/year of methane. The notion that the world's problems might be due to farting termites captured the attention of the popular press but the story does not end there.

Other research workers queried whether the methane being produced was being released into the atmosphere or was being oxidized by bacteria living in the soil and nest walls. Further research carried out in Cameroon showed that mound termite nests do release methane into the air. However, methane generated in the soil is rapidly oxidized and not released. Oxidation is affected by seasonal and disturbance effects. It is greatest under dry conditions, falling to zero in water-logged soil. Disturbing the soil also reduces oxidation. Revised estimates suggest that less than 5% of the methane produced enters the atmosphere and therefore termites are not a significant source of this greenhouse gas.

14 January 1997

The President, Mr C. HART, announced the death of an honorary member, Mr S. W. P. Pooles, who joined the Society in 1933.

Mr C. HART showed two forms of the orange-tip butterfly, *Anthocharis cardamines* (L.). These were ssp *britannica* Verity, the normal form found in Britain, and ssp *hibernica* Williams. The latter had been bred from an egg found near Corkscrew Hill, the Burren, Co. Clare in Ireland. The adult emerged in May 1996. Subsp. *hibernica* has a pale orange hind wing suffusion. The specimen exhibited had an enlarged discal spot joined to the black apical area, a variety referred to as form *crassipuncta* Mezzer.

Mr M. R. HONEY showed a copy of the recently published book, *The Lepidoptera of Europe*, 1996, by Karsholt and Razowski, Apollo Books. It is a full distributional checklist of the 8470 species of Lepidoptera found in Europe and comes complete with a CD Rom containing all the data files. It costs 490 Danish kroner, excluding postage, and is also listed in the UK by Pemberley Books for £68.

Dr D. AGASSIZ circulated a copy of *The natural history of moths*, 1997, by Mark Young, Poyser Natural History.

Mr A. J. HALSTEAD showed a specimen of *Rabocerus gabrieli* Gerhardt (Coleoptera: Salpingidae) collected on 7.xii.96. It is a Notable B species associated with dead wood, including beech, alder, elm and pine. In the *Review of the scarce and threatened Coleoptera of Great Britain*, 1992, it is said to be widespread but local in northern England and very local in southern England, being recorded in most months between February to November. The specimen exhibited was found in a garden at Knaphill, Surrey, on a shirt on a washing line at 11 a.m. Despite the cold dull weather, the beetle had evidently been able to fly onto the washing during the two hours it had been hung out.

Mr S. MILES said he had attended the autumn meeting of the JCCBI where representatives of the constituent organisations had given reports of their recent conservation activities. Copies of these reports were available for inspection.

Dr TONY WARNE spoke on "Insects of the Channel Islands", with particular reference to Jersey. The speaker had made a number of visits there in recent years, mainly in June and September/October, in order to survey sites and evaluate them for designation as SSSIs. He had also carried out survey work to monitor the effects of management regimes. Some recording work between visits had been done by using malaise traps and pitfall traps.

Wildlife in Jersey has to contend with the needs of the island's main industries, agriculture and tourism. Much of the countryside is intensively farmed, with fields yielding two crops a year. Potato fields receive heavy doses of pesticides to control potato cyst eelworm and fertilizer run-off can affect waterways. The demand for golf courses and other developments for the tourist industry further reduces wildlife

areas. The speaker described the main areas of interest on the island. Coastal dunes are much reduced but some remain in the south west of Jersey. The dunes provide the only alkaline grassland due to the accumulation of mollusc shells in the sandy soil. Coastal heath is better represented along the west and north coast, the latter being relatively little affected by developments. Fire can be a problem on the heaths and there is a need to control gorse to avoid uncontrolled fires which result in the heathland flora being replaced by *Molinia* grassland. Woodland in Jersey is mainly along river valleys and has been much altered by felling and replanting in recent years. The island has relatively few streams and wetlands. The cliff vegetation includes some good areas of western gorse, heather tussocks and prostrate broom on southern Jersey. In some places a South African plant, the Hottentot fig, has extensively colonized the cliffs.

BENHS FIELD MEETINGS

Pamber Forest, Pamber, Hampshire, 4 May 1996

Leader: *David Young*. The 1996 field meetings programme included two visits to Pamber Forest with a prime objective of recording the presence of *Jodia croceago* (D. & S.) following the reported sighting of this species in a garden m.v. trap at nearby Mortimer West End, Berkshire (VC 22), a few years ago. *Jodia croceago* must be well up on our list of lesser known British moths both in terms of its present distribution and its habitat requirements.

Weather conditions during the day were dry with sunny periods, but a cold east wind reduced insect activity to a low level outside very sheltered locations. The morning was spent walking around this magnificent site, guided by Graham Dennis, and seeing the extensive conservation projects in hand to open up parts of the forest.

Only four species of butterflies were noted, *Anthocharis cardamines* (L), *Pieris napi* (L), *Inachis io* (L) and *Pararge aegeria* (L), but this was not surprising given the cold conditions prevailing in what proved to be a long and cool spring. *Phyllonorycter trifasciella* (Haw.), *Archips podana* (Scop) and *Olethreutes lacunana* (D. & S.) were bred from larvae found on *Lonicera*, *Chloroclystis debiliata* (Hübn) from *Vaccinium myrtillus* and *Hemithea aestivaria* (Hübn) from *Quercus* sp. *Adela reaumurella* (L) was reasonably common.

Despite the cool weather 14 species of Hymenoptera were recorded, mostly feeding at flowers, and including a specimen of *Nomada xanthosticta* (Kirby)—a Red Data Book 1 'endangered' species.

After a short break for lunch, the afternoon was spent on nearby Silchester Common, now fenced and lightly grazed by cattle to keep the gorse and birch at bay for the benefit of other plants. The stumps of birch in cleared areas showed many old exit holes of the local white-barred clearwing moth *Synanthedon spheciformis* (D. & S.) but no capped holes were noted. Again little was flying and the only species noted were the tortricid moths *Cydia succedana* (D. & S.) and *Acleris hyemana* (Haw.). An adder, cast skins and a common lizard were noted on the common.

Given the cool conditions there was a respectable turnout of members for the evening moth-trapping session and search for *croceago*. Unfortunately with a

clearing sky and the temperature plummeting towards zero, a meagre total of 10 common springtime species was all that could be expected, and needless to say *croceago* was not amongst them. In these conditions a negative result throws little light on the occurrence of this species in the Pamber Forest/Silchester Common area. If, as is suggested, scrub oak that retains its leaves during the winter is a requirement, then this area looks as good a bet as any.

Our thanks to Graham Dennis, Warden of the Pamber Forest Nature Reserve, for acting as our guide during this field trip.

Burnham Beeches, Buckinghamshire, 8 June 1996

Leaders: **Martin Albertini** and **Helen Read**. Burnham Beeches has a history of use as woodland pasture with many beech coppices and heathland. However, both habitats have gone through a period of decline, but the owners, the Corporation of London, have over the last few years taken steps to restore the habitats. Much invertebrate monitoring has been carried out, partly due to a potential threat from a nearby gravel extraction application, which has identified the site as being particularly important for saproxylic insects, especially Coleoptera. There is still scope for invertebrate monitoring as a number of groups (e.g. Hemiptera, Hymenoptera) are poorly covered. It was hoped that the meeting would help fill some of the gaps.

A total of 14 members (7 m.v. lamps) attended the daytime and evening meetings and recorded over 230 species from a range of groups. A general observation of a paucity of insects during the morning was attributed to the high population of wood ants, *Formica rufa*, in the area. The ants only occupy half the site, divided by a road, and the afternoon session in the wood-ant-free area proved more productive. Two other species that were particularly widespread and abundant were the heteropteran bishop's mitre, *Aelia acuminata* and the migrant micromoth *Plutella xylostella*.

The following are some of the more interesting species recorded. Orthoptera: slender groundhopper, *Tetrix subulata*. Rhaphidioptera: 3 of the 4 British snake flies *Subilla confinis*, *Atlantoraphidia maculicollis*, *Phaeostigma notata*. Hemiptera: *Elasmostethus tristriatus* from both juniper and Lawson's cypress, *Eurydema oleraceum*. Diptera: *Xylota abiens*, *Brachyopa pilosa*. Lepidoptera: *Morophaga choragella* bred from fungus *Inonotus dryadeus*, *Nemapogon variatella* bred from fungus *Piptoporus betulinus*, *Nemapogon ruricolella* bred from fungus *Coriolus versicolor*, *Epinotia demarniana*, lead-coloured pug *Eupithecia plumbeolata*, peacock moth *Semiothisa notata*, brindled white-spot *Paradarisa extersaria*. Coleoptera: *Podabrus alpinus*, *Phytodecta rufipes (decemnotata)*, *Agrilus laticornis*, *Platypus cylindricus*, *Phytoecia cylindrica*, *Leptura scutellata*, *Agonum sexpunctatum*, *Cerylon fagi*. Hymenoptera: *Amestategia glabrata*, *Periclista albida*.

Cantley Marshes, Norfolk, 18 June 1996

Leader: **Paul Waring**. This joint field meeting between the BENHS, Butterfly Conservation and the Norfolk Moth Group attracted 31 people, primarily moth enthusiasts. The marshes and some adjacent carr woodland were purchased by the RSPB in 1993 as the result of a public appeal, to which the BENHS made a donation of £250. The marshes are important as winter grazing for the bean goose *Anser fabalis* and extend the existing RSPB reserve of Strumpshaw Fen, making a more viable unit. The purpose of the field meeting was to begin to document the entomological interest of the newly acquired land and the main emphasis was on the

Fig. 1. Cantley Marshes and carr.

moth fauna, for which there are few if any previous records. Searches during the afternoon and light-trapping by night produced a very good number of nationally scarce moth species, including the alder kitten *Furcula bicuspis* (Borkh.), cream-bordered green pea *Earias clorana* (L.), dotted fan-foot *Macrochilo cribrumalis* (Hübn.) and flame wainscot *Senta flammea* (Curt.). Some other local and wetland species of interest included the gold spot *Plusia festucae* (L.), lesser cream wave *Scopula immutata* (L.), May highflyer *Hydriomena impluviata* (D. & S.), oblique carpet *Orthonama vittata* (Borkh.), pinion-streaked snout *Schrankia costaestrigalis* (Steph.), round-winged muslin *Thumatha senex* (Hübn.) small seraphim *Pterapherapteryx sexalata* (Retz.), small clouded brindle *Apamea unanimis* (Hübn.) and striped wainscot *Mythimna pudorina* (D. & S.), while the carr woodland also added species such as the beautiful carpet *Mesoleuca albicillata* (L.), gold swift *Hepialus hecta* (L.), green arches *Anaplectoides prasina* (D. & S.), marbled brown *Drymonia dodonaea* (D. & S.), privet hawk *Sphinx ligustri* (L.), sandy carpet *Perizoma flavofasciata* (Thunb.) and small yellow wave *Hydrelia flammeolaria* (Hufn.). Interesting open ground species included the treble brown-spot *Idaea trigeminata* (Haw.). The dog's tooth *Lacanobia suasa* (D. & S.) was present in numbers and was attracted to 'wine-ropes' (strings soaked in alcoholic sugar solution for this purpose) and larvae of the southern wainscot *Mythimna straminea* (Treit.) were found feeding on reeds by the dykes. These are excellent results for a single night visit and a demonstration of the quality and wider conservation value of this site.

The above records include moths from carr woodland as well as the open marshes. Some records were also collected for the adjacent Buckenham and Strumpshaw Fens.

I would like to thank the RSPB for enabling us to hold this field meeting and wish them all the best in the long-term conservation and restoration of this site. I thank everyone who attended and made the meeting such a success.

Whiteparish Common and Pepperbox Hill, Wiltshire, 2 July 1996

Leader: **Paul Waring**. This joint field meeting between the BENHS and Butterfly Conservation concentrated on Whiteparish Common, with the option of overflow to the nearby National Trust property of Pepperbox Hill. Eleven people attended the afternoon session. including 6 members of the BENHS, boosted to 18 people by arrivals for the light trapping. Whiteparish Common was worked for moths by Roy Pitman in the 1940s and produced a series of notable species. At the time the meeting was planned the site was on the route of recent proposals for a West Wellow bypass, some of which plan a major junction and feeder roads on the edge of and intruding upon the site. The field meeting was organized in order to help update moth records for the site and is being accompanied by additional visits by a local moth recorder.

During the meeting eight mercury vapour light traps and one actinic trap were operated on the Common and a number of important species were found, including the beautiful snout *Hypena crassalis* (F.), cloaked carpet *Euphyia biangulata* (Haw.), common lutestring *Ochropacha duplaris* (L.), great oak beauty *Boarmia roboraria* (D. & S.), orange moth *Angerona prunaria* (L.), round-winged muslin *Thumatha senex* (Hübn.), scarce merveille du jour *Moma alpium* (Osbeck), small black arches *Meganola strigula* (D. & S.) and white-line snout *Schrankia taenialis* (Hübn.).

The scarce merveille du jour is a Red Data Book species, known only from a handful of woodlands from Devon to Kent. It came to four of the lights. Others of the above are nationally scarce in that they have been recorded from fewer than 100 of the 10-km squares in Britain since 1980. As the list of moths indicates, the majority of the Common is not open ground as might be expected of a Common, but is woodland; this is in fact privately owned and special arrangements must be made with the owner for light-trapping.

The woodland includes oak *Quercus robus* L., ash *Fraxinus excelsior* L., beech *Fagus sylvatica* L. and small-leaved lime *Tilia cordata* Miller growing as high forest over damp ground with little understorey. The tree canopy is almost complete, creating a sheltered humid micro-climate and conditions much loved by certain of our woodland moths. Much of the area is believed to be ancient woodland. The site has probably been grazed by domestic stock in the past, as wood pasture, but not for some decades.

The larvae of the scarce merveille du jour, small black arches and great oak beauty all feed on the leaves of oak and all three are associated with large tracts of mature broadleaved woodland where oak is well represented. The cloaked carpet and white-line snout are associated with damp places on the woodland floor, the larvae of the former feeding on stitchworts and allied *Stellaria* spp., while those of the white-line snout have not been found in the wild and the foodplant is unknown. The populations of all of these nationally scarce species are likely to be adversely affected by clearance of any woodland for road-building. Since the field meeting was organized it has been announced that the present round of road proposals have been dropped, at least for the time being. Moth recording will continue, however, and local recorders have already noted another Red Data Book moth, the triangle *Heterogenea asella* (D. & S.).

I would like to thank Norman Hutchinson for arranging with the owner for permission to hold a field meeting on this privately owned site.

Meanwhile, Tony Pickles took his moth-trapping gear up to the chalk downland at Pepperbox Hill to ensure that the opportunity to collect some records for the National Trust was not missed. He was rewarded by the capture of a marbled clover *Heliothis viriplaca* (Hufn.) which turned up at light, along with the ruddy carpet

Fig. 2. Scarce merveille du jour.

Fig. 3. Some of those who attended the meeting.

Catarhoe rubidata (D. & S.) and some migrants which included a small mottled willow *Spodoptera exigua* (Hübn.) along with the more abundant silver Y *Autographa gamma* (L.) and the rush veneer *Nomophila noctuella* (D. & S.). The marbled clover seems to have had a good season at some sites in 1994, with over 80 seen in a field at Lakenheath in Breckland on 19 June, along with about 40 grey carpet *Lithostege griseata* (D. & S.) and 10 tawny wave *Scopula rubiginata* (Hufn.) (P. & D. Sharpe, pers. comm.). Whether or not the marbled clover is resident at Pepperbox Hill, or travelled with the known migrants, needs to be investigated by further fieldwork.

I would like to thank the owners of both sites, each of whom have been supplied with this report and the species lists, which have been copied to the Invertebrate Site Register (JNCC Peterborough) and sent to the English Nature Office at Devizes. I thank all who supported this meeting and made it such a rewarding and useful event, and in particular, Dr Susan Clarke and Mr John Hemmings for their assistance with overnight accommodation and other logistics, and Mr & Mrs Farrar for enabling us to run one light trap all night on a cable from their house.

Ashclyst Forest, Exeter, Devon, 6 July 1996

Leader **R. McCormick**. It was arranged that interested people meet in the car park at 21.00 hours and by this time six people had turned up, members of both Butterfly Conservation and BENHS. We had around a dozen traps which were spread over a good area of the forest covering both SX and SY 10-km squares. The forest is sited at the junction of four 100-km squares on the map, SS, ST, SX and SY; it must be one of the few localities where you can record from four squares at once.

The night was not particularly warm with temperatures going down to around 14° C by around 01.00; there was little or no wind and the sky was slightly cloudy but in the main clear, and there was a nearly full moon; because of the conditions light trapping ceased around 01.00 and there was little movement of moths.

As some of the participants arrived they noticed a police presence gathered in one of the tracks; little notice was taken of this as it had nothing (or so we thought) to do with us. After the lights were running a police car drew up near to my traps so I went over to tell them what we were doing and that this field trip had been planned for some time. We then found out that they thought we were drug dealers (little did they know that recording moths is just a front)!

Among the more interesting species seen were *Eudonia delunella* H.-S. which has been seen in several sites; *Eupithecia virgaureata* Doubl. golden-rod pug, a species that has also been found on Dartmoor; *Apeira syringaria* (L.) lilac beauty, quite a local species where only singletons are seen; *Angerona prunaria* (L.) orange moth, several of which were seen flying at dusk with one or two to light, this species is seen at other localities; *Paradarisa extersaria* (Hübn.) brindled white-spot, this has been seen in other localities on Dartmoor and *Eilema sororcula* (Hufn.) orange footman, this species is fairly common in this bit of woodland and has been seen at other sites. In total 88 species were recorded which includes the micromoths, not brilliant for a night in the middle of the summer but 1996 was to prove to be, from my own observations, a poor year compared to 1995.

OBITUARIES

S. W. P. Pooles

Born 6th February 1907, Sydney William Plowright Pooles was a long-standing member of the Society, joining in 1933 and becoming a Special Life Member in 1984. He was known to his friends as 'Tim'.

He was educated at King's School, Peterborough. He married Ina in 1940 and they moved to Box Hill, Dorking. They later returned to Peterborough where Tim practised as a solicitor at Buckle & Co., with whom he became a partner. After Tim retired, they moved down to Eastbourne in Sussex in 1971.

He was a keen and active field lepidopterist with, perhaps not surprisingly given Peterborough's location in the fenland, a particular interest in the wainscots. He had a substantial and immaculately set collection which included specimens of nearly all of the resident species of Macrolepidoptera found in Great Britain. The bulk of this collection was sold to Watkins & Doncaster a few years prior to Tim going into a nursing home in Eastbourne in 1991. However, he retained a small but representative collection in a few drawers of one cabinet, typically a couple of examples of each species. This is now, appropriately, in the Peterborough Museum.

During his time in East Sussex, he made a significant contribution to the knowledge of the butterflies and moths of the vice-county, in particular the Eastbourne area. Indeed, he was the first to record the sloe pug *Chloroclystis chloerata* (Mabille) in East Sussex, finding larvae in 1974. Tim was a kindly man, always willing to impart knowledge and encourage others. One of my earliest memories of him was of a field trip in 1979; Tim knew of a small pond which had been encroached by reeds at Hampden Park in Eastbourne which he thought looked suitable for twin-spotted wainscot *Archanara geminipuncta* (Haworth). We found larvae and pupae with ease. I was always grateful of his company and expertise on many mothing trips in the Eastbourne area as well as on some ventures out of Sussex, such as to Orlestone Forest and Dungeness in Kent.

A friend and mentor, Tim Pooles died on the 8th July 1996. He is survived by his widow, Mrs Ina Pooles, his son and daughter and four grandchildren. He is sadly missed.

Mark Parsons

Ralph Sydney Tubbs, 1912–1996

It is one of the greatest and most important aspects of this the British Entomological and Natural History Society, that people from widely different backgrounds, social standings and generations are brought together as colleagues and friends. Otherwise I would never have had the privilege of knowing Ralph Tubbs OBE.

I can't quite remember at what meeting it was, but it must have been early on in my BENHS attendances at the rooms of the Alpine Club, perhaps 1980, that Ralph first bought me a pint of Directors' Bitter in Mayfair's Red Lion pub after an evening of insect slides and a pleasant discourse about migrations, unusual food-plants and strange new discoveries in suburban gardens. Such was his generosity that I am embarrassed to consider how many drinks I owe him.

Although a mild-mannered gentleman, subtle and kind, Ralph was one of the movers and shapers of 20th century Britain. As an architect he had enormous impact on the world and is best remembered as the designer and creator of the Dome of Discovery, the largest and most important structure built on London's South Bank as part of the Festival of Britain in 1951. At the time it was the largest dome in the world, with a diameter of 365 feet. Ralph was one of three architects who planned and designed the entire exhibition, the others being Hugh Casson and Misha Black. Ralph was awarded an OBE for his work on the Festival, but sadly, at the end of the celebrations, the dome was heartlessly torn down for scrap on the orders of the Minister of Works of the incoming Conservative government.

Others of Ralph's designs have fared better. Council meetings of this society are held each month in one of his buildings—the headquarters of the Scout movement at Baden-Powell House. A private house in Willow Road, Hampstead has just been acquired by the National Trust, and the YMCA Indian Students' Union and Hostel has recently been listed as of architectural importance.

Ralph wrote two influential books on architecture. *Living in cities* presented a vision of urban life after the destruction of the last World War, and countered the idea that modern planning meant skyscrapers, concrete and flat roofs. *The Englishman builds* was a popular history of architecture.

Ralph was unable to join the forces during the last war, because of lameness in one foot, which he had suffered from childhood. But he joined the "night watch" of St Paul's Cathedral, who patrolled the roofs throughout the Blitz extinguishing the many fragments of incendiary bombs which rained down nightly.

His interest in natural history was wide, but his special interest was in breeding butterflies to uncover the genetic mechanisms behind their aberrations. This pursuit was very much a private interest, he did not publish articles based on his findings, but his regular displays at the annual exhibitions covered many species. He was president of this society in 1977 and his end-of-year address (*Proc. Trans. Br. Ent. Nat. Hist. Soc.* **11 (3/4)**: 77–88) was an account of breeding numerous butterfly species to examine the genetics of several aberrations. These included *Hipparchia semele* (L.) ab. *holanops* Brouwer, *Pyronia tithonus* (L.) ab. *excessa* Tutt, several varieties of *Lysandra coridon* (Poda), *Aphantopus hyperanthus* (L.) abs *arete* Müller, *obsoleta* Tutt and *caeca* Fuchs and *Melanargia galathea* (L.) ab. *craskei* Tubbs.

Ralph was also deeply involved with the Royal Entomological Society; he served on Council from 1981 to 1984 and was the treasurer from then until 1989. It was through his suggestion that I also joined the RES council in 1987 and 1988. And after the lecture meetings of that Society we would often chat over a dry sherry or two in the library.

His funeral service at the Church of St John the Baptist in Wimbledon was very well attended by family, friends and colleagues from the many walks of life he touched. I was pleased to be able to be there as a friend and representing all three national entomological societies to which Ralph belonged.

RICHARD A. JONES

ANNOUNCEMENT

Editorial Apology

The Editor would like to apologize for the late appearance of this issue of the journal. It is hoped that the next issue (10:3) will be available at the Annual Exhibition in October, and that the final part of the year (10:4) will be despatched to members sometime in December.

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 of preference having regard to the suitability of applicants and the plan of work proposed.

Awards may be made to assist travelling and other expenses necessary for fieldwork, for the study of collections, for attendance at conferences, or, exceptionally, for the costs of publication of finished work. In total they are unlikely to exceed £600 in 1997/98.

Applicants should send six copies, if possible, of a statement of their qualifications, of their plan of work, and of the precise objects and amount for which an award is sought, to Dr M. J. Scoble, Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD, as soon as possible and not later than 30 September 1997.

Applications are also invited from persons wishing to borrow the Wild M3 Stereomicroscope and fibre optics illuminator bequeathed to the Fund by the late Edward Pelham-Clinton, 10th Duke of Newcastle. Loan of this equipment will be made for a period of up to six months in the first instance.

Joy's Practical Handbook of British Beetles

Following the success of Hodge & Jone's *New British beetles*, and the encouragement of the authors, E. W. Classey and Company are about to further reprint Joy's original two volumes in November 1997. Long out of print, even after the facsimile reprint of 1976, this useful book continues to be a major reference book, especially for the newcomer to the Coleoptera. The retail price is going to be £76 but the publishers are offering a prepublication price of £69. Prospective customers are urged to contact E. W. Classey on tel: 01367-244700.

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Meetings of the Society are held regularly in London, at the rooms of the Royal Entomological Society, 41 Queen's Gate, London SW7 and the well-known ANNUAL EXHIBITION is planned for Saturday 31 October 1998 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, J. Muggleton, at the address given below.

The Society maintains a library, and collections at its headquarters in Dinton Pastures, which are open to members on various advertised days each month, telephone 01189-321402 for the latest meeting news. The Society's web site is: http: ourworld.compuserve.com homepages pyo BENHS.htm

Applications for membership to the Membership Secretary: A. Godfrey, 90 Bence Lane, Darton, Barnsley, South Yorkshire S75 5DA.

Subscriptions and changes of address to the Membership Secretary: R. D. Hawkins, 30d Meadowcroft Close, Horley, Surrey RH6 9EL.

Non-arrival of the Journal, faulty copies or other problems arising from distribution of the Journal or notices to the **Distribution Secretary**: D. Young, 9 Marten Place, Tilehurst, Reading, Berkshire RG31 6FB.

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Cover illustration: Head of *Rhagium mordax*, photo: Richard Jones

NOTE: The Editor invites submission of photographs for black and white reproduction on the front covers of the journal. The subject matter is open, with an emphasis on aesthetic value rather than scientific novelty. Submissions can be in the form of colour or black and white prints or colour transparencies.

CHANGING PERCEPTIONS IN THE WORLD OF MACRO-MOTHS AND MOTH-PERSONS DURING THE PAST FIFTY YEARS

GERRY HAGGETT

Meadows End, Northacre, Caston, Norfolk NR17 1DG

Our President, on informing me of Council's decision to invite me to honorary membership, suggested that I might share my thoughts on moths and mothing over the past half century. The timing is especially appropriate as we reach the end of the twentieth century, with such profound change having taken place, both in our wildlife interest and in the nation that should protect it. I have accordingly attempted to mention the most noteworthy happenings of this period in the broader context of the community, while remaining conscious that to do justice to all would occupy more than the pages of one part of this journal. As readers will see, the opinions expressed are most definitely those of the writer!

EARLY DAYS

It was my good fortune to live, as a boy and young man, under the tutelage of that giant of the Noctuidae A. J. Wightman, and I preface this narrative with reference to him, not simply to pay tribute to the profound knowledge gained by individuals then, but more to focus on the method in which that wisdom was gained first-hand from a long life of field observation, and as witness also to the end of an era epitomized by him that had begun in the late Victorian and Edwardian times of Barrett, Tutt and South, and whose pattern was then set for the next half century. Knowledge of the British moths was still rooted in painstaking search-and-collect by hand, in diligent beating, sweeping, sugaring and the rearing through of unidentified larvae to moths.

Moths there were a-plenty, but they had to be worked hard for, and collections were built slowly, specimens being assiduously added, often over many seasons, with the aim of assembling the conventional row or series with local forms. The less common were added singly rather than as a one-off completed set from one night's collecting or bred from one female. Collection was the unambiguous goal, for it was a long while before 'study' euphemistically replaced that robust but lately much misrepresented term. Knowledge of habits and behaviour of individual species through their stages of development were acquired first-hand, as were localities, and although there had always been exchange of information as well as of specimens and livestock, the spread was mostly between close colleagues and long-established circles. The average macro collection of those times began strongly with the butterflies and went through the hawks and larger moths to the acronyctas and more easily identifiable noctuids. But they thinned out at the internal feeders, peaking again at the plusias, sharks and crimsons only to trail off into the geometers for the larger showy species. Lots of bred magpies *and* orange moths would be there with a good showing of thorns and beauties. Cossoids and burnets were in, but clearwings less well thought of.

During the period following the Second World War Britain enjoyed stable, warm temperatures the like of which we have not seen since. Night work could be counted upon in the southern counties throughout the year. Moths at sallow blossom were so embarrassing in number that they followed the lantern from bush to bush as a wondrous cloud, while ivy flowers were so productive that an evening's round could afford to neglect all but the richest and easiest sites to work. A light trap was for

most of us available only from the household plug, and Gordon Smith achieved fame with his giant mobile generator that, for the first time, revealed *alni* to be no rarity.

Collections and collectors

Journals continued to feature each year's collecting by luminaries such as the legendary Baron de Worms who seemed annually to work the same localities in the same sequence. Favoured haunts were fewer but heavily worked, with Dungeness, South Devon coastline, Norfolk Broads, Wicken and then Woodwalton Fen, the Breck, Sychnant Pass, New Forest, the Lakes, Rannoch and increasingly Aviemore, the more regular. The war-years had inhibited gatherings but the Annual Exhibition of this Society soon returned to confirm its pre-eminent position as the lepidopterist's major event of the year in the prestigious rooms of the Royal Society at Burlington House. It became jam-packed with overflowing tables of exhibits and set a pattern of convivial conversazione that has endured through changes of venue.

It was the hey-day of Edelsten and Demuth, but dominated by Cockayne and Kettlewell, with Goodson managing their joint collections at Tring (through a haze of cigarette smoke), that were later to be incorporated into the National Collection at Cromwell Road under the name of the R-C-K coll. Austin Richardson was the supreme collector with the famed but dubious distinction of arriving late whilst making off early with the cream of that night's take. Auction sales that had once generated such drama were in terminal decline and the price of a Gurney cabinet remained a distant hope for the average collector. Buckler went for £14 a set and the new books were yet to be written.

Understanding of the distribution and habitat requirements of our moths then was a combination of collecting notes in the journals, product of word-of-mouth plus the time-honoured localities of the last century. Fewer species were then so localized as they have since become, and the scarcer ones were kept as a close secret. The broader picture given in standard works still summarized the lists of the Victoria County Histories. Identification was learned from updated editions and reprints of South's *Moths of the British Isles* or from the hands-on experience of colleagues, yet collecting remained so often a loner occupation with rarely more than two persons together. Lepidopterists were a thinly scattered breed and like artists were reckoned by the general public to be a little odd, and they were, with the most notable of rare exceptions, all male.

A new dawn in a bleak landscape

The nation's war-time demands upon land saw large-scale changes in its use, with the beginnings of modern agricultural techniques but still without herbicides, with scant fertilizers and with puny tractors. Great changes were begun in farm and forest that were to transform the countryside from what had long been known. The age of the motor-car had long since arrived, but without the roads it needed; so a collecting trip made from London to Torquay, to the Norfolk Broads or to Dungeness was still a tedious journey. Only the most venturesome renewed an interest in the Western Isles, and Ireland was regularly visited only by H. C. Huggins until the Burren Green signalled the neglected riches of that spartan treasure house.

This quaint world of the lepidopterist was shaken by two major events: the impact of E. B. Ford's books on butterflies (1945) and on moths (1955), and the popularizing of mercury vapour discharge light traps by the Robinson brothers in

1950. Ford's books broke new ground in giving explanation to origin, variation, behaviour, habitat and distribution of British macro species which he related to the concepts of modern biology of that time. Here in two eminently readable books was a galaxy of stimuli to which the discerning collector or serious student could return time and time again for inspiration to shape his own field studies or genetic trials. The advent of MV as the dominant collecting tool made it possible for population monitoring and for this to be done in all manner of habitats constrained only by the weight of the portable generator. A revolution brought about by technical knowledge was now driven by the catalysts of a greatly improved road system, faster motor cars for all, smaller and more dependable generators, and above all a popular awakening of interest in the countryside and its wildlife in an age of increased leisure and prosperity.

Parallel with this new dawn ran accelerated awareness of the need to conserve our ancient and living heritage both by public bodies under political direction and by charitable trusts who were to combine as a national voice. Even in so short a while as the next five decades, the statutory bodies became politically emasculated and starved of resources, bringing about closer collaboration with private institutions but lacking the driving force of political will. During this time, land was acquired by these different bodies to be managed as nature reserves, some with complicated shared management, others with refreshingly direct control, but all dependent upon a system of grants and funding that has seen the share from public purse subjected to ever stringent manipulation, while the charities struggled to maintain their budgets and achieve their targets.

Yet at the same time that a growing wider public demanded conservation measures, those greatest users of land, in the form of agriculture and forestry, were subjected to the most relentless of economic pressure, which extended to extreme the use of monster drainage machines, the latest developments of the most potent of herbicide and insecticide usage, and the exploitation of land by the ultimate of mechanical invention. Destruction of marginal habitat escalated year by year, lowland and the flat-lands being the easiest and earliest susceptible targets. Yet this occurred also in the uplands where hill cultivation reached into new altitudes, where deep ploughing destroyed moorland and where even the deeper peatlands and limestone pavements became plundered by commercial assault. Deeply shaded conifers replaced native broad-leaved woodlands not only in state forests but in private lands under the lure of heavy subsidy. It is an unparalleled irony that as enlightenment beckoned, so such destruction should be unleashed, and an understanding of the political processes that financed it is an essential adjunct to any review of the fate and changed status of each of our resident moth species.

Records and recorders

Present-day knowledge of species distribution is much advanced due to countless records co-ordinated centrally from computerized returns of county organizers and based on the initial data entered by an army of volunteers. These folk have boomed to cover, in some measure, the length and breadth of Britain and, in the main, they follow the stimulus of their local natural history society or County Museum which may service their activities and certainly provide major computer facilities, although pressure upon Local Government finances may bring about charges for them. Records come primarily from enthusiasts gathered at regular outings when identification can be made in the glare of the MV lamp with expert verification at hand, or made in the seclusion of the garden or local patch when errors only become

apparent at the annual group slide show. Lists are made up and species names (mostly in the vernacular) entered, even ticked, against the minute print of the abbreviated name record cards sometimes edited locally to accommodate all those species known or expected from the county, the aggregate being sorted and hopefully verified by the group or county recorder. Other records, of course, continue to be contributed from more traditional sources, but members of that modern phenomenon, the moth group, supply the bulk. This mammoth bank of data has attracted discussion over who owns it, who can make use of it and for what purposes, and who should bear what charges and costs for publications based upon it. By 1991 the Rothamsted network of tungsten light traps operated on 95 sites in Britain, and had celebrated over twenty-five years of trapping. It had generated an abundance of data, especially phenologically rich; similar information has accrued on computers of the counties, intended for eventual use in the writing of county Histories, but available also for future national analysis. The Rothamsted data can be linked to similar bases gathered by organizations across Greater Europe into Western Russia, who have been monitoring moth populations, mostly since 1993 but even as far back as 1960 for Hungary.

Out of such a wealth of data, past but mostly present, have evolved the national status codings that indicate a range of scarcity or abundance and thus the conservation perception for each species. These check out well enough for insects confined to limited habitat but are less meaningful when distinctions are attempted between the larger numbers of species perhaps better classed collectively as local; and they do not reflect the cyclic pattern of population change that most experience, sometimes at long intervals, and which can be a characteristic of lower profile species. Nor does a system based primarily on moths seen at light cater adequately for those weaker-flying and less easily identified, like the pugs, and whose distribution is better revealed by larval evidence. Updating is, of course, possible but brings in its turn the question of assessment that is meaningful in separating species in on-going decline from those of cyclic fluctuation.

Changes in moth fauna

Mercury vapour light has seen a fair exchange between species formerly regarded as rarities but now recognized to be more numerous, and those once thought to be of general and regular occurrence but now much less often encountered, and as this latter category does contain a disproportionate number of geometers it might be thought that the change in concept has more to do with collecting techniques than real change. Of one group there can be no doubt, those colonists that either were formerly regarded as intermittent migrants before becoming established –usually along the South Coast counties– or those that made settlements soon after their initial discovery and quickly moved to become resident across much of lowland Britain. Whereas such additions to the resident fauna had been understood from earlier times there is no doubt that the numbers following this pattern have markedly increased more recently and we can but conjecture whether this be due to the expanded army of recorders or to shifts of climate or to both? The colonization by alien moths of exotic conifers introduced to Britain on a significant scale only in post-war years is a phenomenon all too clearly evident, while glasshouse production of both food and flowers has attracted further species that can be of commercial interest. Distribution of "garden" species from the proliferation of garden centres has been the presumed source of relocation of resident juniper and *Berberis* feeders into urban environments, whilst increasing

beyond imagination the variety of host-plant cultivars for them. So, too, in the maturing coniferous forests where not only the pine and fir feeders have greatly increased their numbers and territory but where novel host-plants introduced on a grand scale have offered scope to larvae previously known as broad-leaved or heather feeders. The two moths that became occasional large-scale forest pests were both on alien pine species, and *Panolis flammea* could well have jeopardized afforestation of *Pinus contorta* on northern peats but for man's artificial control by aerial insecticide application, use of virus and pheromone bait.

There are around 50 species that have been added to the total British list of macros during the past fifty years. Thirty of these can be regarded as migrants, vagrants or outright stowaways and of the rest, seven have colonized the greater part of southern Britain, with the remainder being reckoned to be resident species never previously recorded, and it is questionable how many of these, too, could have originated as colonists. Of the total species added in this period, only the sibling species together with those of remote locations can surely be regarded as long-standing residents. One of the most revealing facts resulting from wide use of MV light has been the heightened awareness of movement of moths into new territory, and that the habit of the majority is to range well outside their chosen habitat, producing abundant and regular movement into these islands from abroad with subsequent residence of some species. A consequence is that we think that more of our species, regarded at one time to be long-standing residents but here no longer, have followed the pattern of temporary colonization of *Trigonophora flammea*, *Minucia lunaris* and *Arctornis l-nigrum* amongst others, and that more residents depend upon regular reinforcement than we had supposed hitherto.

We have witnessed also dramatic increase in species long resident, such as the since dwindled expansion of *Rhyacia simulans* to the south and eastern counties, in contrast to the renaissance of *Perizoma sagittata* not only in its traditional fenlands but also from the Norfolk broads to the midland shires, while the steady spread of less robust species like *Parascotia fuliginaria*, *Idaea vulpinaria* and *Elaphria venustula* appears to be genuine territorial advance. Regular trapping on the same site can, however, also reveal how the commonest of species can have lean years when population levels crash and then recover, and we can find this to be not just a local happening but to be of widespread occurrence.

The general run of British moths seem to have withstood the commercial onslaught into their habitats rather better than have our butterflies, but total losses are still too numerous and comprise our most demanding species. Since 1945 we have suffered the loss of seven species plus the subspecies *bondii* of *Photedes morrisii*, most of which can be attributed to deterioration into unsustainably small populations as a result of fragmentation and decline of their specific habitat even though their chosen biotope may survive. In southern Britain too many species have suffered population dislocation and constriction with the inevitable problems for gene diversity and viability. Of the upland and alpine moths we believe there have been fewer pressures but we have yet to measure the damage wrought at lower altitudes by afforestation schemes. Only seven species of moths are protected by law under the Wildlife and Countryside Act 1981 (revised 1995), but two are already extinct, and one is perilously close to extinction; while the remainder are in isolated and restricted colonies of low numbers. Young (1996) observes that these seven moths make an interesting contrast with no less than 25 of the 57 resident butterflies that are scheduled under the Act, if only to prevent commercial dealing. Regular revision of the Act provisions sees the occasional moth added, and in the light of continued habitat destruction we may wonder who exactly is targeted.

The new professionals

Awareness of wildlife problems attracted students looking to qualify in natural science and some to examine the problems of Lepidoptera in particular. The years under review saw not a few progress from first degree to environmental studies that could focus on the predicament of individual species. At one time the then designated Nature Conservancy was the natural home for successful postgraduates and we experienced a rash of PhD students eager to advance projects for the protection or reintroduction of butterflies, but moths were at first less successful in attracting this talent and such is the perversity of life that just as that prospect beckoned so government funding waned. The careers of newly qualified scientists (and of others already longer into their jobs) were, in consequence, directed to commerce or education and only the most hardy and resolutely motivated remained to take up the wildlife challenge. The newly hatched British Butterfly Conservation Society soon found nectar and attracted professionals, then promptly moulted and in its new skin began to take moths into its care. The professional was certainly back in business but with a totally changed status from that of the Victorian collector, and as museum jobs shrank alternative careers were pioneered in the broader field of conservation and the better financed national societies, but where scope was possible also for a parallel interest in moths. The process begun by Ford was extended by these new scientists to embrace all manner of behavioural responses and physiological mysteries with inevitable use of the doubtful joys of statistics and thereby the eclectic analysis of matters hitherto the province of subjective discussion. Its practical usage could, however, fail in the separation of species for while a precision could be placed on the likelihood of correct determination this was of little value to the biologist who wanted to be sure! However, help may be forthcoming in the use of group or discriminant analysis as long as the fastidious and scrupulously accurate measurement data can first be gathered.

Bottoms up!

A natural sequence to the matter of species distinction is the emergence during the past fifty years of genitalia to be the supreme arbiter of species recognition, the studies of Pierce being elevated to the status of cult. During this period the numbers of species whose separate existence is dependent solely upon differences in their genitalia have multiplied. Unfortunately, some of them have proved too difficult to rear in numbers from parents so determined, so we are unable to verify – as is possible in those species where their genitalic differences corroborate other characters – that such species are indeed exclusively independent breeding entities. While the recognition of species barely advanced along the long road of speciation may be of significance to other branches of biology, it is of lesser importance to the field lepidopterist; indeed it can be frankly confusing in encouraging records to be submitted of specimens whose identity is too frequently only guessed at from wing characters. As the genitalia species have thrived, those siblings that lack distinctive apparatus, such as *Eupithecia goosensiata*, *Diarsia florida*, *Mythimna favicolor* and *Aporophyla lutebergensis*, continue to remain in limbo, yet the insects called *Plusia gammina* (*gamma*) and *Phlogophora lamii* (*meticulosa*) were consigned outright to the systematist's dustbin, because they failed to possess the slightest of unusual bumps in the right places.

Life histories

Much more is known today of life-histories and in particular of the larvae of our moths and we hear more of the difficult species—not necessarily scarce or local ones—being reared successfully. This, however, is all too often due to the easy availability of females at light traps than to the study of larvae in their environment, which is the more instructive option. Identification of wild larvae has remained poorly served by the inadequacy of illustrated books; Buckler's now expensive and scarcely obtainable volumes still remain the only seriously helpful work. The imminent publication illustrating larvae of the entire British macro species should inspire interest and re-kindle study of this most definitive and compelling branch of science. For there is much work to be done in unravelling the precise requirements of each stage of so many of our moths, as has been done with spectacular success in our butterflies, and amongst those most in need are the internal feeders and soil dwellers that comprise so many Red Data Book species and whose stratagems remain to be discovered if their conservation is to be enhanced. The exact host-plant is also still unknown for too many other species. We desperately need a key to the identification of larvae based on their morphology, for I am not aware of research in Britain to match, for example, the comparative morphological studies being pursued by key workers in mainland Europe and Finland, and who are as a result far better placed than we to judge larval structure as a contributor to moth systematics and conservation. As long as larvae remain no more than incidental to the provision of cabinet specimens and county lists then we shall remain impoverished lepidopterists.

Systematics and nomenclature

Systematics and nomenclature have seen enormous progress and enlightenment in the last fifty years and while inevitably closely dependent upon the work of experts of national museums, there has been more participation from knowledgable laymen. A look back to Heslop's Checklists of the 1940s reveals archaic grouping and the relict survival of the "Bombyces" which primitive concept was firmly replaced by the realism of Bradley and Fletcher in Kloet and Hincks' Checklist of the Royal Entomological Society Handbooks and updated in their subsequent popular versions. Here, amongst many long overdue improvements, the arctiids were admitted into the Noctuoidea, and the drepanids and thyatirids into Geometroidea. We now have only to ponder on the fates of the likes of *Diloba caeruleocephala* and *Colocasia coryli*. Arising from this framework have come sophisticated further lists involving substantial revision of the Noctuidae by Fibiger and Hatcher (1991–92) amongst others and recently further advanced by Beck (1996). The reasoning behind earlier revisions was not well publicized in popular journals and I can only recall the work of Tams (1939) who published his proposed generic changes in the Noctuidae with explanation by taxa. So whereas amateurs, collectors and field workers scrambled in the past to digest each revision which they regarded as academic to their interests, now there is discussion and even accountability by some authors (e.g. Beck, 1996). However well argued and researched, these systematic lists remain uncertain in their treatment of problem genera such as *Perizoma*, *Theria* and *Alsophila*, of *Photedes* and *Parastichtis*, while individual species like *Photedes brevilinea*, *Rusina ferruginea*, *Mormo maura*, *Elaphria venustula*, *Perizoma taeniatum* and *P. sagittata* all call for re-examination of their still unhappy associations.

So it is, and always has been, in the perhaps more relevant field of nomenclature, to the extent that today in his casual field conversation the collector may be

conversant not simply with the 'current' species name, or with its recent alternative, but in the case of moths like *Diarsia mendica*, *Polia bombycina* and *Rusina ferruginea* with its South equivalent as well. And those unfortunate pairs the spectacles and the silver-lines looked doomed to be revised and reversed for ever and most of us must have recourse to their English names in order to be sure of which we speak. Simple comparison of the names of noctuid and geometer moths in the list of Heslop (1947) with that of Emmet (1991) indicates that changes were made in the intervening years to around 15% of generic names involving twice that proportion of total species, to 8% of specific names and to 2% of both the generic and species names of individual moths. The total changes involved 293 species out of Heslop's 670 (noctuids and geometers) or 44%. We might have expected changes in specific names to reduce as the bank of alternatives was worked over, but to have expected also—indeed feared—that the creation of new genera was likely to continue as more evidence accrued, until sadly monotypia threatened each species. For many of us Kloet & Hincks (1972) remains the indispensable means of relating species of past literature to present-day nomenclature.

Moth books

Revolutionary techniques in printing have brought about the instant book with better quality illustration of both living and set moths and especially of their early stages. Some beautiful colour-works have appeared, most notably printed on the Continent of Europe but also in the Far East, and sadly one of the most ambitious of British works failed to match this standard in its earlier volumes. The void left by South's very out-of-date revisions was filled by Skinner & Wilson (1984) so successfully that their book has proved to be matchless for twitchers and beginners and no moth group member is without it. Nevertheless it remains a commercial fact of life that the more scientifically based a book, the smaller its market whereas the coffee-table book or browsy pot-boiler will better attract the profit-driven publisher and its smaller price the wider public. So we have seen diversity and ingenuity in providing for the undiscerning reader while specialists have had to be more patient. Even official works are known to have been tardy in receiving sanction for publication and then for only limited part of their potential. However, local lists have proliferated, and while their standard has reached art-form for butterflies, our moths have been less well served. Local contribution comes increasingly from regional and county groups, some long-established, others very new, all exploiting the modern facility of desk-top publishing to add to the national pile of data. Of the lepidopterous journals we noted with foreboding the collapse of the once prestigious *Entomologist*, now restored as the up-market in-house journal of the Royal Entomological Society whose more popular sister production is a good indicator of the way times have moved. But from humble origins of facsimile typescript the *Entomologist's Gazette* has blossomed to cater for the longer paper and it, too, is heavy with professional input. The profile of moths was greatly raised also in publications of wider public wildlife appeal and from time to time even in the national press. Economics and limited subscriber numbers have seen off the monthly issue but, by contrast and reflecting the life of the modern nation, there is a recently launched biannual devoted to the most sensational and rarest records of each year.

The community of lepidopterists

As in all walks of life the mothing community is now much broader based, well populated with knowledgeable individuals, the attendance at moth nights runs across the ages, and while most youngsters may be taken home by midnight not a few remain into the early hours. Workshops attract the same cross-section of society with ever new faces and swollen numbers, their exceedingly well-equipped photographers keen to contribute colour transparencies and prints to an astonishingly high standard. Species are for the main part instantly identified with surprising accuracy, at least of many genera, yet the absence of voucher specimen or photo can still prove embarrassing. Migrants are detected soon after arrival, indeed lights are massed for them at the best-known reception coasts after appraisal of meteorological forecasts, their likely sources and routes later reconstructed from sophisticated weather analysis, and species new to Britain (once the ultimate experience of the collector) are of regular, if not multiple, annual occurrence at light traps permanently run at Dungeness. There is even a moth-line to satisfy the unabashed twitcher. Identification of the less familiar is aided by the ready availabilty of exotic stock so the scarcest of British species along with vagrant and accidentals become known (and preserved) from livestock either from Continental exchange or from the results of British collecting abroad, or from the exhaustive lists offered from all manner of origin. Group field meetings are the norm in all but the regions of sparse human population, planned to locate individual species, to register their current local county status, to fill a gap in the local recording scheme or complete a 10 km square. Group work may concentrate numbers of lights for these and other purposes and their massed fire-power has revealed species long searched for unsuccessfully by individuals. And the field meetings of this Society continue to play a prominent role. Even the lone operator will reckon to set up two or more lamps and all manner of ingenious apparatus has been developed to allow all-night running of thirsty generators, but with the added modern problem of potential theft or vandalism. Well-known collectors may regularly operate as many as six lamps of one pattern, others a judicious mix of MV and the more mobile actinic traps whose pocket-sized batteries also permit a full night's collecting. Lights are run the year-round by those with interest in species tolerance of seasons and weather, others in series to compare species incidence. As a result of so much information we have come to question long-held concepts of emergence-times and brood-pattern (voltinism is the buzzword) and find some species likely to be present throughout a season, just as larvae may occur through the winter in a variety of instars. We are familiar with erratic species attendance at identical lamps operated within but short distances and sharing common habitat; we ponder whether these observations are real or only apparent and learn anew the resource, resilience and variety of the insect world. And our understanding of species distribution has been utterly revised as more records come from outside known ranges even of species thought to be the most sedentary.

Today the number of people who take significant interest in our moths greatly outnumber collectors, and while no sharp boundary can be drawn between them, those who simply watch do constitute a potentially larger voice than the shrinking number who wish to build a comprehensive collection. Actual numbers of specimens retained for individual collections are probably fewer than at any time in the past century for there are social, economic and financial constraints in additional to the ethical and conservational. On the other hand there are not a few folk who, while loudly opposed even to the temporary imprisonment of a specimen in the early days of their interest, now accept the need for refrigeration pending identification and the

desirability of rearing from wild females. Discussion on the ethics of collecting features in the activities of all responsible societies and journals and codes of conduct have been designed. This much discussed and well-rehearsed debate has been broadened by the easier availability of so many species that collecting simply to obtain them is for most folk no longer a challenge but instead offers the means to assist their understanding. This Society shares the even stance on restraint on collecting while continuing to support its need in the widest cause of conservation and taxonomy.

There is but little doubt that commercial exploitation of land will continue indefinitely and protest by country lovers and conservationists will remain marginal against the smoke-screen of political posturing. On the other hand land continues to be acquired by public and private bodies for the express purpose of wildlife and landscape protection and for public leisure and quiet enjoyment. It is the greater countryside that must inevitably become ever-rationalized at least in most of lowland Britain, driven by an insatiable and ever-demanding consumer society and dictated by obsession with industrial economic success. Yet a majority of our resident moths look well able to adjust their tolerance requirements to allow exploration and occupation of re-created habitats be they ever so unattractive in comparison with former haunts. While we shall continue to experience individual species losses both of range and territory as well in some cases of the species themselves, we shall see also the numbers of colonizers grow and residents derive even from adventists. The figures I have given of seven extinctions to fifty species added to the British list of macro-moths in the past fifty years is not too far removed from Gardiner's 1997 ratio of one extinction to ten new species for all British Lepidoptera from all causes in the same period. The new army of watchers in all its variety is ready to monitor these changes and to witness the shifting balance of the British fauna in both time-scale and magnitude as has never before been possible.

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THE BIOLOGY AND EARLY STAGES OF *HOMALOCEPHALA* (DIPTERA: ULIDIIDAE) IN BRITAIN

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According to his diaries, on 27 June 1905 Col. J. W. Yerbury and his colleague C. G. Lamb were collecting insects along the banks of the River Spey near Grantown. They were attracted by aspen stumps on which they found adults of the syrphid, *Hammerschmidtia ferruginea* (Fallén) and the ulidiid, *Psairoptera albitarsis* (= *Homalocephala biumbrata* Wahlberg (Andersson, 1991)). This was the first time these species had been found in Britain. The syrphid was exhibited at one of the autumn meetings of the Royal Entomological Society later that year (1905) [Exhibition Report], Transactions of the Royal Entomological Society xlvi–vii). Curiously, *Psairoptera albitarsis* is not recorded as being exhibited. Yerbury and Lamb probably passed on some of their specimens to Collin, as their presence in the Verrall–Collin collection shows. Based on this material, Collin (1910) introduced this species as new to Britain five years later. Apparently Collin often 'sat' on new findings while he accumulated data (Smith, 1962).

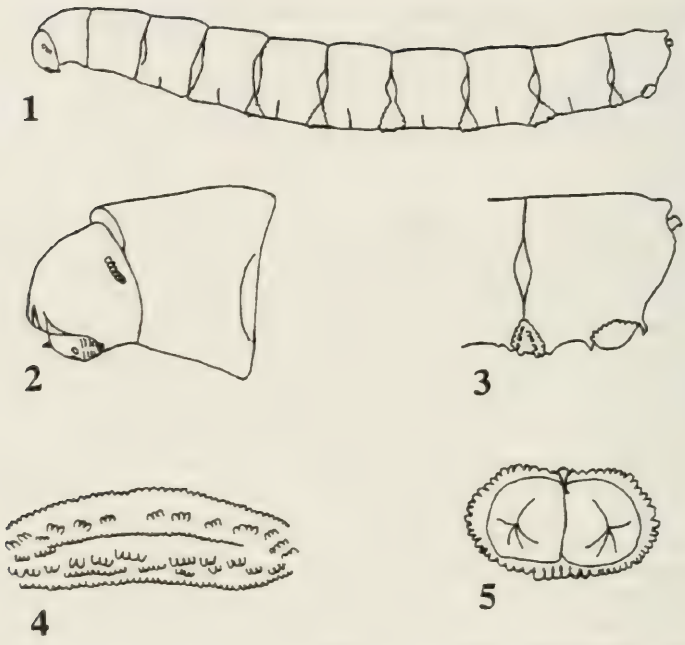
A second *Homalocephala* species, *H. bipunctata* (Loew) (= *H. albitarsis* Zetterstedt (Andersson, 1991)) was added to the British list by Cogan & Dear (1974). This was based on a specimen collected by H. Graber on 16 October 1952 in sappy wood from a stump of *Pseudotsuga menziesii* (Mirbel) Franco at Penicuik, Midlothian, and reared by E. B. Basden, the adult emerging on 1 July 1953. Basden sent the specimen to Collin who never published this second species as new to Britain. This again is curious because he already had a specimen, from Nethy Bridge on 9 July 1936 which he had probably collected himself. This second specimen is not mentioned by Cogan & Dear (1974).

During the course of work on saproxylic Diptera in Scotland we re-encountered both *Homalocephala* species and in this paper give details of their biology and describe their early stages. *Homalocephala biumbrata* is an RDB 1 species, considered to be endangered and close to extinction (Shirt, 1987; Falk, 1991). *Homalocephala albitarsis* is considered an RDB K species, thought to be threatened but further data required to clarify its status (Falk, 1991).

DESCRIPTION OF THE THIRD STAGE LARVA AND PUPARIUM *HOMALOCEPHALA BIUMBRATA* (WAHLBERG) (= *ALBITARSIS* AUCTT. NEC ZETTERSTEDT)

Larva subcylindrical in cross-section, between 7 and 8 mm long with an inclined end segment bearing a pair of fleshy protuberances above pale brown breathing tubes (Figs 1 & 3), these tubes without projections. Mouth-hooks red-brown and blunt-tipped. Puparium subcylindrical except for anterior end which is flattened dorsoventrally; end segment terminating in a smooth plate surrounded by ridges narrower than the diameter of the spiracular plate; anterior and posterior ends with inter-segmental ridges obscuring the segmental boundaries (Fig. 6).

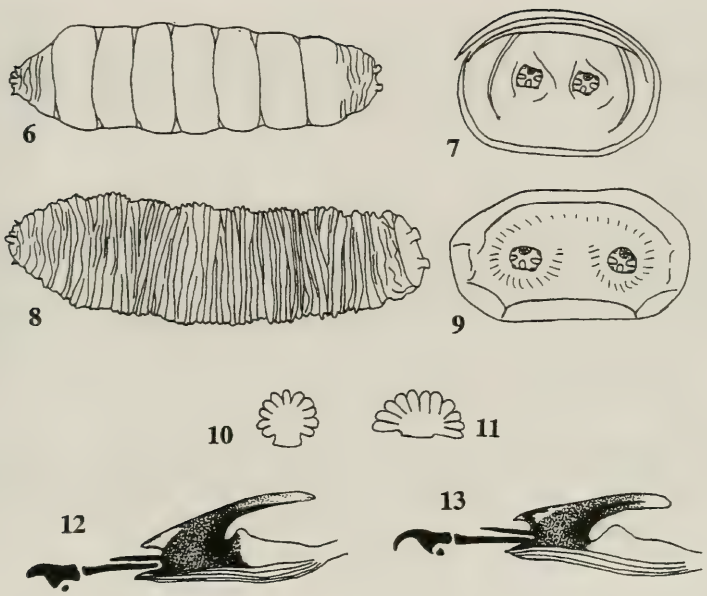
This paper is number II in the series "Saproxylic Diptera in Scotland".



Figs 1–5. *Homalocephala biumbrata*, third stage larva. 1, whole larva, lateral view anterior end to the left; 2, lateral view of the head, prothorax and mesothorax; 3, lateral view of the end segments; 4, locomotory organ from the 4th abdominal segment, ventral surface; 5, anal lobes from the ventral surface of the end segment.

Diagnosis

Larva: length between 7 and 8 mm; width 0.8 mm; subcylindrical in cross-section, tapering anteriorly; end segment inclined dorsoventrally (Figs 1 & 3); integument smooth and shining with segment boundaries clearly delineated. Head: oral lobes (sited between the antennomaxillary organs and the mouth) large and coated in transverse ridges (Fig. 2). Cephalopharyngeal skeleton (Fig. 12): pharyngeal sclerite lightly pigmented except for hyaline areas on cornua; dorsal bridge, dorsal apodeme and ventral pharyngeal ridges present; pharyngeal and intermediate sclerites not fused; anterior end of intermediate sclerite heavily pigmented; parastomal bars extending forward almost to mouth-hooks; mouth-hooks red-brown, blunt and without accessory teeth; posterior part of mouth-hooks quadrate in shape; dental sclerites present. Thorax: anterior margin of prothorax folded down to meet head bearing longitudinal impressions or grooves (Fig. 2); anterior spiracles fan-shaped with 9–11 lobes (Fig. 10). Abdomen: each of the first six abdominal segments with locomotory organs comprising 5 rows of locomotory setae, the first two rows on the posterior margin of one segment and the remaining three on the anterior margin of the next segment (Fig. 4); second and fourth rows consisting of inclined groups of 3–8 setae. End segment: with a pair of fleshy protuberances above the breathing tubes (Figs 1 & 3); anus with two lobes indented at tip and anus surrounded by round-tipped, spatulate, locomotory setae (Fig. 5); anteriomedial row of 4–6 setae larger



Figs 6–13. *Homalocephala* puparia. 6, *Homalocephala biumbrata*, dorsal view; 7, end segment, apical view; 8, *Homalocephala albitarsis*, dorsal view; 9, end segment, apical view; 10, *H. biumbrata*, anterior spiracle; 11, *H. abitarsis*, anterior spiracle; 12, *H. biumbrata*, head skeleton, lateral view; 13, *H. albitarsis*, head skeleton, lateral view.

than others and, posteriorly, a single tapering projection about twice as long as locomotory setae (Fig. 5). Posterior breathing tubes (Fig. 7): each mounted on a short, light brown, sclerotized papilla; each papilla with 3 spiracular openings and 4 groups of interspiracular setae (often missing) on slight but darkened projections; circular scar on the anterior margin of the spiracular plate. Puparium: subcylindrical but anterior end flattened dorsoventrally; anterior and posterior ends with intersegmental ridges obscuring the segmental boundaries (Fig. 6); end segment terminating in a smooth plate surrounded by ridges which are narrower than the diameter of a spiracular plate; in the centre of the smooth plate are the posterior breathing tubes, separated by about 0.2 mm (Fig. 7).

Material examined

Four larvae collected by GER from Ord Ban nr Aviemore 25.v.1990; one puparium collected by GER from Speybridge, Grantown, 14.vi.1989 female emerged 23–28.vi.1989; 19 puparia (10 females and 9 males) collected by GER from Dulicht Wood, Grantown 22.vii.1990, adults emerged during June 1991. All this material collected in wet, decaying sap under bark of fallen *Populus tremula* L. trees and branches.

Distribution

Andersson (1991) records this species from Great Britain, Sweden, Finland and north-western USSR. In Britain it is only known from northern Scotland: in Sutherland, Wester Ross, Easter Ross, Nairn and Inverness-shire (MacGowan, 1993).

Biology

Puparia were apparently found by Wahlberg in 1839 among fallen leaves (Andersson, 1991). We found larvae and puparia only under bark of fallen *Populus tremula* L. The larva apparently feeds on the breakdown products of the decaying cambial layers caused by micro-organisms. Under the bark of fallen trees and branches a layer of decaying material tends to build up over a period of about 3 years. After this time the bark cracks, the sap dries out and becomes unsuitable as a breeding site. Thus a critical factor in the survival of this species is continuity of fresh fallen wood.

Adult *H. biumbrata* are found in June and July. They occur on the bark of fallen *P. tremula*, where they court, mate and oviposit. Occasionally, we encountered aggregations of up to 100+ puparia under *P. tremula* bark surrounding cracks and crevices. Possibly larvae about to pupate search out cracks under the bark where the emerging adult can readily escape the breeding site.

HOMALOCEPHALA ALBITARSIS ZETTERSTEDT (= BIPUNCTATA LOEW)

Larva subcylindrical in cross-section, between 7 and 8 mm long with an inclined end segment bearing a pair of slight fleshy protuberances above pale brown breathing tubes (Figs 1 & 3), these tubes without projections. Mouth-hooks red-brown and sharply pointed (Fig. 13). Puparium subcylindrical except for anterior and posterior ends which are dorsoventrally flattened; intersegmental ridges obscure the segmental boundaries so that the whole puparium appears wrinkled (Fig. 8); end segment terminating in a smooth plate.

Diagnosis

Larva: length between 7 and 8 mm; width 0.8 mm; cyclindrical in cross-section, tapering anteriorly; end segment inclined dorsoventrally (Figs 1 & 3); integument smooth and shining with segment boundaries clearly delineated. Head: oral lobes (sited between the antennomaxillary organs and the mouth) large and coated in transverse ridges (Fig. 2). Cephalopharyngeal skeleton (Fig. 13): pharyngeal sclerite lightly pigmented except for hyaline areas on cornua; dorsal bridge, dorsal apodeme and ventral pharyngeal ridges present; pharyngeal and intermediate sclerites not fused; anterior end of intermediate sclerite heavily pigmented; parastomal bars extending forward almost to mouth-hooks; mouth-hooks red-brown, sharply pointed and without accessory teeth; posterior part of mouth-hooks quadrate in shape; dental sclerites present. Thorax: anterior margin of prothorax folded down to meet head bearing longitudinal impressions or grooves (Fig. 2); anterior spiracles fan-shaped with 9–11 lobes (Fig. 11). Abdomen: each of the first six abdominal segments with locomotory organs comprising 5 rows of locomotory setae, the first two rows on the posterior margin of one segment and the remaining three on the anterior margin of the next segment (Fig. 4); second and fourth rows consisting of

inclined groups of 3–8 setae. End segment: with a pair of fleshy protuberances above the breathing tubes; anus with two lobes indented at tip and anus surrounded by round-tipped, spatulate, locomotory setae (Fig. 5); anteriomedial row of 4–6 setae larger than others and, posteriorly, a single tapering projection about twice as long as locomotory setae (Fig. 5). Posterior breathing tubes (Fig. 9): each mounted on a short, light brown, sclerotized papilla; each papilla with 3 spiracular openings and 4 groups of interspiracular setae (often missing) on slight but darkened projections; circular scar on the anterior margin of the spiracular plate. Puparium: subcylindrical but anterior end flattened dorsoventrally with anterior and posterior ends with intersegmental ridges obscuring the segmental boundaries (Fig. 8); end segment terminating in a smooth plate surrounded by a ridge as wide as or wider than the diameter of the spiracular plate and in the centre of which are the posterior breathing tubes, separated by about 0.4 mm (Fig. 9).

Material examined

Three puparia from Penicuik, Midlothian: one collected by H. Graber emerged 1.vii.1953, now in the Verrall–Collin collection, Oxford University Museum; two collected as larvae 27.iv.1996 by DMR, male emerged 21.vi.1996, female emerged 11.vii.1996 and one larva, collected 29.iii.1997.

Distribution

Andersson (1991) records this species from Great Britain, Germany, Norway, Poland, Sweden, Finland, north-western USSR and North America. In Britain it is known from Duncombe Park, nr Helmsley, Yorkshire, where a female was collected on 10.vi.1980 by P. Skidmore and from Nethy Bridge, Inverness-shire where a female was collected on 9.vii.1936, probably by J. E. Collin and from Penicuik Estate, Midlothian. Thus in Britain our data suggests that this species is similarly northern in distribution but more widespread than *H. biumbrata*. It is, however, known from fewer sites and is possibly under-recorded.

Biology

Puparia were apparently found by Wahlberg in 1839 under the bark of rotting *Pinus* in Norway and Sweden (Allen & Foote, 1967; Andersson, 1991). H. Graber found a larva in a stump of *P. menziesii*. However, we found larvae under bark of a *Fagus* stump. The female collected by P. Skidmore from Yorkshire is very teneral and was on a dead *Fagus* suggesting that it shared the same breeding site as our specimens. As in *H. biumbrata*, the larva apparently feeds on the breakdown products of the decaying cambial layers caused by micro-organisms.

Discussion

The biology of Ulidiidae (including Otitidae) is poorly known and summarized by Allen & Foote (1967) and Ferrar (1987). A range of larval feeding modes occur in the family from saprophagy to phytophagy and a number of species in several genera have been reared from under bark. In comparison with larvae of other families found under bark, those of the two *Homalocephala* species examined here are most similar to larvae of *Chymomyza* and *Stegana* (Drosophilidae) and *Palloptera* (Pallopteridae) Czerny. However *Homalocephala* larvae can be separated from these groups by their

red-brown mouth-hooks. Mouth-hooks are black in drosophilid and pallopterid larvae. In relation to other ulidiids, comparisons with figures in Ferrar (1987) show that larvae of *Homalocephala* most closely resemble those of *Eumetopiella* Hendel in general shape, form and in the structure of the larval head skeleton and posterior breathing tubes. However *Eumetopiella* is a new world genus and phytophagous on grasses (see Ferrar, 1987). *Homalocephala* larvae seem to be separated from other ulidiid larvae, including *Eumetopiella*, by the following combination of characters: mouth-hooks lacking accessory teeth; head skeleton with intermediate sclerite long and thin, without a broad mid-section, and posterior breathing tubes with spiracular openings about as long as broad.

The larva of *H. albitarsis* is easily separated from that of *H. biumbrata* in having sharply pointed mouth-hooks compared with the blunt ones of *H. biumbrata* (Figs 12 and 13). The puparia can also be separated by this character and also by the heavily wrinkled puparium and posterior breathing tubes being more widely separated in *H. albitarsis* compared with smooth puparium and posterior breathing tubes being closer in *H. biumbrata* (Figs 6 and 8, 7 and 9, respectively).

Acknowledgements

We are grateful to Dr John Ismay for help in tracking down *Homalocephala* records from the Acalypterate review and to him, and Dr George McGavin, for arranging access to the Verrall–Collin collection and to Sheila Brecknell for access to the Yerbury diaries, at the University Museum Oxford. We are also grateful to Dr Roy Danielsson of the Zoology Institute, Lund, for a loan of Swedish *Homalocephala* and to Martin Limbert for loaning us Peter Skidmore's *Homalocephala* specimen from Yorkshire. We thank the British Ecological Society, Scottish Natural Heritage and the Worldwide Fund for Nature (UK) for financial assistance towards the cost of fieldwork. The work reported here is part of a wider project on saproxylic Diptera in Scotland carried out by the Malloch Society. We gratefully acknowledge the contribution made by members of the Society to the work reported here.

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ANNUAL EXHIBITION 1996

1996 ANNUAL EXHIBITION
Imperial College, London SW7—2 November 1996

The following account of exhibits has been compiled by A.M. Jones (British butterflies), S. P. Clancy (British Macrolepidoptera), D. J. L. Agassiz (British Microlepidoptera), B. Goater (Foreign Lepidoptera), P. J. Chandler (Diptera), P. J. Hodge (Coleoptera), P. Kirby (Hemiptera), A. J. Halstead (Hymenoptera and other orders), R. Dyke (illustrations). The photographs for the two colour plates were taken by D.E. Wilson and the cost of printing these plates was met by a grant from the Hammond Memorial Fund.

British butterflies

Bailey, K. E. J.—Further results of breeding *Eurodryas aurinia* Rott. ab. *atratus* Bailey (Plate I, Fig. 11), an aberration previously shown at the 1994 annual exhibition. These were extracted recessives from the F_2 generation; the number of *atratus* were down on the expected recessive ratio and specimens proved difficult to pair, indicating a possible genetic weakness. Among the specimens was a female heterozygous to *atratus* with patches of *atratus* colour on the left hindwing underside. The stock is being maintained and now includes hybrid pairings with the Spanish subspecies *beckeri* H.-S.

Among specimens produced by temperature shock to the pupae were two *Nymphalis polychloros* L. with prominent blue marginal lunules on the forewings, but a suppression of the blue on the hindwings—a reverse of the usual condition, both from heat shock. Other notable specimens included a highly melanic *Aglais urticae* L. approaching ab. *osborni* Donckier de Donceel, from heat shock; *Ladoga camilla* L. ab. *nigrina* Weymer with paler ground colour than usual and an extreme underside ab. *nigrizina* Frohawk of *Argynnis paphia* L., from cold shock. Also examples of *Inachis io* L. ab. *fischeri* Standfuss produced by holding 8–12 hour-pupae at 4 °C for 21 days.

Several notable wild-caught aberrations included two male *Boloria selene* L. taken within 5 minutes of each other, the first with extreme melanic forewings (Plate I, Fig. 9), the second ab. *vanescens* Cab., Devon, vi.1996. A female *Argynnis paphia* L. ab. *confluens* Spuler and *Pararge aegeria* L. approaching ab. *intermediana* Lempke, both Devon, viii.1996. *Aglais urticae* L. ab. *semiichnusoides* Pronin resembling the Corsican *Aglais urticae ichnusa* Hübner with no black shading between the two outer black costal spots on the forewings and hindwing postdiscal position S7, Devon, viii.1995.

Barrington, R. D. G.—An extreme, possibly unique aberration of *Cynthia cardui* L. (Plate I, Fig. 1) with forewing black markings greatly extended and joining

PLATE I ANNUAL EXHIBITION 1996

1: *Cynthia cardui*, Dorset, viii.1996, R. D. G. Barrington. 2: *Cynthia cardui* ab. *rogeri*, temperature shock, vi.1996, P. Tebbutt. 3: *Plebicula escheri*, Meysomme, Dordoyne, France, 3.vi.1990, M. Crow 4: *Polyommatus icarus*, ab. *striata* + obsoleta, bred, vii.1996, R. Revels. 5: *Celastrina argiolus*, ab *radiata*, Eel Pie Island, Middx, 7.viii.1996, A. M. Jones. 6: *Lysandra bellargus*, gynandromorph, vii.1996, A. M. Jones. 7: *Aphantopus hyperantus*, halved gynandromorph, bred Wilts., 6.vii.1996, M. Callow. 8: *Aphantopus hyperantus*, ab *pallens*, York, 14.vii.1996, M. Parker. 9: *Clossiana selene*, male Devon, vi.1996, K. E. J. Bailey. 10: *Plebejus argus*, mixed gynandromorph, R. Barrington. 11: *Eurodryas aurinea* ab. *atratus*, Bred. K. E. J. Bailey. 12: *Pipizella maculipennis*, Warmwell Heath, Dorset, 16.vii.1996, A. Wass. 13: *Leptarthrus vitripennis*, Riddlesdown, Surrey, 1.vii.1996, R. D. Hawkins. 14. *Lysandra bellargus*, gynandromorph, Dorset. 15.vi.1996. A. S. Harmer. 15: *Cynthia cardui*, ab. *rogeri*, Dorset. 27.vii.1996. B. Fensome

the white costal blotch streaked inwards and about three times the normal size, upperside hindwings a little more heavily marked than the type, underside hindwings with typical marginal areas and the centres largely obsolete, captured Dorset, viii.1996.

Several *Maniola jurtina* L: a male with homoeosis having hindwing underside markings reproduced on the left forewing, a male ab. *parvipuncta* Leeds, a female with a dark underside and an ab. *crassipuncta* Leeds; or, also a pair of ab. *postmultifidus* Lipscombe. *Coenonympha tullia* Müller subspecies *polydama* Haworth, a heavily marked ab. *addenda* Lempke from S. Yorks. *Lysandra coridon* Poda, fresh examples of ab. *postcaeca* B. & L., ab. *anticaeca* B. & L., and full ab. *caeca* Courv. A very fine mixed gynandromorph of *Plebejus argus* L. (Plate I, Fig. 10), left side male, right side female with a streak of male across the hindwing, caught vii.1996.

A bred F_1 example of *Pyronia tithonus* L. ab. *excessa* Leeds from a similar parent. *Lycaena phlaeas* L., a pair of ab. *discojuncta* Tutt, bred with 9 other examples from a brood of 70 adults from a type female.

CALLOW, M.—A possibly unique *Aphantopus hyperantus* L. bilateral gynandromorph (Plate I, Fig. 7), the underside with a type male left side and ab. *arete* Müller female right side. This emerged in a brood consisting of 16 *arete* and 26 type, the F_3 generation from an *arete* female. The stock is being maintained for further study.

CHAMBERS, D. A.—*Aglais urticae* L. approaching ab. *semiichnusoides* Pronin, photographed at Queensdown Warren, Kent, on 25.viii.1996 as it sat at the top of an impenetrable bramble thicket. The aberration mainly affected the forewings with only half the hindwings showing dark suffusion.

CHURCH, S. H. A selection of Scottish butterflies including a very small male *Polyommatus icarus* Rott. with a greyish ground colour, possibly caused by a scale defect.

FENSOME, B.—An extreme *Cynthia cardui* L. ab. *rogeri* Meilhan (Plate I, Fig. 15) captured at Burton Brackstock, Dorset, 27.vii.1996. *Aricia agestis* D. & S., two ab. *glomerata* Tutt, from Northants. A good female *Polyommatus icarus* Rott. ab. *radiata* Courv. captured in Hunts., and a bred pair. A pale *Thymelicus sylvestris* Poda from Paxton, Hunts., and a male *Pyronia tithonus* ab. *lugens* Ober. from Bedfordshire.

HARLEY, B. H. Butterflies from the Inner Hebrides including *Coenonympha tullia* Müller subsp. *scotica* Staudinger and *Maniola jurtina* L. subsp. *splendida* Buchanan White.

HARMER, A. S.—An example of the very rare *Thymelicus acteon* Rott. ab. *alba* Bolton, taken Dorset, 5.viii.1996. A gynandromorph of *Lysandra bellargus* Rott. (Plate I, Fig. 14) from Corfe, Dorset, 15.vi.1996, mainly male but with the left hindwing female and half the normal size.

JONES, A. M.—A pair of bred *Pararge aegeria* L. showing homoeosis on the underside, a female from the F_2 generation with large pale areas on the left hindwing and a dark streak on the forewing, 22.xii.1995, a male from the F_3 generation with pale streaks on the right forewing, iv.1996. Two male *Maniola jurtina* L., an ab. *antiparvipuncta* Leeds and an ab. *anommata* Verity, both taken from the same locality on 28.vii.1996 and possibly genetically related. *Celastrina argiolus* L., a male approaching ab. *subtus-radiata* Ober. (Plate I, Fig. 5), captured at Eel Pie Island, Middx., on 7.viii.1996 during a lunch break and without the aid of a net. A gynandromorph of *Lysandra bellargus* Rott. (Plate I, Fig. 6) appearing halved with the upperside left wings male and the right wings female but with a streak of male colouration on the underside of the female forewing and a male-looking abdomen, captured viii.1996.

KEMP, R. J.—A strong *Aglais urticae* L. ab. *semiichnusoides* Pronin, captured at Ford Village, near Aylesbury, Bucks., on 22.viii.1996.

MIDDLETON, H. G. M.—A *Cynthia cardui* L. ab. *ocellata* Rebel, captured at Brockenhurst, Hants., as it fed from buddleia, 25.viii.1996.

MCCORMICK, R.—A dwarfed example of *Cynthia cardui* L., captured 7.vi.1996.

PARKER, M.—*Aphantopus hyperantus* L. ab. *pallens* Schultz (Plate I, Fig. 8), a male of this very rare aberration taken near York, Yorkshire, 14.vii.1996.

PAYNE, J. H.—The results of pupal shock experiments on nymphalid butterflies included *Polygonia c-album* L. ab. *obscura* Closs. and ab. *extincta* Rebel lacking the 'comma', and *Inachis io* L. ab. *belisaria* Ober. A wild-caught *Aphantopus hyperantus* L. and ab. *arete* Müller from Wiltshire.

PICKLES, A. J .& C. T.—An *Argynnis aglaja* L. ab. *suffusa* Tutt female bred from a larva taken on the Burren, Co. Clare, and *Erynnis tages* L. subsp. *baynesi* Huggins approaching ab. *alcoides* Tutt, also from Co. Clare.

PORTER, J.—A selection of *Anthocharis cardamines* L. subsp. *hibernica* Williams, including ab. *crassipuncta* Mezger, bred from eggs found at the Burren, Co.Clare, vi.1995. *Lysandra bellargus* Rott., ab. *marginata* Tutt and ab. *semiceronus* Tutt, both from Wilts., 13.vi.1996. *Polygonia c-album* L. ab.*i-album* Tutt, one of two reared from a female, Surrey, 11.ix.1996.

REVELS, R. C.—A short series of *Aricia agestis* D. & S. ab. *glomerata* Tutt taken in Northants during 1996. The population studied showed a high frequency of *glomerata* with approximately 1 in 30 specimens affected. *Celastrina argiolus* L., a dark-suffused female from the summer brood. A dark *Coenonympha pamphilus* from a Bedfordshire 'set aside' field, ix.1996.

Selected specimens of *Polyommatus icarus* Rott. from the F_4 generation of a female ab. *discoelongata* B. & L. taken viii.1994. These included a good ab. *radiata* Courv., an ab. *obsoleta* Gillmer., and an example of the rare ab. *striata* Tutt. with partially obsolete hindwings (Plate I, Fig. 4). The F_5 generation from *radiata* parents only produced a few worthwhile aberrations and about half the eggs were infertile.

Further breeding of *Pyronia tithonus* L. ab. *lugens* Ober., consisting of two very dark suffused pairs. The 1996 brood was very weak and only 10 specimens were reared of which 5 were *lugens*. A pairing between a *lugens* female and a wild type male occurred but no eggs were laid.

SALMON, M.A. –A selection of historical specimens including a male *Papilio machaon* L. subsp. *britannicus* Seitz taken by G. Brooks at Wicken Fen, Cambs., 5.viii.1911. The normal deep yellow to all areas except the discoidal cells is reduced to pale yellow-white caused by a scale defect. An *Argynnis lathonia* L. captured by Captain Chawner at Caistor, Norwich, in 1834. A male example of the rare ab. *aureus* Frohawk of *Gonepteryx rhamni* L., from Assington, Suff., in 1897. This has an orange patch on each forewing and was exhibited with a male *G. cleopatra* L. for comparison. Three examples of *Erebia ligea* L. from the Isle of Mull, Scotland, all captured between 1860 and 1862 and from the G. H. Simpson-Hayward collection. These were the subject of a recent article (see Salmon, M. A., 1995, *Ent. Rec. J.Var.* **107**: 117–126).

SHARPE, P. A female *Colias croceus* Geoffroy with a pale yellow ground colour, Lizard, Corn., 14.x.1996.

STOKES, D. Three bred *Cynthia cardui* L., including an ab. *rogeri* Meilhan caused by heat shock experiments. Two strong female and a male *Argynnis paphia* L. ab. *confluens* Spuler from cold shock experiments.

TEBBUTT, P. The results of heat shock experiments on freshly formed pupae including a series of *Polygonia c-album* L. ab. *obscura* Closs with almost black

hindwings and a single ab. *suffusa* Frohawk. *Aglais urticae* L., named melanics including ab. *nigra* Tutt, ab. *semiichnusoides* Pronin and ab. *nigricaria* Lambillion. *Nymphalis polychloross* L., an almost entirely black ab. *extrema* Gonner, and an ab. *testudo* Esper.; *Vanessa atalanta* L., an unnamed aberration with the forewing white costal blotch absent. Very interesting, in the light of the huge 1996 immigration, was a series of *Cynthia cardui* L. showing a range of named upperside aberrations and their corresponding undersides; these included ab. *emielymi* Verity, ab. *priameis* Schulz, ab. *inornata* Bramson, ab. *browni* Meilhan, ab. *elymi* Rambur and an ab. *rogeri* Meilhan (Plate I, Fig. 2).

Wild-caught specimens included a *Maniola jurtina* L. ab. *grisea-aurea* Ober., a series of Scottish *Aphantopus hyperantus* L. showing spotting variation and a greyer ground colour when compared to English ab. *arete* Müller., *Aricia agestis* Denis & Schiff. ab. *glomerata* Tutt, ab. *discreta* Tutt, and ab. *parvipuncta* Tutt. A male *Boloria dia* L. captured in Wiltshire was one of two seen, and may have been the result of a deliberate release, as the species is not a noted migrant.

British macrolepidoptera

Agassiz, D. J. L. From Gravesend, Kent, the fourth British record of *Dysgonia algira* (L.), 31.vii.96 (see also D.C. Brown exhibit). Also from the same locality, *Simyra albovenosa* (Goeze) and an aberrant *Agrotis exclamationis* (L.).

Baker, B. R. From N. Devon on 26.vii.96, *Perizoma taeniata* (Steph.), *Hydrelia sylvata* (D. & S.), and a series of *Alcis jubata* (Thunb.) exhibiting a tendency for distinct forewing barring. Also a bred series of *Orthonama obstipata* (F.) from Exmoor, Somerset.

Baker, P. J. A striking aberration of *Gymnoscelis rufifasciata* (Haw.), taken at West Hill, E. Devon, on 20.x.96 (Plate II, Fig. 8).

Bland, K. P. Two examples of *Lithophane leautieri hesperica* (Bours.) taken with others at Tarvin, Ches., between 20.x.96 & 28.x.96.

Brotheridge, D. J.—The following migrant species from Wroughton, near Swindon, Wilts., during 1996: *Orthonama obstipata* (F.), *Spodoptera exigua* (Hübn.), *Heliothis armigera* (Hübn.), *Heliothis peltigera* (D. & S.), and *Trichoplusia ni* (Hübn.). Also exhibited from the same locality, varieties of *Scopula biselata* (Hufn.), *Camptogramma bilineata* (L.), *Phragmatobia fuliginosa* (L.), *Agrotis exclamationis* (L.), and *Autographa gamma* (L.).

Brown, D. C. G.—Several scarce migrant species including *Hyles gallii* (Rott.), Walberswick, Suff., 23.vii.96; *Hyles livornica* (Esp.), Lizard, Corn., 19.viii.96; *Hippotion celerio* (L.), Studland, Dorset, 26.x.95; *Ochropleura leucogaster* (Freyer), Lizard, Corn., 31.x.95 (fifth British record); *Dysgonia algira* (L.), Portland, Dorset, 14.viii.96 (fifth British record); and *Trichoplusia ni* (Hübn.), four examples from Pagham, W. Sussex, and Lizard, Corn., taken viii.1996.

An example of *Lomaspilis marginata* (L.) with restricted dark scaling (Plate II, Fig. 18), and *Crocallis elinguaria* (L.) showing a narrow, tapering central band.

Brown, K.—Exhibited on behalf of the Somerset Moth Group, a number of species taken in that county by various recorders. These included *Mythimna l-album* (L.), *Mythimna obsoleta* (Hübn), *Ptilodontella cucullina* (D. & S.), *Arenostola phragmitidis* (Hübn.), *Chilodes maritimus* (Tausch.) ab. *bipunctata* (Haw.), *Heliothis armigera* (Hübn.), and *Heliothis peltigera* (D. & S.).

Also exhibited from Somerset were a bred series of *Trichoplusia ni* (Hübn.) and several *Lasiocampa quercus quercus* (L.) exhibiting some of the characteristics of *L. quercus callunae* (Palm.) while having a one-year life cycle.

CHURCH, S. H.—A selection of macrolepidoptera varieties from Scotland.

CLANCY, S. P.—Dispersive species recorded from the Dungeness area of Kent during 1996. Most noteworthy of these were as follows: *Chloantha hyperici* (D. & S.), 20.viii.96 (first British record—Plate II, Fig. 1); *Actinotia polyodon* (Cl.), 18.viii.96; *Cryphia algae* (F.), four specimens; *Cryphia raptricula* (D. & S.), 9.viii.96; and *Catocala sponsa* (L.), 19.viii.96.

Also exhibited, from Rye Harbour, E. Sussex, were *Enargia paleacea* (Esp.), 19.viii.96; *Acronicta strigosa* (D. & S.), 22.vii.96 (first British record since the species died out as a resident in 1933); and *Macdunnoughia confusa* (Steph.), 19.viii.96.

Four of the five British specimens of *Pechipogo plumigeralis* (Hübn.) were also shown: a female taken at Greatstone, Kent, on 12.x.95 (the first record), and three males taken in 1996, at New Romney, Kent, on 8.viii.96, and Rye Harbour, E. Sussex, on 22.vii.96 and 11.viii.96.

CLARKE, J.—A selection of Lepidoptera bred or taken during 1996. Resident species included bred series of *Noctua orbona* (Hufn.) from the Breck, Suff., *Anarta cordigera* (Thunb.) from Newtonmore, Inv., and *Orthosia opima* (Hübn.) from Essex. Immigrants included *Spodoptera exigua* (Hübn.) from Surrey & Cornwall.

In addition, a selection of moths from the Burren, Co. Clare, were shown including *Odontognophos dumetata hibernica* (Forder), *Philereme vetulata* (D. & S.), and *Philereme transversata* (Hufn.), all bred from larvae on *Rhamnus catharticus*; *Semiothisa clathrata hugginsi* (Baynes), shown with *S. clathrata clathrata* (L.) for comparison; and *Zygaena purpuralis sabulosa* (Trem.) from four different localities.

COLENUTT, S.—A specimen of *Eurois occulta* (L.) taken at Whitwell, Isle of Wight, 20.viii.96.

COLLINS, G. A.—An exhibit centred around *The Larger Moths of Surrey*, a book due for publication in 1997 and the result of extensive fieldwork over the last ten years. Distribution maps, specimens and species accounts were displayed for several species whose known status in the county has changed during this period. These included *Sesia apiformis* (Cl.), found to be widespread in the northern part of the county due to increased fieldwork; *Chloroclysta siterata* (Hufn.), showing a recent extension of its range throughout Surrey; *Eupithecia millefoliata* Rössl., now known to breed in the county; *Eupithecia egenaria* H.-S., new to Surrey; and *Stilbia anomala* (Haw.), a resident species, overlooked until recently.

COOK, R. R.—A number of interesting resident species recorded from Britain and Ireland. These included *Agrochola haematidea* (Dup.) from a new locality in the New Forest, Hants.; *Bembecia muscaeformis* (Esp.) from Wembury, Devon; *Eupithecia ultimaria* (Boisd.) from S. E. Hants.; *Hydrelia sylvata* (D. & S.) and *Photedes fluxa* (Hübn.) from Powerstock Common, Dorset; and, from the Burren, Co. Clare, *Zygaena purpuralis sabulosa* (Trem.), *Odontognophos dumetata hibernica* (Forder), and *Photedes captiuncula tincta* (Kane).

CRAMP, P. J. From the Isle of Wight: examples of *Mesoleuca albicillata* (L.) and *Atolmis rubricollis* (L.) from Parkhurst, and *Trichoplusia ni* (Hübn.) from Godshill on 19.viii.96.

DOBSON, A. H. From the BENHS Field Meeting at Sandwich Bay, Kent, on 13.vii.96, a number of the specialities from this site including *Eilema pygmaeola pygmaeola* (Doubl.) and *Idaea ochrata cantiata* (Prout); and an interesting aberration of *Philudoria potatoria* (L.), (Plate II, Fig. 6).

ELLIOTT, B. Species noted on a visit to Mainland Shetland during July 1996. These included examples of *Hepialus humuli thulensis* (Newm.), *Hepialus fusconebulosa f. shetlandicus* (Viette), *Hadena confusa* (Hufn.) ab. *obliterae* (Robs.), and

Apamea zeta marmorata (Zett.). Most notably, *Thera cognata* (Thunb.) was recorded locally as a larvae, a species new to Shetland (Plate II, Fig. 11).

EMMET, A. M.—Migrant species taken at Saffron Walden, Essex: *Eurois occulta* (L.), 1.ix.96 & 3.ix.96; *Spodoptera exigua* (Hübn.), 17.viii.96; *Heliothis peltigera* (D. & S.), 16.vi.96, 17.vi.96, & 14.viii.96, (a fourth was recorded on 20.viii.96 but not retained); *Trichoplusia ni* (Hübn.), 17.viii.96. In addition an example of *Cucullia absinthii* (L.) was exhibited. This was also taken in Saffron Walden on 21.viii.96, and represents the first record of this species from north-west Essex.

EZARD, A. S.—Some selected species taken in Yorkshire during 1996. These included *Hyloicus pinastri* (L.), Allerthorpe, 14.viii.96; *Meganola albula* (D. & S.), Bridlington, 9.viii.96, and Rudston, 12.viii.96; *Heliothis armigera* (Hübn.), Rudston, 7.ix.96; *Heliothis peltigera* (D. & S.), Rudston, 4.ix.96; and *Hydraecia petasitis* Doubl., Rudston, 3.ix.96.

HALL, N. M.—From Reading, Berks., examples of *Spodoptera exigua* (Hübn.) and *Heliothis peltigera* (D. & S.), a melanic form of *Agrotis clavis* (Hufn.), and an aberration of *Charanycha trigrammica* (Hufn.).

Also a bred series of *Euplagia quadripunctaria* (Poda) from Portland, Dorset, and *Apamea oblonga* (Haw.) from Hastings Country Park, E. Sussex, 19.viii.96.

HARLEY, B. H.—An extensive exhibit of Lepidoptera from Islay, Inner Hebrides, with a few specimens from Jura and Colonsay. Most notable among these were examples of *Phibalapteryx virgata* (Hufn.), *Serraca punctinalis* (Scop.), and *Tyria jacobaeae* (L.), all from Islay.

HARMAN, T. W.—A selection of species taken at Beltinge, Herne Bay, Kent, by B. Matlock and exhibited on his behalf. These included two *Hyles livornica* (Esp.), three *Eurois occulta* (L.), and examples of *Euxoa cursoria* (Hufn.), *Rhyacia simulans* (Hufn.), *Conistra erythrocephala* (D. & S.), *Xanthia gilvago* (D. & S.), *Enargia paleacea* (Esp.), *Deltote bankiana* (Fab.), and *Trichoplusia ni* (Hübn.).

Also shown was a series of *Eurois occulta* (L.) bred from a female taken at Sandwich Bay, Kent on 26.viii.95.

HART, C.—Small larvae of *Orthonama obstipata* (Fab.), bred from a female taken at Buckland, Surrey, 12.x.96.

HENWOOD, B.—A selection of moths taken in Devon during 1996. Most noteworthy among these was a migrant example of *Scopula rubiginata* (Hufn.) from Beer on 18.viii.96. Also included were *Orthonama obstipata* (Fab.), Abbotskerswell, 7.vi.96; *Discoloxia blomeri* (Curt.), Berry Pomeroy, 2.viii.96; *Cosmia affinis* (L.), Abbotskerswell, 5.viii.96; *Spodoptera exigua* (Hübn.), Abbotskerswell, 19.vi.96; *Heliothis armigera* (Hübn.), Abbotskerswell, 2.viii.96; and *Trichoplusia ni* (Hübn.), Abbotskerswell, 5.viii.96.

HONEY, M. R.—Exhibited on behalf of The Natural History Museum, London, some specimens from the National Collection:

Examples of the regular British migrant *Hyles livornica* (Esp.) and the closely related American species *Hyles lineata* (Fab.), now considered to be separate species. These were exhibited with an example of *H. lineata* reputedly from Bridlington, Yorks. in July 1897.

An apparently unique melanic aberration of *Noctua janthe* (Borkh.) with completely black hindwings (Plate II, Fig. 3). This was taken in Cambridge by R. Revell on 20.vii.96, and subsequently donated to the National Collection.

Short foreign series of two species recently added to the British list *Agrotis herzogi* (Rebel) and *Chloantha hyperici* (D. & S.). (See A. Spalding and S.P. Clancy exhibits).

A drawer showing species recorded in the Wildlife Garden of the Natural History Museum, London. Of interest were examples of *Macroglossum stellatarum* (L.), 4.vi.96; *Ipimorpha subtusa* (D. & S.), 10.vii.96 & 7.viii.96; and *Chloroclysta siterata* (Hufn.), 25.iv.96.

HUMPHREY, D. A.—An example of *Acontia lucida* (Hufn.) taken at M.V. light by A. G. Page at a site 3 km northeast of Ringwood, Hants. on 19.viii.96. This represents the first Hampshire record of this species and only the fifth British record this century, all in the last three years.

JENKINS, A.—A number of local species recorded in Britain during 1996. These included *Malacosoma castrensis* (L.) and *Hypena obsitalis* (Hübn.) from S. Devon; *Cossus cossus* (L.) from Cambridgeshire; and *Mythimna turca* (L.) from Somerset.

KENDRICK, R. C.—An exhibit centred around a visit to Kynance Cove, Lizard, Corn., on 18 & 19.viii.96, and including specimens of *Hyles livornica* (Esp.), *Rhodometra sacraria* (L.), *Mythimna unipuncta* (Haw.), and *Trichoplusia ni* (Hübn.), from that site.

KNILL-JONES, S. A.—An extensive exhibit of migrant and resident species taken on the Isle of Wight. All species listed are from Freshwater during 1996: *Dendrolimus pini* (L.), 12.viii.96 (first British record this century and new to Hampshire, Plate II, Fig. 4); *Agrotis crassa* (Hübn.), 12.viii.96 (new to I.O.W.); *Trigonophora flammea* (Esp.), 14.x.96; *Trachea atriplicis* (L.), 9.viii.96 (new to I.O.W.); *Heliothis viriplaca* (Hufn.), 13 & 14.viii.96; *Catocala fraxini* (L.), 9.x.96; and *Eilema caniola* (Hübn.), 11.viii.96. Aberrations included a virtually unmarked *Spilosoma luteum* (Hufn.) and two *Noctua pronuba* L. lacking the black apical mark.

KOLAJ, A.—Exhibit included from Coventry, War., *Macroglossum stellatarum* (L.), 31.viii.96, *Heliothis peltigera* (D. & S.), 16.vi.96, and *Trichoplusia ni* (Hübn.), 22.viii.96.

Also shown were three *Hyles livornica* (Esp.), of eight or nine seen at Swanage, Dorset on 7.vi.96; and a selection of specialities from Hamstreet, Kent, which included examples of *Heterogenea asella* (D. & S.) and *Peribatodes secundaria* (Esp.).

LANGMAID, J. R.—From Hampshire: *Acronicta auricoma* (D. & S.), Warsash, 9.viii.96 (taken by P. M. Potts); *Apamea oblonga* (Haw.), Portsmouth, 26.vii.96 (a dark specimen taken by I. Thirlwell); *Heliothis armigera* (Hübn.), Southsea, 31.viii.96; and *Trichoplusia ni* (Hübn.), Southsea, 14.viii.96.

LOWE, C. D.—Species recorded during an A-level investigation on the Heart and Dart, *Agrotis exclamationis* L., and others in a Breconshire (Llangorse) garden. *Agrotis exclamationis* (L.), 17/18.ix.1996, *Heliothis peltigera* (D. & S.), 19/20.vi. 1996, *Oligia versicolor* Borkh., 7.vii.1996, *Oligia strigilis* (L.), 23.vii.1996, *Anaplectoides prasina* (D.& S.), 9.vii.1996, 9.viii.1996, cream-banded form, *Orthopygia glaucinalis* L., 14.viii.1996 (new county record), *Orthonama obstipata* Fab., 18.viii.1996, *Coenotephria salicata* (Hb.), 9.ix.1996, *Agrotis puta* (Hb.), 10.ix.1996, *Peridroma saucia* (Hb.), 22.x.1996 (third county record), *Xestia c-nigrum* (L.), 16.ix.1996, *Larentia clavaria* (Haw.), 26.ix.1996 (third county record since 1926), *Gortyna flavago* (D.& S.), 9.x.1996, *Lithophane leautieri* (Boisd.), 9.x.1996 (first county record 10.x.1991), recorded 3.x-31.x 1996 (max. 7 on 6.x.)

LOWE, N. R.—Records from Breconshire (VC42) *Eupithecia pygmaeata* Hb., Cray, Brecon., 18.vi.1996, *Idaea trigeminata* Haw. Pwll y Wrach, Brecon., 7.vii.1996.

MCCORMICK, R.—An extensive exhibit of interesting species found in Devon, mainly during 1996. Most notable of these were the following: *Cossus cossus* (L.), two at Branscombe, 12.vii.96; *Cyclophora porata* (L.), several at Gulliford, Kenton, 18.viii.96–3.ix.96, and at Exeter, 7.viii.96; *Eupithecia valerianata* (Hübn.), near Widecombe, Dartmoor, 22.vii.96; *Discoloxia blomeri* (Curt.), Dartmoor, 25.vi.96,

and near Dunsford, 22.vii.96; *Venusia cambrica* (Curt.), near Lynmouth, 9.vii.96, and Dartmoor, 30.vii.96; *Furcula bicuspis* (Borkh.), Newton Abbot, 5.vi.96; *Spilosoma urticae* (Esp.), in good numbers at Exminster Marshes, 14.vii.96; *Antitype chi* (L.), one of at least six specimens taken by D. Fish at Churston during 1996; *Acronicta aceris* (L.), Chardstock, 9.viii.96 (taken by A. Jenkins a very rare moth in Devon); *Celaena haworthii* (Curt.), Chardstock, 18.viii.96 (taken by A. Jenkins).

Among the migrants exhibited were two *Lymantria dispar* (L.) from Plymouth, 10.viii.94, and Dawlish, 18.viii.96; two *Hyles livornica* (Esp.) of the thirteen seen at Prawle Point on 7.vi.96, (others were seen at Teignmouth on 21.viii.96 & 19.ix.96); and *Mythimna loreyi* (Dup.), Dawlish, 5.ix.96.

Two species from outside Devon were shown: *Idaea dilutaria* (Hübn.) from a locality near Bristol, Som., and *Thera cupressata* (Geyer), found as larvae at Swanage, Dorset.

MIDDLETON, H. G. H. & SCANES, J. T.—From Beeley Moor, Derbys., *Epirrita filigrammaria* (H.-S.), *Antitype chi* (L.), *Lithomoia solidaginis* (Hübn.), *Celaena haworthii* (Curt.), and *Syngrapha interrogationis* (L.).

From the Burren, Co. Clare, *Thera cognata* (Thunb.), *Hemaris tityus* (L.), *Hadena perplexa capsophila* (Dup.), and *Acronicta euphorbiae myricae* (Guen.).

Also examples of *Sideridis albicolon* (Hübn.), Rosslare, Wex.; *Enargia paleacea* (Esp.), Sherwood Forest, Notts.; and *Acronicta alni* (L.) *ab. steinerti* (Casp.), Chiddingfold, Surrey.

Immigrant species were *Orthonama obstipata* (Fabr.), two at Tolworth, Surrey, 1.viii.96 & 14.viii.96; *Acherontia atropos* (L.), Brockenhurst, Hants., 9.viii.96; *Heliothis peltigera* (D. & S.), Lymington, Hants., 8.vi.96 (two), Tolworth, Surrey, 10.vi.96 12.vi.96 (four), and Beeley Moor, Derbys., 20.viii.96 (twelve); and *Heliothis armigera* (Hübn.), Beeley Moor, Derbys., 20.viii.96 (two).

PARSONS, M. S.—Examples of *Hadena caesia* (D. & S.) reared from larvae collected on the Isle of Mull, 28.vi.95; *Cryphia algae* (Fabr.), Holywell, Eastbourne, E. Sussex, 13.viii.96; two *Trichoplusia ni* (Hübn.), Holywell, Eastbourne, E. Sussex, 13.viii.96 & 21.viii.96; and *Synanthedon myopaeformis* (Borkh.) reared from a larva found at Richmond Park, Surrey, 22.vi.96.

PHILLIPS, J. W. Five species were exhibited: *Semiothisa carbonaria* (Cl.), from Newtonmore, Inv.; *Aleucis distinctata* (H.-S.) from Bookham Common, Surrey; *Noctua comes* Hübn. from Findhorn, Moray., a bred series showing the full range of forms from that site; *Eurois occulta* (L.), a series reared from larvae found near Kingussie, Inv.; *Lithophane hepatica* (Cl.), a series bred from a female taken at Hamstreet, Kent.

PICKLES, A. J. & C. T.—From the Burren, Co. Clare, *Hadena perplexa capsophila* (Dup.) and *Hadena caesia mananii* (Gregs.), the latter species exhibited with some specimens from Skye for comparison.

Also several *Tetheella fluctuosa* (Hübn.), representing *f. albilinea* (Cockayne), ab. *unicolor* (Lempke), and the type.

PITTIS, S. C. A wide range of local, migrant, & aberrant moths, mostly bred or caught in 1996. Among these were bred series of *Thera cupressata* (Geyer) from Dorset, *Cosmia diffinis* (L.) from Cambs., and *Hypena rostralis* (L.) from Surrey. A number of Scottish specialities were shown; examples of *Agrius convolvuli* (L.), from Kingussie, Inv., viii.96, and *Trichoplusia ni* (Hübn.) from Woking, Surrey, 9.viii.96. Aberrations included *Craniophora ligustri* (D. & S.) ab. *nigra* (Tutt), from Tintern, Mon., 26.vi.95, and an extreme variety of *Electrophaes corylata* (Thunb.), from Loch Tummel, Perth., 2.vii.96 (Plate II, Fig. 7).

PLANT, C. W.—Immigrant species recorded during 1996 from Bishops Stortford, Herts.: *Heliothis peltigera* (D. & S.), 17.vi.96; *Lithomoia solidaginis* (Hübn.), 1.ix.96; *Cryphia algae* (Fabr.), 19.viii.96; and *Heliothis armigera* (Hübn.), 19.viii.96. The latter three species were exhibited on behalf of J. Fish & J. Reeve.

PORTER, J.—*Zeuzera pyrina* (L.)—two females & a male illustrating the size variation within this species; *Eupithecia ultimaria* Boisd. with several examples collected as larvae at Brighton, W. Sussex, 8.vii.96; and *Hypena obsitalis* (Hübn.)—a specimen bred from a larva found in Devon, 23.viii.96.

ROUSE, T.—A number of interesting species, mainly immigrants, taken in Kent during 1996. Most notable among these were the following: *Atolmis rubricollis* (L.), Densole, 4.vii.96; *Eurois occulta* (L.), one of three taken, Snargate, 4.ix.96; *Enargia paleacea* (Esp.), Dungeness, 1.ix.96; and *Deltote bankiana* (Fabr.), Dungeness, 22.vii.96.

Also included was an example of *Cryphia raptricula* (D. & S.), taken by K. Palmer at Dungeness, Kent, on 22.vii.96.

SHARPE, P.—A gynandromorph *Laothoe populi* (L.) and an example of *Autographa gamma* (L.) ab. *nigricans* (Spuler).

SIMMONS, M. J.—From Crowborough, E. Sussex, 1996, the following migrant species: *Hyles livornica* (Esp.), *Actinotia polyodon* (Cl.), *Spodoptera exigua* (Hübn.), *Heliothis armigera* (Hübn.), and *Heliothis peltigera* (D. & S.). The *A. polyodon* specimen occurred on 11.vi.96.

Also shown was a suspected immigrant example of *Eilema pygmaeola* (Doubl.) taken at Normans Bay, E. Sussex.

SIMS, I.—A number of local species comprising the following: *Cyclophora annulata* (Schulze), examples from Tugley Wood, Surrey, 2.viii.91, and Hambleden, Marlow, Bucks., 19.x.91 (ex larva); *Idaea vulpinaria atrosignaria* (Lempke), Chigwell Row, Essex, 5.vii.77 & 1.viii.77; *Plemyria rubiginata* (D. & S.), Lower Earley, Reading, Berks., 7.vii.91; *Colostygia olivata* (D. & S.), Lynton, Devon, 18.viii.93; *Cepphis advenaria* (Hübn.), Hambleden, Marlow, Bucks., 29.v.89; *Ennomos autumnaria* (Werneb.), Loughton, Essex, 6.x.72; *Photedes fluxa* (Hübn.), Bernwood Forest, Otmoor, Oxon., 31.vii.93; *Pyrrhia umbra* (Hufn.), Medmenham, Marlow, Bucks., 28.vii.96; *Diachrysia chryson* (Esp.), Thatcham, Reading, Berks., 27.vii.96.

SKINNER, B.—From Addington, Surrey: *Xanthorhoe designata* (Hufn.), a male with reduced central forewing band, 27.viii.96 (Plate II, Fig. 9); *Agrotis clavis* (Hufn.), four aberrant specimens, vii.96; and *Autographa gamma* (L.) ab. *nigricans* (Spuler), 27.viii.96.

Also shown, *Cabera exanthemata* (Scop.), a male with well-defined cross-lines from Dungeness, Kent, 19.viii.96 (Plate II, Fig. 10); *Luperina testacea* (D. & S.), extreme light and dark forms from Dorset and Surrey; and *Hadena caesia* (D. & S.), bred examples from Ardnamurchan, Argyll, and Treshnish, Isle of Mull.

Exhibited on behalf of R. Eden, *Acontia lucida* (Hufn.), a specimen taken at West Bexington, Dorset, 18.viii.96.

SPALDING, A. A male example of *Agrotis herzogi* (Rebel) taken at Praze-an-Beeble, near Camborne, Cornwall, 22.xi.95 (Plate II, Fig. 16). The first British record of this species.

STERLING, M. Examples of *Eupithecia ultimaria* Boisd. from Brighton and West Wittering, Sussex (ex. larvae); and *Osmia diffinis* (L.) from unspecified localities in Eastern England, 15.viii.96.

STERLING, P. H. *Mythimna turca* (L.) from Melbury Park, Dorset, 27.vi.96; and an albino example of *Catocala nupta* (L.) from Weymouth, Dorset on 12.ix.96. Also shown, *Hydrelia sylvata* (D. & S.), taken with others at Beaminster, Dorset, 14.vii.96,

by D. Hallett & M. Spencer; and *Catocala fraxini* (L.) taken at Horsey, Norfolk, 18.ix.96, by J. R. Langmaid and PHS.

SWIFT, S. & WALKER, D.—From the Browndown/Alver Valley area, Hampshire; examples of *Meganola albula* (D. & S.), 25.vii.96; *Calophasia lunula* (Hufn.), 3.viii.96; *Heliothis armigera* (Hübn.), 30.viii.96 & 23.ix.96; and *Trichoplusia ni* (Hübn.), 5.viii.96. Also shown were aberrations of *Agrotis exclamationis* (L.), *Agrotis puta* (Hübn.), and *Charanyca trigrammica* (Hufn.).

TOWNSEND, M.—A range of immigrant species recorded during three nights light-trapping at Worth Matravers, near Swanage, Dorset, 18.viii.96—20.viii.96. These included *Cyclophora puppillaria* (Hübn.), *Thaumetopoea processionea* (L.), *Spodoptera exigua* (Hübn.), *Heliothis armigera* (Hübn.), and *Trichoplusia ni* (Hübn.).

In addition, *Tyta luctuosa* (D. & S.) from Long Wittenham, Oxon; and wild-caught and bred examples of *Heliothis peltigera* (D. & S.) exhibiting temperature variation.

WARNE, B. J.—A selection of migrant and resident species from Binstead, Ryde, Isle of Wight (unless otherwise stated). Most notable of these were as follows: *Hyles livornica* (Esp.), 14.vi.96, also recorded at Chale, I.O.W. on 13.viii.96; *Atolmis rubricollis* (L.), recorded from Parkhurst Forest, I.O.W., 25.vi.96 & 10.vii.96 (2); *Meganola strigula* (D. & S.), 11.vii.96, also recorded from Parkhurst Forest, 10.vii.96 (4); *Lithophane semibrunnea* (Haw.), 22.x.96; *Trichoplusia ni* (Hübn.), 16.viii.96; and *Chrysodeixis acuta* (Walk.), 27.x.95.

WEDD, D.—An extensive selection of bred or wild-caught local species. These included *Odontognophos dumetata hibernica* (Forder), specimens bred or taken in differing circumstances to show size variation; *Gnophos obfuscata* (D. & S.), examples of the Scottish and Irish forms, the exhibitor suggesting the need for subspecific status; *Lithosia quadra* (L.), recorded from three localities in Cos. Clare and Galway during 1996; *Hadena caesia mananii* (Gregs.), specimens from Doolin, Co. Clare, and Kilkieran, Connemara; *Luperina nickerlii demuthi* (subsp. nov.), the latter subspecies proving much harder to rear than the former; and *Thalera fimbrialis* (Scop.), some examples bred ex. Dungeness female before the species became protected, the third generation producing a unique and striking aberrant male (Plate II, Fig. 5).

YOUNG, D.—From Scotland, examples of *Eurois occulta* (L.) and *Polia trimaculosa* (Esp.) bred from larvae found near Insh, Inv., v. 96; *Semiothisa carbonaria* (Clerck), and *Phragmatobia fuliginosa borealis* (Staud.), Newtonmore, Inv., v. 96, the latter species ex. pupa.

Additional species included *Synanthedon formicaeformis* (Esp.), ex. larvae, Chichester, W. Sussex; *Cossus cossus* (L.), New Forest, Hants., 30.vii.96; and *Idaea vulpinaria atrosignaria* (Lempke), Richmond Park, London, 12.vii.96.

YOUNG, M. R. –From Gruinard, Isle of Islay, S. Ebudes, a recurrent aberration of *Lomaspilis marginata* (L.), 27.vii.96; and *Mythimna straminea* (Treit.), 27.vii.96, new to Scotland (taken by MRY & M. Harper).

BRITISH MICROLEPIDOPTERA

AGASSIZ, D. J. L.—*Gelechia senticetella* (Stdgr), Gravesend, Kent, 27.vii.1996; *Scythris limbella* (F.), Gravesend, Kent, 7.vi.1996; a pink form of *Hypsopygia costalis* (F.) Gravesend, Kent, 29.vii.1996.

BEAUMONT, H. E.—*Phyllonorycter leucographella* (Zell.) Elmfield Park, Doncaster VC63 mine on *Pyracantha* emerged 20.vi.1996, first Yorkshire record; *Coleophora ibipennella* Zell. [*ardeaepennella* Scott] Sandall Beat Wood, Doncaster VC63 29.vi.1992 larval case on oak, moth reared, Gibbing Greave Wood, Rotherham VC63 19.vii.1996, first confirmed Yorkshire records; *C. adjunctella* Hodgk.

Saltfleetby NNR, Lincs. VC54 1.vii.1984, new county record; *Caryocolum tricolorella* (Haw.) Wath Wood, Rotherham VC63 9.viii.1996, first VC63 record for over 100 years; *Epiblema grandaevana* (L. & Z.) Spurn VC61, 7.vi.1996 (leg. B. R. Spence), possibly resident locally; *Cydia fagiglandana* (Zell.) Gibbing Greave Wood, Rotherham VC63, 19.vii.1996 several, previously only unconfirmed 19th century records from Yorkshire; *Ancylosis oblitella* (Zell.) Spurn VC61, 29.vii.1996 (leg. B.R. Spence) first Yorkshire record; *Stenoptilia millieridactyla* (Bruand) [=*saxifragae* Fletch.] Dalby Forest VC62, 27.vi.1996, new VC record.

BLAND, K. P.—*Narycia duplicella* (Goeze) [*monilifera* (Fourc.)], Glen Moriston NH3917, VC96, 29.vi.1996, previously only known in Scotland from VCs 82 and 83; *Lampronia morosa* Zell. Seton Bents NT4376, E. Lothian VC82, 9.vi.1996; *Glyphipterix forsterella* (F.) Hannaston Wood NX5982, Kirkcudbrightshire VC73, 22.vi.1996, a new vice-county record; specimens also from Dalcroy Marsh NN7759, Perths. VC88, 19.vi.1996; *Exaeretia ciniflonella* (L. & Z.) Glen Affric NH2828, VC96, 28.viii.1996, flying in rain; *Reuttia subocellea* (Steph.) Linkim Shore NT9265, Berwicks. VC81 reared 9.vi.1996 from larval cases on *Thymus* 22.viii.1995; *Mompha subbistrigella* (Haw.) Blackford, Edinburgh NT2571, VC83 6.vi.1996, second Scottish record; *Scythris picaepennis* (Haw.) Arthur's Seat, Edinburgh NT2873 15.vi.1996, last recorded there in 1852, first SE Scotland record since 1895; *Phalonidia manniana* (F. v. R.) Dalcroy Marsh NN7759, Perths. VC88, 19.vi.1996, third Scottish site; *Olethreutes arcuella* (Clerck) Glen Moriston NH3917, VC96, 29.vi.1996, most northerly record; *Phycitodes saxicola* (Vaugh.) bred from larva in flowerhead of *Tripleurospermum maritimum* collected 22.viii.1995 Linkim Shore NT9265, VC81, new VC record; *Athrips tetrapunctella* (Thunb.) Glen Fender Meadows NN8866 bred 22.v.1996 from larva on *Lathyrus montanus* collected 11.viii.1995; *Xystophora pulveratella* (H.-S.) Straloch Morraines NO0163, bred 22.v.1996 from larva on *Lathyrus montanus* collected 14.viii.1995.

BRITTON, M. R.—Moths bred or taken in 1996: *Psychoides filicivora* (Meyr.) Porlock, Somerset larvae 13.x.1995, emerged 1.iii.1996; *Phyllonorycter acerifoliella* (Zell.) Malton, Yorks. mines 28.ix.1995 emerged 20.iv.1996, Haxby, York mines 3.x.1995 emerged 27.vi.1996, Hop Grove, York mines 4.x.1995, emerged 15.iv.1996; *Gelechia rhombella* (D. & S.) Strensall Common, Yorks. larva 12.vi.1996 emerged 17.vii.1996; *Caryocolum blandella* (Dougl.) Scarborough, Yorks. larvae on *Stellaria holostea* 23.v.1996, emerged 17–27.vii.1996; *C. kroesmanniella* (H.-S.) Scarborough, Yorks., larvae on *Stellaria holostea*, 23.v.1996, emerged 26.vi–11.vii.1996; *Ancylis unguicella* (L.) Strensall Common, Yorks. 12.vi.1996; *Epinotia demarniana* (F. v. R.) Skipwith Common, Yorks. 23 & 25.vi.1996; *Strophedra weirana* (Dougl.) Bickleigh Vale, Devon larva 18.x.1995 emerged 21.v.1996; *Pammene fasciana* (L.) Merton, York from spongy oak gall 27.ii.1996 emerged 23.vi.1996; *Crambus ericella* (Hübn.) Ribblehead, Yorks. 21.vii.1996; *C. uliginosellus* (Zell.) Skipwith Common, Yorks. 18.vii.1996; *C. hamella* (Thunb.) Risley Moss, Cheshire 17.viii.1996; *Agriphila selasella* (Hübn.) Skipwith Common, Yorks. 8.viii.1996; *Catoptria falsella* (D. & S.) Skipwith Common, Yorks. 6.viii.1996.

BROTHERIDGE, D. J.—*Monochroa hornigi* (Stdgr) new to Wiltshire?; *Sparganothis pilleriana* (D. & S.) new to Wiltshire?; *Sitochroa palealis* (D. & S.).

CLANCY, S. P. Pyralidae from the Dungeness area taken in 1996, chiefly migrants: *Euchromius ocellea* (Haw.) Greatstone, 10.viii.1996 (B. Banson); *Psammotis pulveralis* (Hübn.) Lydd, Kent (two) 23.vii.1996 (K. Redshaw), Dungeness, Kent 27.vii.1996 (D. Walker); *Margaritia sticticalis* (L.) New Romney, Kent (three) 13 17.viii.1996 (K. Redshaw), Dungeness, Kent 20.viii.1996 (D.Walker); *Hypsopygia costalis* (F.) Lydd, Kent 14.viii.1996 a

unicolorous aberration; *Acrobasis tumidana* (D. & S.) Dungeness area, Kent (four out of 20 seen at various dates) 1996; *Sciota hostilis* (Steph.) New Romney, Kent 7.vi.1996 (K. Redshaw).

CLARKE, J.—*Margaritia sticticalis* (L.) from Surrey, and Findhorn, Morayshire where six were taken on 15.viii.96.

COOK, R. R. —*Eudonia delunella* (Staint.) Piddleswood, Dorset 13.vii.1996; *Anania funebris* (Ström) Burren, Co. Galway, vi.1996; *Mecyna flavalis* (D. & S.) Afton Down, Isle of Wight, 28.vii 3.viii.1996; *Pyrausta sanguinalis* (L.) Loch Bunny, Co. Clare, 7.vi.1996; *Crambus silvella* (Hübn.) Matley Bog, Hants. 29.vii.1996.

DAVIS, A. M. *Commophila aeneana* (Hübn.) Rye Common VC12, 1994; *Aethes francillana* (F.) Berks. (close to Hants. border) 1996; *Phiaris schulziana* (F.) Shortheath Common VC12 in floating bog; *Crambus ericella* (Hübn.) Ayrshire VC75, 1995; *Pediasia contaminella* (Hübn.) Yateley Common, Hants., common, viii.1996; *Oncocera semirubella* (Scop.) Surrey; *Mecyna flavalis* (D. & S.); *Elegia similella* (Zinck.). Also a display about the Pyralid and Plume Recording Scheme.

ELLIOT, B. —*Rhigognostis senilella* (Zett.) bred from larvae on *Hesperis* vii.1996; *Catoptria furcatellus* (Zett.) four, Shetland late vii.1996; *Stenoptilia "picardi* Gibeaux", abundant amongst *Succisa* at Urafirth, Shetland vii.1996.

EMMET, A. M. Microlepidoptera from Saffron Walden, Essex, VC19: *Luffia lapidella* (Goeze), or possible an alate male *L. ferchaultella* (Steph.), 12.vii.1992; *Gelechia senticetella* (Stdgr), 25.viii.1996, new to VC19; *Platytes cerussella* (D. & S.) 21.vii.1996; *Assara terebrella* (Zinck.) 18.vii.1995 & 8.viii.1996. From Little Oakley, Essex, VC19: *Coleophora fuscicornis* Zell., adults active in sunshine 14.vi.1996, possibly its only British locality; *Oncocera genistella* (Dup.) larvae abundant 14.vi.1996, moths emerged 18 26.vii.1996, new to Essex. Species new to Ireland, reared from larvae collected ix.1995: *Phyllonorycter geniculella* (Rag.) mines common in Cos Tyrone VC H36, Down VC H38, Antrim VC H39 and Londonderry VC H40, specimen exhibited from Dungannon H36 emerged indoors 15.iii.1996; *Coleophora milvipennis* Zell. Killaun NR, Co. Offaly VC H18, larval cases common on *Betula* 16.ix.1995, moths bred 20-26.vi.1996.

HARLEY, B. H. A box of lepidoptera from Islay, with a few from Jura and Colonsay, including *Yponomeuta evonymella* (L.); *Ypsolopha dentella* (F.); *Apotomis semifasciana* (Haw.); *Crambus pascuella* (L.); *Catoptria pinella* (L.); *Eudonia mercurella* (L.); *Elophila nymphaeata* (L.); *Nymphula stagnata* (L.); *Aphomia sociella* (L.).

HECKFORD, R. J.—*Ischnoscia borreonella* (Mill.) Torquay, Devon VC3 16 & 18.viii.1996, first record for 70 years; *Eulamprotes phaeella* Heck. & Lang., Whitewell, Inverness-shire VC96, 1.vii.1996; *Cochylis flaviciliana* (Westw.) Hammerley Down, Glos. VC34, 5.vii.1996; *Bactra lacteana* Caradja, Trowlesworthy Warren, Devon VC3, 14.vii.1996 2 specimens, new to Britain (Plate II, Fig. 15); *B. furfurana* (Haw.) and *B. lancealana* (Hübn.) shown for comparison; *Pammene ochsenheimeriana* (L. & Z.) Newpark Waste, Devon VC3 bred from *Picea sitchensis* 5.v.1996, new to Devon and new food-plant record for Britain; *Cydia amplana* (Hübn.) Plympton, Plymouth VC3, 18.19 & 20.viii.1996. *C. coniferana* (Ratz.) Newpark Waste, Devon VC3 bred from *Picea sitchensis* 7.vi.1996; *Euchromius ocellea* (Haw.) Plympton, VC3 18.viii.1996; *Pempelia obductella* (Zell.) Birling, Kent VC16, bred from *Origanum vulgare* 22 & 24.vii.1996.

HENWOOD, B. – *Cydia amplana* (Hübn.) Abbotskerswell, Devon 17.viii.1996; *Phlyctaenia perlucidalis* (Hübn.) Abbotskerswell, Devon 31.vii.1996; *Pempelia formosa* (Haw.) Abbotskerswell, Devon 23.vii.1996.

HIPPERSON, D.—*Duponchelia fovealis* Zell. (Pyralidae) Thorpe St. Andrew, near Norwich 10.ix.1996, New to Britain (Plate II, Fig. 14).

HONEY, R. M.—Species recorded from the Natural History Museum garden, London: *Denisia albimaculea* (Haw.); *Gelechia turpella* (D. & S.); *Tachystola acroxantha* (Meyr.) the last named being recorded on 5.vi., 17.vi., 11.ix. and 21.x.1996.

KNILL-JONES, S. A.—Lepidoptera from the Isle of Wight VC10. *Morophaga choragella* (D. & S.) Parkhurst, 22.vii.1996; *Ethmia bipunctella* (F.) Freshwater, 21.viii.1996, new VC record; *Dichomeris marginella* (F.) Freshwater, 3.viii.1996; *Acleris cristana* (D. & S.) Binstead, iv.1996; *Sparganothis pilleriana* (D. & S.) Freshwater, 13.viii.1996; *Crambus perlella* (Scop.) f. *warringtonellus* Staint. Freshwater, 27.vii.1996; *Dipleurina lacustrata* (Panz.) Parkhurst, 22.vii.1996; *Elophila nymphaeata* (L.) Freshwater, 18.vi.1996; *Evergestis extimalis* (Scop.) Freshwater, 15.viii.1996; *Udea fulvalis* (Hübn.) four, Freshwater, viii.1996; *Dolicharthria punctalis* (D. & S.) Freshwater, vii.1996; *Aglossa pinguinalis* (L.) Freshwater, 5.viii.1996; *Ostrinia nubilalis* (Hübn.) Freshwater, 7.viii.1996; *Oncocera palumbella* (D. & S.) vi–vii.1996; *Microthrix similella* (Zinck.) Parkhurst, 22.vii.1996, new VC record; *Phycitodes saxicola* (Vaugh.) Parkhurst, 22.vii.1996; *Ephestia parasitella* (Stdgr) ssp. *unicolorella* (Stdgr) Parkhurst, 22.vii.1996; *Marasmarcha lunaedactyla* (Haw.) Tennyson Down, 18.vii.1996; *Capperia britanniodactyla* (Greg.) Parkhurst, 22.vii.1996; *Amblyptilia acanthadactyla* (Hübn.) Freshwater, various dates 1996.

LANGMAID, J. R.—*Bankesia douglasii* (Staint.) a series bred from Fareham, Hants. cases 27.i.1996, moths emerged during ii.1996; *Yponomeuta irrorella* (Hübn.) bred from *Euonymus europaea* Meopham, Kent 10.vi.1996; *Coleophora fuscicornis* Zell. two, Little Oakley, Essex, 14.vi.1996; *Monochroa hornigi* (Stdgr) Thursley Common, Surrey, 7.vi.1996, new to Surrey and an early date.

LOWE, C. D.—Species recorded during an A-level investigation on the Heart and Dart, *Agrotis exclamationis* (L.) and others in a Breconshire (Llangorse) garden. *Dichrorampha montanana* Dup. 24.vi.1996, *Coleophora taeniipennella* H.-S., 18.vii.1996 (new county record), *Coleophora lusciniapennella* (Tr.), 23.vii.1996, *Amblyptilia acanthadactyla* (Hb.), 9.viii.1996, *Olindia schumacherana* Fab., 9.viii.1996, cream-banded form *Cydia splendana* (Hb.), 9.viii.1996, (second county record), *Orthopygia glancinalis* (L.), 14.viii.1996 (new county record), *Mompha propinquella* (Stt.), 18.viii.1996 (second county record), *Pyla fusca* Haw. 18.viii.1996 (second county record), *Galleria mellonella* (L.), 19.viii.1996 (new county record), *Amblyptilia punctidactyla* (Haw.), 23.ix.1996.

LOWE, N. R.—Records from Breconshire (VC42) and Pembrokeshire (VC45). *Taleporia tubulosa* (Retz). reared Allt House Wood, Brecon., 8.vi.1996, emerged 12.vi.1996, *Triaxomera parasitella* (Hb.) Allt House Wood, Brecon., 12.vi.1996, *Argyresthia curvella* (L.) Allt House Wood, Brecon., 24.vi.1996, *Psychoides filicivora* Meyr. Old Mill Grounds, Pembs. 18.v.1978 (first West Wales record), *Coleophora lutipennella* (Zell.), Llangorse, Brecon., 15.vii.1993, *Coleophora caespititiella* Zell., Allt House Wood, Brecon., 28.vii.1991, *Teleiodes vulgella* Hb., Llangorse, Brecon., 4.vii.1996, *Blastobasis decolorella* (Woll.), Allt House Wood, Brecon., 15.vi.1996, *Cnephasia communana* (H.-S.), Allt House Wood, Brecon., 15.vi.1996, *Cydia fagiglandana* (Zell.), Allt House Wood, Brecon., 15.vi.1996,

MCCORMICK, R.—*Ypsolopha sequella* (Clerck) Chardstock, Devon, 16.viii.1996; *Schiffermuelleria grandis* (Desv.) Wray Cleave, near Moretonhampstead, Dartmoor, 21.vi.1995 (another seen at Trendlebere Down, Dartmoor, 25.vi.1995); *Catoptria falsella* (D. & S.) Wray Cleave, Dartmoor 1.viii.1996; *Anerastia lotella* (Hübn.) Dawlish Warren, 19.vii.1996; *Ancylosis oblitella* (Zell.) Dawlish Warren 19.vii.1996,

Axmouth Saltings 4.viii.1996: *Amblyptilia acanthadactyla* (Hübn.) Teignmouth 9.vi.1996, Prawle Point, 7.vi.1996; *Eudonia murana* (Curt.) Haverthwaite, Cumbria, 10.ix.1996; *Pterophorus tridactyla* (L.) [*fuscolimbatus* auctt.] larvae at Cadgwith Bay & Kynance Cove 27.vi.1996.

O'KEEFFE, D.—*Coleophora idaeella* Hofm. bred from cases on *Vaccinium vitis-idaea*, Aviemore; *C. glitzella* Hofm. bred from cases on *Vaccinium vitis-idaea*, Aviemore; *Esperia oliviella* (F.) near Dunkirk, Kent 26.vi.1996; *Scrobipalpa clintoni* Pov. bred from dead stems of *Rumex crispus*, Inverneill, Argyll, collected 17.iv.1996; *Caryocolum alsinella* (Zell.) (possibly a new subspecies) bred from seed capsules of *Minuartia verna*, spring sandwort, growing in cracks in limestone pavement at Cahergrillaun, Co. Clare, Ireland, 1996; *C. alsinella semidecandrella* Threlf. specimens from Kent for comparison; *Mompha subdivisella* Bradley, Petts Wood, Kent, bred from larvae in stems of *Epilobium hirsutum* viii.1996, moths bred ix.1996; *Archips crataegana* (Hübn.) with a specimen of *A. xylosteana* (L.) for comparison; *Cydia cosmophorana* (Treits.) specimens bred from old galls of *Retinia resinella* (L.) Moormore, Aviemore, 1996; *Maruca vitrata* (F.) [= *testulalis* (Gey.)] Petts Wood, Kent 27.vii.1996; *Microthrix similella* (Zinck.) Petts Wood, Kent 1996.

PARSONS, M. S.—*Dahlica inconspicuella* (Staint.) Dungeness, Kent, reared from larvae collected 2.iii.1996; *Nemapogon clematella* (F.) Chedworth Woods, Glos. bred from larvae collected 25.v.1996; *Denisia albimaculea* (Haw.) South Kensington, London, 5–6.vi.1996; *Tachystola acroxantha* (Meyr.) South Kensington, London 17.vi.1996; *Ethmia funerella* (F.) Holywell, Eastbourne, E. Sussex, 13.viii.1996; *Agonopterix purpurea* (Haw.) Welshbury Woods, Glos. 20.iv.1996; *Caryocolum proximum* (Haw.) South Kensington, London reared from larvae collected 27.v.1996; *Gypsonoma oppressana* (Treits.) Raynes Park, Surrey, 26.vi.1996; *Selania leplastriana* (Curt.) Kingsdown, E. Kent, 6.vii.1996; *Cydia micrograrnmana* (Guen.) Folkestone Warren, E. Kent, 6.vii.1996; *Ancylosis oblitella* (Zell.) Holywell, Eastbourne, E. Sussex, 14.vii.1996, Friston Forest, E. Sussex, 18.viii.1996; *Cnaemidophorus rhododactyla* (D. & S.) Holywell, Eastbourne, E. Sussex, reared from larvae 15.vi.1996.

PICKLES, A. J. & C. T.—*Catoptria margaritella* (D. & S.) Trinafour, Perths.; *Udea uliginosalis* (Steph.) Ben Lawers, Perths; *Anania funebris* (Ström) Burren, Co. Clare; *Margaritia sticticalis* (L.) Lymington, Hants.

PORTER, J.—*Pyrausta aurata* (Scop.) with gold spots on forewing missing, Surrey, 25.viii.1996; *Nomophila noctuella* (D. & S.), a series taken in 1996 illustrating variation.

SIMS, I.—*Micropterix mansuetella* Zell. Cothill Fen, Berks. 1.vi.1996; *M. aureatella* (Scop.) Burnham Beeches, Bucks. 2.vi.1996; *M. aruncella* (Scop.) Moor Copse, Reading, Berks. 31.v.1996; *M. calthella* (L.) Medmenham, Marlow, Bucks. 6.v.1996; *Ectoedemia intimella* (Zell.) Lower Earley, Reading, Berks. reared from larvae 12.xi.1995, emerged indoors 10.vi.1996; *E. angulifasciella* (Staint.) Dinton Pastures, Reading, Berks. mines in *Rosa*, 22.x.1995, emerged indoors 30.vi.1996; *E. quinquella* (Bedell) Lower Earley, Reading, Berks. mines 12.xi.1995, emerged indoors 29.v.1996; *Stigmella obliquella* (Hein.) Medmenham, Bucks. mines 19.x.1995, emerged indoors 29.v.1996; *S. trimaculella* (Haw.) Medmenham, Bucks. mines 28.ix.1995, emerged indoors 12.v.1996; *Tischeria ekebladella* (Bjerk.) Lower Earley, Reading, Berks. mine 12.xi.1995, emerged indoors 22.v.1996; *T. dodonaea* Staint. Lower Earley, Reading, Berks. mine 12.xi.1995, emerged indoors 19.v.1996; *Incurvaria oehlmanniella* (Hübn.) Buckleberry Upper Common, Reading, Berks. 1.vi.1996; *Adela croesella* (Scop.) Oaken Grove, Medmenham, Bucks. 5 & 13.vi.1996; *Luffia lapidella* (Goeze) Cornwall, reared from first instar larvae 19.ix.1995, male

emerged 30.iii.1996, female 10.iii.1996, both kept at 25°C; *L. ferchaultella* (Steph.) Lower Earley, Reading, Berks. females and cocoons collected 12.iv.1990, emerged 29.v.1990; *Nemapogon variatella* (Clem.) Burnham Beeches, Bucks. larvae 23.iii.1996, emerged 5 & 8.v.1996; *N. clematella* (F.) Cothill Fen, Berks. bred from larva in *Diatrype disciformis* on coppiced hazel, emerged indoors 26.v.1996, also from Icknield Way, Watlington, Oxon 20.iii.1996, emerged indoors 2.vii.1996; *Niditinea fuscella* (L.) Lower Earley, Reading, Berks. 7.viii.1996; *Tinea trinotella* Thunb. Medmenham, Marlow, Bucks. bred from blackbird's nest 5.i.1990, emerged 15–17.iv.1990; *Bedellia somnulentella* (Zell.) Instow, Devon, mining *Calystegia sepium* 25.ix.90, emerged 12.x.1990, Twyford, Berks. mines 29.ix.1996 emerged 14.x.1996; *Bucculatrix thoracella* (Thunb.) Medmenham, Marlow, Bucks. larvae on *Tilia* 21.ix.1995, emerged indoors 1.iii.1996; *Caloptilia betulicola* (Her.) Bear Wood, Wokingham, Berks. larva 9.vi.1996 emerged 21.vi.1996, larva 11.vii.1996 emerged 28.vii.1996; *C. alchimiella* (Scop.) Medmenham, Bucks. 26.x.1992 emerged indoors 27.ii.1993, Winnersh Triangle, Berks. 24.x.1992 emerged indoors 19.ii.1993; *C. robustella* Jäckh, Lower Earley, Reading, Berks. 26.x.1992 & 3.xii.1989 emerged indoors 21.ii.1993 & 5.iii.1990, Medmenham, Bucks. 26.x.1992, emerged indoors 28.ii.1993; *Phyllonorycter harrisella* (L.) Twyford, Berks. 9.xi.1991 emerged indoors 9.ii.1992, Lower Earley, Reading, Berks. 28.x.1991 emerged indoors 12.ii.1992; *P. heegeriella* (Zell.) Hainault Forest, Essex 6.xi.1992 emerged indoors 23.ii.1993, Medmenham, Bucks. 25.vi.1990 emerged 5.vii.1990; *P. tenerella* (Joannis) Hainault Forest, Essex 6.xi.1995 emerged indoors 21.ii.1996, Dinton Pastures, Reading, Berks. 22.x.1995 emerged indoors 22.ii.1996; *Coleophora limosipennella* (Dup.) Medmenham, Bucks. cases 24.v.1996 emerged 28.vi.1996; *C. viminetella* Zell. Medmenham, Bucks. cases 25.vi.1996, emerged 26.vi.1996; *C. hemerobiella* (Scop.) Lower Earley, Reading, Berks. cases 6.v.1995 emerged 3.vii.1995; *C. anatipennella* (Hübn.) Lower Earley, Reading, Berks. case 8.v.1989, emerged 13.vi.1989; *C. palliatella* (Zinck.) Burnham Beeches, Bucks. case 13.v.1990, emerged 8.vi.1990.

SKINNER, B. F.—*Agriphila inquinatella* (D. & S.) Dungeness, Kent 19.viii.1996, a dark brown male with pale sub-marginal cross band similar to that figured in *Br. J. Ent. nat. Hist.* **8**, Pl 3.

SMITH, E. G. and M. H.—*Opostega salaciella* (Treits.) Spye Park VC7, 3.ix.1996 flying over *Rumex acetosa*, a late date compared with published British sources; *Telechrysis tripuncta* (Haw.) Bullen Hill Farm, Steeple Ashton VC8, 11.vi.1996; *Parachronistis albiceps* (Zell.) Imber Village VC8, 6.viii.1996; *Cosmopterix orichalcea* Staint. Longleat VC8 22.v.1996, one of a short series taken in a commercial coniferous woodland on dry acid soil; *Merrifieldia baliodactylus* (Zell.) Ford VC7, 3.vii.1995, new VC record; *Pselnophorus heterodactyla* (Müll.) Cranham Woods, Glos. bred 14.vi.1996 from *Mycelis muralis* collected 13.v.1996; *Eulecoptilus carphodactyla* (Hübn.) Ford VC7, flying over *Inula conyza* 21.vi.1994, new VC record.

STERLING, M. S.—*Nemapogon variatella* (Clem.) Burnham Beeches, Bucks VC24, bred from *Piptoporus* collected ii.1996; *N. granella* (L.) Epping, Essex VC18, bred from *Piptoporus* collected iv.1996; *Archinemapogon yildizae* (Koçak) Insh VC96, bred from *Fomes*, 1996; *Argyroploce arbutella* (L.) Newtonmore VC96, bred from *Arctostaphylos*; *Ancylis paludana* (Barr.) Wicken Fen VC29, bred from *Lathyrus palustris*.

STERLING, P. H.—*Dahlica inconspicuella* (Staint.) a case found under limestone scree at Flowers Barrow, Dorset VC9, 2.xii.1995, emerged iii.1996, new to Dorset; *Bankesia douglasii* (Staint.) Fareham, Hants. VC11, case found 27.i.1996, emerged

ii.1996; *Coleophora ochrea* (Haw.) a case found on *Helianthemum* at Punfield Cove, Dorset VC9, 17.v.1996, emerged vii.1996; *Biselachista trapeziella* (Staint.) Lydford Gorge, Devon VC3, larva on *Luzula sylvatica* 26.iv.1996 emerged 26.v.1996; *Argolamprotes micella* (D. & S.) Weymouth, Dorset VC9, 14.vii.1996; *Monochroa suffusella* (Dougl.) Studland, Dorset VC9, larva found in *Eriophorum angustifolium* 2.v.1996, emerged 12.vi.1996, first record of larva in Britain; *Gelechia senticetella* Stdgr Ampfield, Hants VC11, 31.vii.1996; *Brachmia lutatella* (H.-S.) Gad Cliff, Dorset VC9, larva in tube on *Brachypodium sylvaticum* 6.vii.1996, emerged 31.vii.1996; *Mompha divisella* H.-S. Breage, Cornwall VC1, three galls on *Epilobium montanum* 10.viii.1996, emerged 3.ix.1996; *Scythris empetrella* K. & N. many larvae in tubes in sand under *Calluna Erica* at Studland, Dorset VC9, 2.v.1996, emerged 14.vi.1996, first record for many years; *Cydia amplana* (Hübn.) Portland Bird Observatory, Dorset VC9, viii.1996 taken by M.Cade; *Dioryctria schuetzeella* Fuchs Ampfield, Hants VC11, 31.vii.1996.

UFFEN, R. W. J.—*Commophila aeneana* (Hübn.) Commonswood, Welwyn Garden City, Herts. 26.vi.1996, new to Hertfordshire.

WARNE, B. J.—Pyralidae from Binstead, Ryde, Isle of Wight VC10. *Scoparia subfusca* Haw. 25.v.1996; *Evergestis pallidata* (Hufn.) 9.viii.1996; *Palpita unionalis* (Hübn.) 19.viii.1996; *Pempelia genistella* (Dup.) 6.vii.1996; *Homoeosoma sinuella* (F.) 11.vii.1996.

YOUNG, M. R.—Scarce Scottish lepidoptera: *Stigmella spinosissimae* (Waters) bred *Rosa pimpinellifolia* Coul Links, Embo VC107 26.v.1996 by Philip Entwhistle; *Epermenia falciformis* (Haw.) [*illigerella* sensu auctt.] Guinard, Islay VC102 24.vii.1996, new to Scotland; *Ethmia pyrausta* (Pallas) Glas Maol, Forfar VC90 17.vi. & 6.vii.1996 collected by Richard Smith (Plate II, Fig. 13), only previous British record in VC107 in 1853 by E.C. Buxton; *Caryocolum blandelloides* Karsholt Coul Links, Embo VC107, 19.vii.1996, discovered at the same locality by R.J.B. Hoare in 1994; *C. junctella* (Dougl.) Migdale Wood, Bonar Bridge VC107, 25.iii.1996, beaten from *Pinus sylvestris* by Philip Entwhistle; *Piniphila bifasciana* (Haw.) Spinningdale, Dornoch VC107, 6.vii.1996, collected by Philip Entwhistle, also recorded from Banff, VC94 in 1996.

FOREIGN LEPIDOPTERA

CORLEY, M. F. V.—Phycitinae (Pyralidae) from Portugal. A total of 58 species were exhibited, about two-thirds of the species recorded in Portugal. Sixteen species

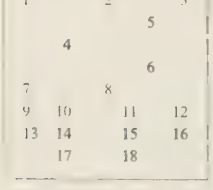

PLATE II ANNUAL EXHIBITION 1996

1: *Chloantha hyperici*, Dungeness, Kent, 20.viii.1996, D.Walker (S. Clancy). 2: *Mythimna impura*, M. Parsons. 3: *Noctua janthe*, melanic, Cambs., 20.viii.1996, R. Revel/BMNH. 4: *Dendrolimus pini*, Freshwater, I.o.W., 12.viii.1996, S. Knill-Jones. 5: *Thalera fimbrialis*, bred, F3, Dungeness, Kent, 17.vii.1992, D.Wedd. 6: *Philudoria potatoria*, Sandwich, Kent. 13.vii.1996. A. Dobson. 7: *Electrophaes corylata*. Loch Tummel, Perthshire, 2.vii.1996. S. Pittis. 8: *Gymnoscelis rufifasciata*, West Hill, E. Devon, 20.x.1996, P. Baker. 9: *Xanthorhoe designata*, Addington, Surrey, 27.viii.1996, B. Skinner. 10: *Cabera exanthemata*, Dungeness, Kent, 19.viii.1996, B. Skinner. 11: *Thera cognata*, Shetland Mainland, bred 1996, B. Elliott. 12: *Hadena bicruris*, Vendée, France, 21.vii.1995, N. Hall. 13: *Ethmia pyrausta*, Glas Maol, Forfar, 6.vii.1996, M. R. Young. 14: *Duponchelia fovealis*, Norwich, 10.ix.1996, D. Hipperson. 15: *Bactra lacteana*, Trowlesworthy Warren, Devon, 14.vii.1996, R. J. Heckford. 16: *Agrotis herzogi*, Praze-an-Beeble, Camborne, Corn. 22.xi.1995, A. Spalding. 17: *Etiella zinckenella*, Portalegre, Portugal, W. F. V. Corley. 18: *Lomaspilis marginata*, Hamstreet, Kent, 2.vii.1996. D. Brown.

ANNUAL EXHIBITION 1996

have been added to the Portuguese List in the last eight years, and many more are likely to be added by further collecting. The Phycitinae is the largest subfamily of Pyralidae in the Iberian Peninsula, and the most difficult group for identification. The problem is in part due to the lack of literature (although nearly half the species are now treated in Microlepidoptera Palaearctica), and in part to the difficulty of assigning an unidentified specimen to the correct genus, as quite unrelated species may look remarkably similar (e.g. *Pempelia genistella* Dup. and *Aporodes florella* Mann), and also because many genera contain only one or two Iberian species; some genera contain species that look dissimilar (e.g. *Oncocera, Pempelia, Phycita,* also compare *Sciota coenulentella* with the British *Sciota* species). A few species are very variable or dimorphic, and this can also cause confusion (*Pempelia palumbella* (D.& S.), *Ephestia parasitella* Stdgr). The genus *Pempeliella* is particularly troublesome, as there are a number of species, all of similar aspect, and although specimens can be readily separated on genitalic characters, it has not yet proved possible to attach the right names to them.

Another taxonomic vexation is the attribution of subspecific names to the Iberian forms of species in several genera. This is most prevalent in genera such as *Phycitodes* and *Ephestia* where the species are not particularly easy to distinguish. In *Ephestia* the exhibitor has found specimens that appear to belong to non-Iberian subspecies in the same localities as Iberian subspecies. *Pompelia palumbella liviella* Zerny is the subspecies supposedly found in the southern parts of Spain and Portugal. The three specimens exhibited, all from the Algarve, show the species is polymorphic within the area and therefore no subspecific name should be used. *Ephestia parasitella* has two common forms, one closely resembling that found in Britain and the other with dark grey ground colour that obscures the forewing markings. Surely the latter is the form Staudinger named *unicolorella,* yet the name is currently applied in the literature to the British form. As with *Pompelia palumbella,* the two forms are sympatric, so that treating them as subspecies is incorrect. On the other hand, the Iberian *Acrobasis consociella* Hübn. is distinctive and of uniform appearance and may merit subspecific status.

Several species known in Britain as pests of stored products or imported fruit live outside in Portugal, e.g. *Cryptoblabes gnidiella* Mill., *Plodia interpunctella* Hübn., *Ephestia* and *Cadra* species. The specimen of *Epischnia bankesiella* Rich. is the first record from mainland Europe. Hitherto it was known only from England, Wales and the Channel Islands. The specimen exhibited is the only one found; a search for larvae at two sites was unsuccessful.

CROW, M.—A variation of *Plebicula escheri* Hübn. collected Meysomme, Dordogne, France, 3.iv.1990. (Plate I, Fig. 3).

GOATER, B.—(1) A series of photographs depicting habitats in the vicinity of Jukkasjärvi, Swedish Lappland, including BENHS member Stig Torstenius and his son, Björn, in the foreground.

(2) A selection of Lepidoptera from Swedish Lappland, June–July, 1996. At this time of year the sun never sets. Nevertheless, the majority of noctuids fly between the hours of 2130 and 0400. Lamping is out of the question, sugar is usually unproductive, and hence every specimen has to be caught with a net. Several species fly around the tops of the spruce trees growing along the margins of bogs, and a long-handled net must be used. The exhibitor used one with a fibre-glass handle in three sections, which extended to 5 metres. The following species were shown: Zygaenidae: *Zygaena exulans* Hochenwarth – extremely abundant on rather dry, open moorland; Arctiidae: *Pararctia lapponica* Thunb. – flies in warm sunshine during the afternoon over boggy moorland, resembling a small fritillary, several

species of which occur in the same biotope: Noctuidae: *Syngrapha parilis* Hübn.—fresh male specimens attracted between 1500 and 1800 hrs to pheromone set out amongst *Betula nana* on boggy moorland: *Sympistis heliophila* Payk.—very common flying by day in a variety of habitat: *Lasionycta skraelingia* H.-S.—common but difficult to catch flying fast round the tops of spruces between 2100 and 2230 hrs: *Anartomima bohemani* Stdgr—similar habits to the former species, but less common and flying a little later in the night: *Xestia alpicola* Zett.—the small, dark form from Lappland compared with enormous, pale subsp. *iveni* Huber from southern Sweden and Finland, well-marked, reddish subsp. *ryffelensis* Oberth. from the French Alps and, most beautiful and variable of all the races, subsp. *alpina* H.& W. from the Scottish Highlands: *X. tecta* Hübn.—males fly commonly between 2300 and 0300 hrs, fast and low over boggy moorland, and females, which are seen much more rarely, during the afternoon at a more leisurely pace: *X. speciosa* Hübn.—the smaller, darker form from Lappland compared with specimens from southern Sweden and Finland: *X. laetabilis* Zett.—flies rather slowly and weakly about 1 m above the ground in spruce forest from around 2300 hrs. Its sibling, *X. distensa* Evers., distinguishable on genitalia, occurs on the same ground and emerges a few days later. None of the specimens caught turned out to be this species: *X. borealis* Nordstr.—rather uncommon flying gently around the tops of spruces during the night: *X. gelida* Sparre-Schneider—rather common flying briskly at low level amongst well-grown spruce, 2300—0300 hrs.

(3) A few interesting species from Central and Eastern Sweden: (a) from Dalarna—Notodontidae: *Furcula furcula* Cl.—a very dark specimen compared with a normal English specimen: Noctuidae: *Xestia sincera* H. S. and *X. rhaetica* Stdgr specimens taken at light during the short period of semi-darkness in an ancient spruce forest: *Acronicta auricoma* (D.& S.)—dark specimens from the same locality compared with typical ones from France: *Poliubrya umovii* Evers.—two specimens of the rare and difficult species from the same locality: *Apamea rubrirena* Treits.—also from this locality. (b) from a coastal locality in Västerbotten, *Athetis lepigone* Möschler and *A. pallustris* Hübn., found flying together over sandy shingle in daylight from 2200 hrs. *A. lepigone is* a very local species, the foodplant of which is *Lathyrus maritimus*, while *A. pallustris* is more widespread in Scandinavia.

HALL, N. (1) Heterocera from the Canary Islands a) Fuerteventura, December 1995: (i) Pyralidae: *Spoladea recurvalis* (F.), of which only two specimens were seen in a fortnight: by contrast, on Gran Canaria in March 1996, the moth was abundant, flying all day (though especially early and late), often among *Rumex*. They usually came to rest on the undersurface of the leaves. They also came to light in small numbers. (ii) Geometridae: *Eucrostes simonyi* Rbl. an 'emerald' which rests with its wings in a characteristic roof-like position. (iii) Noctuidae-*Eublemma cochyloides* Gn. These flew around *Launea* bushes early and late. Specimens from Spain were shown for comparison. (iv) *Cucullia calendulae hermiguae* Pink. & Bac. (b) Gran Canaria, March 1996: Pyralidae: *Pseudarenipses insularum* Speidel & Schmitz. Geometridae: *Scopula guancharia* Alph., *Idaea charitata* Rbl. Sphingidae: *Hippotion celerio* L., Noctuidae: *Pandesma robusta* Walk., *Cosmophila flava* F., *Characoma nilotica* Rgnhfr. *Thysanoplusia orichalcea* F., *Ctenoplusia limbirena* Gn., *Chrysodeixis chalcites* Esp. bred ex larva, *Condica capensis* Walk., *Caradrina rebeli* Stdgr. *Spodoptera exigua* Hübn. bred ex larva, *Euxoa canariensis* Rbl. *Agrotis trux* Hübn.

(2) An extreme aberration of *Hadena bicruris* Hufn. which was exhibited in 1995 as an unidentified hadenid aberration from Ile d'Olonne, Vendée, France. It was shown again this year, photographed (Plate II, Fig. 12) and subsequently dissected and found to be a male of this species.

HONEY, M. R.—on behalf of The Department of Entomology, The Natural History Museum, London. (1) A drawer showing the 'red' *Catocala* species of Europe. There are 24 species of the genus *Catocala* recorded for Europe, of which only six occur in Britain (for comparison, there are 110 species in north America!). Only four of the British species have red hindwings and these were exhibited along with the other European species for comparison. A brief indication of the European distribution was given for each species. *Catocala sponsa* L. widespread; *C. dilecta* Hübn. southern and eastern; *C. nupta* L. widespread; *C. adultera* Men. eastern and northern; *C. elocata* Esp. fairly widespread; *C. oberthuri* Austaut southern Spain; *C. deducta* Evers. "Russia"; *C. puerpura* Giorna eastern and southern Europe; *C. optata* God. western Mediterranean; *C. promissa* (D.& S.) widespread; *C. electa* View. fairly widespread; *C. conjuncta* Esp. Mediterranean; *C. lupina* H.-S. eastern and southern Europe; *C. pacta* L. northern and eastern Europe.

LANGMAID, J. R.—Coleophoridae: *Coleophora chamaedryella* H.-S. Two specimens with their larval cases, bred from *Teucrium chamaedrys*. Found at St Adrien, Seine-Maritime, France, on the weekend joint Field Meeting between the BENHS and the Normandy Lepidopterists Society.

LUCKENS, C. J.—Butterflies from Corsica and southern France taken between 13–23 July 1996. In terms of species diversity, Corsica has a somewhat impoverished butterfly fauna but shares with the neighbouring island, Sardinia, a number of interesting endemics. During the visit, all of these species and subspecies save the exclusively vernal *Euchloe insularis* Stdgr were encountered, though many were present in very low numbers or found as single examples. The following were exhibited: single specimens of *Pyrgus armoricanus rufasaturata* Vty and *Aglais ichnus* Bonelli; a variable series of *Argynnis paphia* L., by no means all of which were f. *immaculata* Bellier, the "usual" Corsican form; *Plebejus idas bellieri* Oberth. was expected to be difficult to find, as it is seldom included in collecting lists, but in the event it was discovered in a number of localities, and in one place a female was watched ovipositing on a stunted plant of *Genista corsica;* on the Col de Vizzavna, *idas* flew beside the road, but higher up it was replaced by *Plebejus argus corsicus* Bellier, a race with blue-washed females and an unusually pale-spotted underside; the Corsican Swallowtail, *Papilio hospiton* Gn. was seen in small numbers in one locality along with another protected species, *Argynnis elisa* God., which was also found above Vizzavona. Some collecting was done on the way down through France, and on the return journey a detour was made for *Agrodiaetus dolus vittatus* Oberth. The exhibit illustrated differences between this subspecies and the nominotypical *A. dolus dolus* Hübn., which was found in two localities during the expedition.

REVELL, R. J.—A selection of 24 species of Geometridae collected in Sierra Leone, West Africa, 1967–69: *Victoria immunifera* Prout, *V. pulveriplaga* Warren, *V. peromata* Warr. and *Victoria sp.* near *V. gordoni* Prout; *Archichlora viridimacula* Warr. and *A. marginata* Warr.; *Bathycolpodes subfuscata* Warr.; *Hypocoela subfulva* Warr.; *Somatina chalyboeta* Walk., *S. figurata* Warr., *S. irregularis* Warr. and *S. punctulata* Warr.; *Melinoessa perlimbata* Gn., *M. palumbata* Warr. and *M. fulvescens* Prout; *Antibotyodes dentilinea* Warr.; *Sphingomima cinereomarginata* Holland; *Gongopteryx fasciata* Holland; *Plegapteryx anomalous* H.-S.; *Semiothisa plutocrpsis* Herbulot, *S. punctiversa* Warr., *S. trigonoleuca* Herbulot, *S. fulvisparsa* Warr. and *S. streniata* Gn.

WARING, P. A., SPALDING, A. & COLLINS, G. A display of photographs and specimens illustrating the objectives and results of the three-man BENHS expedition to Belize, Central America, 19.i–16.ii.1996. Most of the hawkmoths (Sphingidae) shown came to light traps and most of the large Noctuidae were recorded at bait-

traps. Both types of trap were operated within forest and in adjacent cleared areas as part of a project to compare the moth and butterfly faunas of the two contrasting habitats. A more detailed account is given in the *British Journal of Entomology and Natural History* **9**(4). Below, the following site codes are used: T = Tamandua, St Margaret's, in moist forest edge off the Hummingbird Highway in the foothills of the Mayan Mountains in central Belize. R = Rio Bravo Research Station, Programme for Belize, in moist forest in northern Belize. L = Lubantum, Fallen Stones Butterfly Ranch, in rainforest edge near Punta Gorda, southern Belize. S = John Spang's camp, in mangrove swamp near Punta Gorda.

Sphingidae: *Cocytius duponcheli* Poey (R); *Manduca sexta* L. (T); *Adhemarius ypsilon* Roths. & Jord. (R); *A. gannascus* Stoll (R, L); *Protambulyx strigilis* L. (L, S); *Isognathus rimosa* Grote (R); *Pachylia ficus* L. (R); *Madoryx oiclus* Cram. (R); *Callionima falcifera* Gehlen (T, R, L); *Xylophanes pluto* F. (T, S); *X. anubus* Cramer (L); *X. chiron nechus* Cramer (L); *X. titana* Druce (L); *X. terse* Drury; *X. ibya* Druce (R); *Aleuron chloroptera* Boisd. (R).

Noctuidae: mainly taken at T, at bait traps. Catocalinae: *Ramphia albizona* Latreille. Ophiderinae: *Ascalapha odorata* L.; *Thysania zenobia* Cramer; *Letis buteo* Gn.; *L. mycerina* Cramer; *L. magna* Gmelin; *L. herilia* Stoll; *L. hypnois* Hübn.; *Cyclopis caecutiens* Hübn.; *Hemeroblemma hampsoni* Feige; *Latebraria amphipyroides* Gn.

WINOKUR, L. –An exhibit illustrating some observations made on the Grecian copper butterfly, *Heodes ottomanus* Lef., bred in southern England. Adults of the spring brood were taken by Mr B. Worthy at Kalavryta on Mt Chelmos, Greece, in April 1995, and produced an F_1 generation.

(1) Seven pupae were obtained and kept indoors. Two of the five summer-brood females (upper-and underside, 7.vii.1995) were exhibited. The only male to emerge achieved two pairings outdoors over potted sorrel (*Rumex*) under netting, proving that males will mate more than once. The butterflies were fed on 10% honey solution. One female was lost to a spider; the other laid F_2. Larval foodplant was supplemented with cut dock. Care of the stock was shared between the exhibitor and Mr N. Fletcher, London. (2) Over 70 'late summer' adults emerged between 31.viii and 5.x.1995. Such a third brood is rare even in Greece (the mountains are cooler) and was probably brought about by the sustained hot weather in Britain; normally this generation would overwinter as larvae. The emergence of males preceded that of the females by about a week, giving them time to reach sexual maturity and to establish territories, and ensuring they would encounter virgin females in the wild. The first two and last two of each sex to emerge were exhibited, showing the difference in upperside pattern between the sexes but similarity of the undersides. It was suggested that this was due to the need for camouflage while roosting (bird predation on related species suggests that *H. ottomanus* might be palatable) combined with different visual courtship signals. The less vivid upperside of the female may also render her less conspicuous when ovipositing. The last to emerge were distinctly smaller than the earlier ones. Eight pairings were obtained (two per sorrel plant) within raised clear polythene-covered frames, to maintain warmth and deter damp. (3) Of the resulting broods, one lot of larvae was brought indoors and pupated in January February 1996. The pupae were kept at 2 9 °C until 31.iii., to prevent premature emergence of the spring brood. Four of the resulting imagines were exhibited, including a male (11.iv.96) and two females (14.iv.) with extensive upperside blacking and extensive reduction in underside spotting. Hindwing 'tails' were smaller and undersides greyer than in the yellowish summer broods, illustrating seasonal variation. The fourth, a typical female (14.iv.) lived 42 days and yielded over

100 eggs which were, however, infertile. A second lot of larvae completed the life cycle outdoors and emerged in late April–May. They hid in dense foliage at a time when cool, dull weather inhibited activity, so that the emergence was noticed only after the chance to obtain further pairings had been lost. The experiment showed that the species can be bred outdoors in England, given added protection during winter.

Diptera

A wide selection of flies was exhibited, although the Syrphidae and "larger Brachycera" were as usual to the fore. The latter included one of the two species new to Britain exhibited, i.e. the asilid *Leptarthrus vitripennis* (Mg.) exhibited by Roger Hawkins. This species has evidently been overlooked here previously as Roger found one older specimen misidentified under *L. brevirostris* (Mg.) in The Natural History Museum, London, collections; it is probably more easily recognized as different in the male as it lacks the slender hind metatarsus. The other addition was a tachinid, *Clytiomya continua* (Panzer), shown by Colin Plant; this was formerly a reputed British species, but thought to have been wrongly recorded by van Emden and omitted altogether by Belshaw. The number of exhibits was on a par with last year, compared with the high point in 1994 and was not obviously affected by the coincidence of the Exhibition with the annual dipterists' meeting, although some dipterists who do not usually attend were able to spend part of the day at the Exhibition.

Alexander, K. N. A., & Foster, A. P.—A selection of the more interesting flies found in 1996 by the National Trust Biological Survey: *Oxycera rara* (Scop.) (Stratiomyidae), Long Mynd, Salop., 31.vii; *Choerades marginatus* (L.) (Asilidae), Dudmaston, Salop., 26.vii; *Microdon mutabilis* (L.) (Syrphidae), Hale Purlieu, S.Hants, 18.vi; *Myopa buccata* (L.) (Conopidae), Kenidjack, W. Corn. 13.v; *Zodion notatum* Mg. (Conopidae), Walcot Park, Salop. 29.vii.

Godfrey, A.—Mostly specimens reared in 1995: *Dictenidia bimaculata* (L.) (Tipulidae), ex wood debris, Grimsthorpe Park, Lincs, collected 10.vi, emerged 11.vii; *Ptychoptera albimana* (F.) (Ptychopteridae), ex water-filled tree cavities in buttress roots of beech, Bretton Park, Barnsley, S. Yorks, collected 26.iii, emerged 24.iv; *Mycetobia pallipes* Mg. (Mycetobiidae), ex rot hole debris, Calke Abbey, Derbys., emerged 30.v; *Ptiolina nigra* Staeger in Zetta (Rhagionidae), ex moss from base of an old oak, Chatsworth Park, Derbys., collected 24.iii, emerged 5.vi; *Euthyneura halidayi* Collin (Hybotidae), ex rot hole, Hugset Wood, Barnsley, S. Yorks, collected 26.iii, emerged 18.iv; *Platypalpus parvicauda* (Collin) (Hybotidae), ex rot hole, Hugset Wood, Barnsley, S. Yorks, collected 26.iii, emerged 2.v; *Drapetis arcuata* Loew (Hybotidae), ex sappy wood mould from cavity in horse chestnut (*Aesculus*), Grimsthorpe Park, Lincs, collected 10.vi, emerged 10.vii; *Systenus pallipes* (von Roser) (Dolichopodidae), ex rot hole, Calke Abbey, Derbys., collected 8.v, emerged 31.v; *S. leucurus* Loew (Dolichopodidae), ex sappy wood mould from cavity in horse chestnut (*Aesculus*), Grimsthorpe Park, Lincs, collected 10.vi, emerged 17.vii; *Microsania pectipennis* (Mg.) (Platypezidae), from bonfire smoke, Culzean Country Park, Ayrshire, 4.vii.1995; *Drosophila busckii* Coq. (Drosophilidae), ex rot hole material, Calke Abbey, Derbys., collected 8.v, emerged 30.v; *Lipara rufitarsis* Loew (Chloropidae), ex galls on *Phragmites australis*, Chippenham Fen, Cambs, collected 3.ii, emerged 1.v; *Stenomicra delicata* (Collin) (Stenomicridae), ex *Carex paniculata* tussocks, Amberley Wild Brooks, Sussex, 26.ix; *Paykullia maculata* (Fall.) (Rhinophoridae); *Admontia seria* (Mg.) (Tachinidae), ex oak log, Chatsworth Park,

Derbys., collected 24.iii, emerged 4.v; *Phaonia cincta* (Zett.) (Muscidae), ex sappy wood mould from cavity in horse chestnut (*Aesculus*), Grimsthorpe Park, Lincs, collected 10.vi, emerged 17–20.vii; *P. exoleta* (Mg.) (Muscidae), ex rot hole debris in beech, Hagnaby, Spilsby, Lincs, collected 1.vi, emerged 29.vi; *P. canescens* Stein (Muscidae), reared from under beech bark, Dunham Massey Park, Gtr Manchester, collected 2.iv, emerged 1.v.

HALSTEAD, A. J. Some local flies found in 1996: *Solva marginata* (Mg.) (Xylomyidae), on sycamore (*Acer pseudoplatanus*) leaf, White Rose Lane L.N.R., Woking, Surrey, 22.vi; *Brachyopa insensilis* Collin (Syrphidae), on sap run on horse chestnut, RHS Garden, Wisley, Surrey, 11.vi; *Noeeta pupillata* (Fall.) (Tephritidae), swept from roadside, near Thorne Colliery, Yorks, 15.vii; *Trypeta immaculata* (Macq.) (Tephritidae), Raincliffe Wood, Yorks, 18.vii; *Megamerina dolium* (F.) (Megamerinidae), Whitmoor Common, Surrey, 23.vi; *Colobaea bifasciella* (Fall.) (Sciomyzidae), Rossie Moor, near Montrose, Angus, 15.vii; *Ochthera mantis* (De Geer) (Ephydridae), pond margin, Kindrogan F.S.C., near Enochdhu, Perthshire, 8.viii.

HAWKINS, R. D.—Some Syrphidae and Asilidae recorded in 1996: (a) Asilidae: *Leptarthrus vitripennis* (Mg.), new to Britain, beaten from young birch (*Betula*) on south-facing chalk grassland invaded by scrub at Riddlesdown, Surrey, 1.vii (Plate 1, Fig. 13); the other previously known British species, *L. brevirostris* (Mg.), found at the same site on 16.vi.1995 and at Kenley Common on 6.vi.1996. (b) Syrphidae: *Chrysotoxum verralli* Collin, Kenley Common, Surrey, 10.vii; *Epistrophe melanostoma* (Zett.), West Wickham Common, W. Kent, 9.v, at dandelion (*Taraxacum*) flowers; *Meligramma cuchromum* (Kowarz), Riddlesdown, Surrey, 7.v, and West Wickham Common, 20.v, at flowers of *Angelica sylvestris*; *Platycheirus ambiguus* (Fall.), Riddlesdown, 7.v, and Farthing Downs, 3.v, beaten from sloe (*Prunus spinosa*); *Rhingia rostrata* (L.), Riddlesdown, 13.vi, in woodland; *Xylota xanthocnema* Collin, Spring Park, W. Kent, 16.vii, in woodland.

HODGE, P. J. Five species of Diptera found in 1996: *Sciapus contristans* (Wied.) (Dolichopodidae), Stodmarsh Turf Fields, E. Kent, 26.vii; *Callicera aurata* (Rossi) (Syrphidae), Mickleham, Surrey, 13.vii, one female at base of old lime tree (*Tilia*); *Megamerina dolium* (F.) (Megamerinidae), Naphill Common, Bucks, 5.viii, several swept off low vegetation in forest glade; *Cistogaster globosa* (F.) (Tachinidae), Oakhanger, N. Hants, 15.viii, one swept from sandy field; *Subclytia rotundiventris* (Fall.) (Tachinidae), Mickleham, Surrey, on umbel, no date given.

JONES, R. A. A selection of flies from various South London sites, found in 1995 and 1996: *Solva marginata* (Mg.) (Xylomyidae), Beckenham Place Park, Kent, 10.viii.95, on wing at woodland edge; *Odontomyia tigrina* (F.) (Stratiomyidae), Ruxley Gravel Pits, Darenth, Kent, 17.vi.96, on lakeside vegetation; *Criorhina floccosa* (Mg.) (Syrphidae), Dacres Wood, Lewisham, Kent, 4.vi.96, flying around base of large partly rotten turkey oak (*Quercus cerris*) (*Volucella zonaria* (Poda) and *V. inanis* (L.) were found in the same wood); *Dorycera graminum* (F.) (Ulidiidae), Hither Green N.R., Kent, 6.vi.96, swept from rough grassland (of only nine recorded sites since 1960, two are in the neighbouring Bromley area of Kent); *Merzomyia westermanni* (Mg.) (formerly included in *Icterica*) (Tephritidae), Hither Green N.R., Kent, many swept from ragwort (*Senecio* sp.), 22.viii.96; *Noeeta pupillata* (Fall.) (Tephritidae), Hither Green N.R., 10.vii.96; *Acinia corniculata* (Zett.) (Tephritidae), Tewkesbury Reservoir, Lewisham, Kent, one swept from rough grassland, 30.vii.95, another swept on 10.viii.95 (known from four other British sites, all National Nature Reserves).

PARKER, M.—Various Diptera recorded in 1996: *Symphoromyia immaculata* (Mg.) (Rhagionidae), male and female from long grass at Kipling Cotes chalk pit, Yorks, 16.vii; *Bombylius canescens* Mikan (Bombyliidae), St Gabriel's, Golden Cap Estate, Dorset, 22.vi; *Eriozona syrphoides* (Fall.) (Syrphidae), female at hawthorn (*Crataegus monogyna*), Delcombe Woods, Dorset, 9.vi; *Platycheirus sticticus* (Mg.) (Syrphidae), male from low herbage in woodland ride at Newton Dale, Yorks, 18.vii; *Callicera rufa* Schummel (Syrphidae), reared from larvae in rot hole of Scots Pine (*Pinus sylvestris*), Rothiemurchus Forest, Inverness, larvae 29.v, pupated 19.vi, emerged 18.vii; *Lejogaster tarsata* (Megerle) (=*splendida* (Mg.)) (Syrphidae), pondside vegetation at Farings Reserve, Yorks, 19.vii; *Leopoldius signatus* (Wied.) (Conopidae), male at Fordington Fields, Dorchester, Dorset, 11.ix; *Zodion cinereum* (F.) (Conopidae), male swept from heathland vegetation at Warmwell Heath, Dorset, 27.vii; *Myopa polystigma* Rond. (Conopidae), male at hawthorn, Scrubbity Burrows, Cranbourne Chase, Dorset, 2.vi; *Hypoderma diana* Brauer (Oestridae), female on sandy track at Rothiemurchus Forest, Inverness, 12.vii.

PLANT, C. W. —*Clytiomya continua* (Panzer) (Tachinidae), new to Britain, one male from the disused Alsa Sand Pit, Elsenham, Essex, 13.vi.1996; it was swept over bare gravel in the vicinity of nests of aculeate Hymenoptera, although the fly is a parasite of Heteroptera (family Pentatomidae).

PORTER, D. A.—*Macquartia tenebricosa* (Mg.) (Tachinidae), reared from a *Chrysolina* (Coleoptera, Chrysomelidae) larva found on *Mentha* sp. in a shaded marshy area at Pippingford Park, E. Sussex, 10.ix; both *Chrysolina polita* and *C. menthastri* adults were present in the area but the exuvium associated with the parasite was believed to be that of *C. menthastri.*

WASS, A.—*Pipizella maculipennis* (Mg.) (Syrphidae), a female swept from heathland vegetation at Warmwell Heath, Dorset, 16.vii, a new record for Dorset; attention was drawn to the diagnostic characters, an obvious wing shade and long antennae (Plate 1, Fig. 12).

COLEOPTERA

New county records are indicated with an asterisk (*) unless otherwise stated.

ALEXANDER, K. N. A.—*Diaperis boleti* (L.) (Tenebrionidae), the Sandlings district, East Suffolk, 19–20.x.1996, in brackets of birch polypore *Piptoporus betulinus* at four localities.

ALEXANDER, K. N. A. & FOSTER, A. P.—A selection of the more interesting beetles found during the work of the National Trust's Biological Survey in 1996. *Hydroporus ferrugineus* Stephens (Dytiscidae), Long Mynd, Salop., 31.vii.1996, *Hydroporus longulus* Mulsant (Dytiscidae), Long Mynd, Salop. 29.vii.1996; *Paederus caligatus* Erichson (Staphylinidae), Hale Purlieu, South Hampshire, 18.vi.1996; *Prionocyphon serricornis* (Müller) (Scirtidae), Dudmaston Park, Salop., 5.viii.1996; *Malthinus frontalis* (Marsham) (Cantharidae), Dudmaston Park, Salop., 5.viii.1996; *Drilus flavescens* (Fourcroy) (Drilidae), Saddlescombe, West Sussex, vi.1996, Blackcap, East Sussex, vi.1996, and Hinton Ampner, North Hampshire, vi.1996; *Epuraea distincta* (Grimmer) (Nitidulidae), South Hole, North Devon, 22.v.1996, common in brackets of *Daedaleopsis confragrosa*; *Stethorus punctillum* (Weise) (Coccinellidae), Long Mynd, Salop., 23.vii.1996, from western gorse *Ulex gallii; Aderus oculatus* (Paykull) (Aderidae), Dudmaston Park, Salop., 5.viii.1996; *Abdera flexuosa* (Paykull) (Melandryidae), Torver Beck, Cumbria, 9.vii.1996, from brackets of *Inonotus*

radiatus; *Tomoxia bucephala* Costa (Mordellidae), Morden Hall Park, Surrey, 18.vi.1996, and Northchurch Common, Herts, 19.vii.1996; **Ischnomera cinerascens* (Pandelle) (Oedemeridae), Farnborough Hall, Warks, 7.vi.1996; **Calomicrus circumfusus* (Marsham) (Chrysomelidae), Long Mynd, Salop., 31.vii.1996, from western gorse *Ulex gallii*; *Dieckmanniellus (Nanophyes) gracilis* (Redtenbacher) (Apionidae), Hale Purlieu, South Hampshire, 16.vi.1996; *Cathormiocerus attaphilus* Brisout and *C. myrmecophilus* (Seidlitz) (Curculionidae), Scobbiscombe, South Devon, 20/21.v.1996; *Cossonus parallelepipedus* (Herbst) (Curculionidae), Morden Hall Park, Surrey, 18.vi.1996, under poplar bark; *Rhynchaenus iota* (F.) (Curculionidae), Hale Purlieu, South Hampshire, 18.vi.1996; **Miarus micros* (Germar) (Curculionidae), Scobbiscombe, South Devon, 20.v.1996, and Tregenna, East Corn., 17.v.1996; *Sibinia sodalis* Germar (Curculionidae), Kenidjack, Corn., 13.v.1996.

ALLEN, A. J. W. Some beetles collected in 1996. *Atheta (Phyconoma) immigrans* Easton (Staphylinidae), Isle of Grain, West Kent, 8.viii.1996, under seaweed; *Eulagius filicornis* (Reitter) (Mycetophagidae), Reading, Berkshire, 26.viii.1996, beaten from dead oak and beech branches; **Anthicus tobias* Marseul (Anthicidae), West Parley, Dorset, 25.x.1996, in manure heap; *Psylliodes cucullata* (Illiger), near Aberdare, Glamorgan, 5.x.1996, several swept; *Tachyerges decoratus* (Germar) (Curculionidae), Leckford, N. Hants., 11.iv.1996, on Purple Willow *Salix purpurea*.

BRATTON, J.—*Cercyon alpinus* Vogt (Hydrophilidae), Oakhall Coppice, West Glos, 3.vi.1996, in horse dung in woodland; *Aphodius porcus* (F.) (Scarabaeidae), Burghley Park, Northants, 5.x.1996, on the wing in sheep pasture; *Aphodius zenkeri* Germar (Scarabaeidae), Castor Hanglands NNR, Northants, 22.ix.1996, in deer dung in woodland; *Telmatophilus brevicollis* Aubé (Cryptophagidae), Baston Fen, South Lincs, 20.vii.1996, on flowers of branched bur-reed *Sparganium erectum*; *Tomoxia bucephala* Costa (Mordellidae), Wood Walton Fen NNR, Hunts, 21.vii.1996; *Ischnomera cinerascens* (Pandelle) (Oedemeridae), Barnack Hills and Holes NNR, Northants, 15.vi.1996, on purging buckthorn flowers.

COLLIER, M. J.—Some notable beetles recorded from Norfolk between 1994 and 1996, including four new county records (*). **Amara montivaga* Sturm (Carabidae), Cranwich Heath, 7–28.vi.1994, pitfall trap in clear-felled pine plantation (also on 15.v.–7.vi.1994 and 28.vii.1994); **Hydnobius latifrons* (Curtis) (Leiodidae), Thetford, 2.vii.1994, evening sweeping on Breckland heath; *Leiodes rugosa* Stephens (Leiodidae), Thetford, 16.ix. 16.x.1994, in pitfall trap on Breckland heath; *Carpelimus lindrothi* Palm (Staphylinidae), Thomson Common, 26.iii.1994, sieving sedge tussock litter; *Oxytelus fulvipes* Erichson (Staphylinidae), Wheatfen, Surlingham, 20.xi.1994, in litter at base of sedge-tussock; *Tachyusa coarctata* Erichson (Staphylinidae), Wheatfen, Surlingham, 15.ix.1994, running on wet mud on dyke bank; *Agrilus sinuatus* (Olivier) (Buprestidae), Stanford PTA, 26.viii.1996, beating isolated hawthorn bush; *Lycoperdina succincta* (L.) (Endomychidae), Stanford PTA, 16.ix.1994, in small puffball fungus; *Anisoxya fuscula* (Illiger) (Melandryidae), Sisland, 15.ix.1996, beating young ash on edge of mixed woodland; **Abdera biflexuosa* (Curtis) (Melandryidae), Stanford PTA, 19.vi.1995, beating low branches of old oak; *Abdera triguttata* (Gyll.) (Melandryidae), Thetford, 6.vii.1994, beating dead branches of fallen conifer; *Anthicus bimaculatus* (Illiger) (Anthicidae), Holkham, 9.vi.1996, running on strand-line driftwood at top of beach; **Galeruca interrupta* auct. Brit. not Illiger (Chrysomelidae), Norfolk Broads, 13.x.1996 (also on 1–22.ix.1996), associated with creeping thistle *Cirsium vulgare*, last recorded from Britain in 1919; *Psylliodes sophiae* Heikertinger (Chrysomelidae), Stanford PTA, 12.vii.1996 (also on 20–28.vii.1996 & 16.viii.1996), on young flixweed *Sisymbrium sophia*; *Rhynchites longiceps* Thomson (Attelabidae), Stanford PTA, 16.vi.1996,

beating sallow; *Orthochaetes setiger* (Beck) (Curculionidae), Cranwich Heath, 14.viii.–16.ix.1994, pitfall trap in clear-felled pine plantation; *Neophytobius muricatus* (Brisout) (Curculionidae), Thomson Common, 21.x.1995, grubbing in dried-out pond; *Pityogenes trepanatus* (Nördlinger) (Scolytidae), Stanford PTA, 19.vi.1995, general sweeping.

COPESTAKE, D. R.—Some beetles taken in 1996. *Harpalus froelichi* Sturm (Carabidae), near Lakenheath, West Suffolk, 31.vii.1996, at plant roots in a private field; *Masoreus wetterhali* (Gyll.) (Carabidae), near Lakenheath, West Suffolk, 31.vii.1996, at plant roots in a private field; *Staphylinus ophthalmicus* Scopoli (Staphylinidae), Thetford Heath NNR, West Suffolk, 31.vii.1996, in pit-fall trap; *Procraerus tibialis* (Boisd. & Lac.) (Elateridae), High Standing Hill, Windsor Forest, Berks., 5.vi.1996, on hawthorn *Crataegus* blossom; *Melasis buprestoides* (L.) (Eucnemidae), High Standing Hill, Windsor Forest, Berkshire, 5.vi.1996, flying by dead beech; *Lycoperdina succincta* (L.) [with *Lycoperdina bovistae* (F.) for comparison] (Endomychidae), near Lakenheath, West Suffolk, 17.ix.1996, pit-fall trap in a private field; *Ischnomera cinerascens* Pandelle (Oedemeridae), Wychwood Forest, Oxon, 28.v.1996, on flowers; *Leptura scutellata* F. (Cerambycidae), High Standing Hill, Windsor Forest, Berks., 27.vi.1996, flying across clearing; *Judolia ceambyciformis* (Schrank) (Cerambycidae), High Standing Hill, Windsor Forest, Berks., 27.vi.1996, on hogweed *Heracleum* umbel; *Phytoecia cylindrica* (L.) (Cerambycidae), Tubney, Oxon, 14.v.1996, on flowers; *Dieckmanniellus* (*Nanodes*) *gracilis* (Redtenbacher) (Apionidae), pond near Brockenhurst, South Hampshire, 17.vii.1996; *Cionus longicollis* Brisout (Curculionidae), Maidscross Hill, Lakenheath, West Suffolk, 31.vii.1996; *Glocianus pilosellus* (Gyll.) (Curculionidae), Tubney, Oxon, 14.v.1996, grubbing near lesser dandelion *Taraxacum laevigatum*.

GODFREY, A.—Two species of Coleoptera from south-west Scotland.

(1) *Procas granulicollis* Walton (Curculionidae), Loch Wood, Beattock, Dumfriesshire, 10.vi.1996; Kirkconnel Flow, Dumf., 11.vi.1996; Lochside Plantation, Castle Loch, Lochmaben, Dumf. 12.vi.1996; Castramon Wood, Gatehouse of Fleet, Kirk., 13.vi.1996, all in open areas of birch *Betula* woodland by searching climbing corydalis *Corydalis claviculata* for signs of feeding damage.

(2) *Cryptocephalus sexpunctatus* (L.) (Chrysomelidae), Kirkconnel Flow, Dumf., 11.vi.1996, one on a grass stem amongst bracken and climbing corydalis *Corydalis claviculata*.

HACKETT, D. S.—(1) The Stag Beetle *Lucanus cervus* (L.) (Lucanidae), a large larva and two adults (with the Lesser Stag Beetle *Dorcus parallelipipedus* (L.) (Lucanidae) for comparison), together with an appeal for recent records in the London area.

(2) The Musk Beetle *Aromia moschata* (L.) (Cerambycidae), Tottenham, Middx, TQ344888, bred from a 5 cm diameter branch of Goat Willow *Salix caprea* agg. on a piece of railway land beside the River Lee, the larval boring was discovered in v.1995 and a section of the branch was removed in iv.1996, the adult emerged on 4.vi.1996.

HALSTEAD, A. J.—Some local Coleoptera taken in 1996. *Gyrinus caspius* (Ménétriés) (Gyrinidae), Lunan Bay, north of Montrose, Forfar, 7.viii.1996, at M.V. light; *Agrilus viridis* (L.) (Buprestidae), Whitmoor Common, Surrey, 23.vi.1996, swept off sallow *Salix* sp.; *Podabrus alpinus* (Paykull) (Cantharidae), East Burnham Common, Berks., 8.vi.1996, swept; *Orsodacne cerasi* (L.) (Chrysomelidae), Scarwell Wood, Forge Valley, near West Airton, N.E.Yorks, 18.vii.1996, on hogweed *Heracleum* umbel; *Zeugophora subspinosa* (F.) (Chrysomelidae), Whitmoor Common, Surrey, 2.vi.1996, swept off aspen *Populus tremula*; *Byctiscus betulae* (L.)

(Attelabidae), Whitmoor Common, Surrey, 2.vi.1996, swept off aspen *Populus tremula*; *Grypus equiseti* (F.) (Curculionidae), Scarwell Wood, Forge Valley, near West Airton, N.E. Yorks, 18.vii.1996, swept.

HAWKINS, R. D.—Coleoptera recorded during 1996.

(1) One species from England. *Opilo mollis* (L.) (Cleridae), Spring Park, West Kent, 17.vi.1996, on trunk of oak *Quercus* at night.

(2) Three species from northern France. *Trichodes alvearius* (F.) (Cleridae), Bouquelon near Pont-Audemer, 31.v.1996, on composite flowers; *Oberea oculata* (L.) (Cerambycidae), south of Calais, 3.ix.1996, on sallow *Salix* in marshland; *Agelistica alni* (L.) (Chrysomelidae), Marais Vernier near Pont-Audemer, 31.v.1996, on alder *Alnus*.

HENDERSON, M.—Some typical beetles from Braunton Burrows, North Devon. *Aegialia arenaria* (F.) (Scarabaeidae), near Dog Walk, 22.ix.1996, trapped in sand dune; *Agrypnus murinus* (L.) (Elateridae), 4.vi.1988, swept; *Melanimon tibialis* (F.) (Tenebrionidae), 4.vi.1988; *Isomira murina* (L.) (Tenebrionidae), 4.vi.1988; *Oedemera nobilis* (Scop.) (Oedemeridae), 4.vi.1988; *Cryptocephalus aureolus* Suff. (Chrysomelidae), 4.vi.1988; *Chrysolina banksi* (F.) (Chrysomelidae), on coastal path near Westward Ho!, 5.vi.1988; *Chrysolina brunsvicensis* (Grav.) (Chrysomelidae), Broadsands Car Park, 25.ix.1996, crawling on ground.

HOARE, D. I. B.—Twenty-one species of Coleoptera, mostly collected in 1994 and 1995. *Blethisa multipunctata* (L.) (Carabidae), Coul Links, Embo, E.Suther., 24.v.1995, on mud; *Amara spreta* Dej. (Carabidae), Seaton Carew, Durham, 28.v.1995, on sand dunes; *Harpalus ardosiacus* (Luts.) (Carabidae), Treyarnon, West Corn., 10.vii.1995, on cliff-top path; *Odacantha melanura* (L.) (Carabidae), Lower Test Marshes, S. Hants. 7.v.1995, swept; *Hygrobia hermanni* (F.) (Hygrobiidae), East Prawle, South Devon, 17.x.1995, in pond; *Gyrinus urinator* Ill. (Gyrinidae), Treyarnon, West Corn., 16.vii.1995, in slow-running stream; *Paederus fuscipes* Curtis (Staphylinidae), Lower Test Marshes, S. Hants., 7.v.1995, swept; *Tachinus elongatus* Gyll. (Staphylinidae), Schiehallion, Mid Perth, 25.v.1994, under stone; *Podabrus alpinus* (Paykull) (Cantharidae), Selborne, N. Hants, 5.vi.1994, on nettles *Urtica*; *Dermestes maculatus* Deg. (Dermestidae), Holmesley, S. Hants, 6.viii.1994, in dead ferret; *Anobium inexpectatum* Lohse (Anobiidae), Emer Bog, S. Hants, 18.vi.1995, beaten off oak *Quercus*; *Dendrophagus crenatus* (Payk.) (Cucujiidae), Glenmore, Easterness, vi.1993, under spruce bark; *Opatrum sabulosum* (L.) (Tenebrionidae), Pentire Head, East Corn. 13.vii.1994, under stone; *Bolitophagus reticulatus* (L.) (Tenebrionidae), by Loch Rannoch, Mid Perth, 19.viii.1994, in *Fomes* on birch; *Agapanthia villosoviridescens* (Deg.) (Cerambycidae), Brackley, Northants, 30.v.1994, on *Heracleum*; *Attelabus nitens* (Scop.) (Attelabidae), Hale Purlieu, S. Hants, 14.v.1994, on beet; *Otiorhynchus nodosus* (Müll.) (Curculionidae), Glen Feshie, Easterness, 21.v.1995, on forest track; *Otiorhynchus scaber* (L.) (Curculionidae), Glen Feshie, Easterness, 24.v.1993, swept; *Magdalis carbonaria* (L.) (Curculionidae), Selborne, North Hampshire, 31.v.1995, on brushwood; *Mecinus circulatus* (Marsh.) (Curculionidae), Portland, Dorset, 12.vi.1994, on stone; **Pityogenes trepandatus* (Nörd.) (Scolytidae), Winchester, S. Hants, 5.ix.1991, at m.v.light.

HODGE, P. J.—Nineteen species of Coleoptera, including one which has not previously been recorded in Britain. *Laccophilus ponticus* Westhoff (Dytiscidae), Lewes Brooks, East Sussex, TQ4009, 16.vii.1996, one male in the Celery Sewer; *Stenichnus pusillus* (Müller & Kunze) (Scydmaenidae), The Coombe, Lewes, E. Sussex, TQ4310, 5.v.1996, several in moss and at roots of low plants; **Alevonota aurantiaca* Fauvel (Staphylinidae), Mount Caburn N.N.R., Glynde, East Sussex,

TQ4408, 29.v.1996, one at roots of low plants; **Elodes tricuspis* Nyholm (Scirtidae), Parham Park, West Sussex, TQ0514, 6.vi.1996, on vegetation overhanging stream; *Antherophagus canescens* Grouvelle (Cryptophagidae), Matley Bog, New Forest, S. Hants, SU3307, 3.viii.1996, one swept; **Mordellistena imitatrix* Allen (Mordellidae), Oakhanger, N. Hants, SU7636, 15.viii.1996 and West Lavington, West Sussex, SU9020, several swept off Mugwort *Artemisia vulgaris*; **Mordellistena parvuloides* Ermisch (Mordellidae), near Bexhill, East Sussex, TQ7609, 30.vii.1996, one female swept off Creeping Thistle *Cirsium arvense*; **Bruchidius varius* (Olivier) (Bruchidae), Ditchling Beacon, East Sussex, TQ3313, 9.x.1994, one female swept, and Novington Lane, Plumpton, East Sussex, TQ3713, five females on 11.vii.1996 and two males, one female on 18.ix.1996, the first records for the British Isles; **Cassida denticollis* Suffrian (Chrysomelidae), A27 road verge near Falmer, East Sussex, TQ3709, 27.viii.1996, one at roots of Yarrow *Achillea millefolium*; *Cassida prasina* Ill. (Chrysomelidae), A27 road verge near Falmer, East Sussex, TQ3709, 27.viii.1996, one at roots of Yarrow *Achillea millefolium*; **Bruchela rufipes* (Ol.) (Anthribidae), Mickleham, Surrey, TQ1753, 8.vii.1996, several on Wild Mignonette *Reseda lutea*; **Rhynchites longiceps* Thoms. (Attelabidae), Powdermill Reservoir near Brede, East Sussex, TQ7920, 21.viii.1996, female on sallow *Salix*; *Otiorhynchus porcatus* (Herbst) (Curculionidae), Lewes, East Sussex, TQ4009, 1.v.1996, one at roots of Cowslip *Primula veris*; **Lixus scabricollis* Boh. (Curculionidae), Telscombe Cliffs, East Sussex, 25.ix.1996, at roots of sea beet *Beta vulgaris* on cliff top; *Hypera suspiciosa* (Herbst) (Curculionidae), A267 road verge near Hellingly, East Sussex, TQ5711, 17.vii.1996, male on Bird's-foot Trefoil *Lotus corniculatus*; *Trichosirocalus horridus* (Panz.) (Curculionidae), Moulsford Downs, Berkshire, SU5682, 10.vii.1996, plentiful on Musk Thistle *Carduus nutans*; *Hadroplontus trimaculatus* (F.) (Curculionidae), Moulsford Downs, Berks., SU5682, 10.vii.1996, plentiful on Musk Thistle *Carduus nutans*; *Smicronyx reichi* (Gyll.) (Curculionidae), Buckle By-pass, Seaford, East Sussex, TQ4700, 9.v.1996, several at roots of low plants; **Isochnus populicola* (Silfverberg) (Curculionidae), near Rise Farm, Lewes, East Sussex, TQ4108, 16.vii.1996, several on Crack Willow *Salix fragilis*.

JONES, R. A. —Some notable and interesting beetles taken in various south London sites in recent years. *Pterostichus macer* (Marsh.) (Carabidae), Nunhead, Surrey, 12.viii.1996, crawling in a very small front garden; *Trichius zonatus* Germar (Scarabaeidae), Dacres Wood, Lewisham, West Kent, 15.vii.1996, on the wing around bramble flowers near large rotten beech, last recorded in Britain in 1959; *Agrilus angustulus* (Illiger) (Buprestidae), Hither Green NR, West Kent, 18.vi.1996 and 10.vii.1996, by sweeping; *Agrilus laticornis* (Illiger) (Buprestidae), Beckenham Place Park, Bromley, West Kent, 28.vii.1995, beating oak; *Malachius marginellus* (Olivier) (Melyridae), Chinbrook Orchard, Grove Park, Bromley, West Kent, 27.vi.1996, sweeping; *Aspidiphorus orbiculatus* (Gyll.) (Sphindidae), Beckenham Place Park, Bromley, West Kent, 19.vi.1995, sweeping; *Helops caeruleus* (L.) (Tenebrionidae), Blackheath Hill, West Kent, 3.x.1995, under bark of sycamore branch; *Conopalpus testaceus* (Olivier) (Melandryidae), Beckenham Place Park, Bromley, West Kent, 27.vii.1995, beating dead oak branch; *Orchesia micans* (Panzer) (Melandryidae), Beckenham Place Park, Bromley, West Kent, 19 & 29.vi.1995, in *Ganoderma* fungus on large turkey oak; *Cicones undatus* Guér.-Mén. (Colydiidae), Honor Oak Park, Surrey, 25.viii.1995, under sycamore bark infected with sooty bark disease (also found in several other localities in the south London area, sometimes in abundance); *Synchita separanda* (Reitt.) (Colydiidae), Honor Oak Park, Surrey, 25.viii.1995, several under sycamore bark infected with sooty bark disease (also found under sycamore bark at Dacres Wood, Lewisham,

West Kent, 15.vii.1996), and on horse chestnut at Hither Green NR, West Kent, 27.vi.1996): *Anommatus duodecimstriatus* (Müller, P.W.J.) (Bothrideridae), Dacres Wood, Lewisham, West Kent, 4.vi.1996, under bark on underside of sycamore log infected with sooty bark disease [also found with it were many specimens of *Biphyllus lunatus* (F.) (Biphyllidae) and *Diplocoelus fagi* Guér.-Mén. (Biphyllidae)]; *Litioceris lilii* (Scopoli) (Chrysomelidae), Dacres Wood, Lewisham, West Kent, 17.vii.1996, swept from pond-side vegetation; *Chrysolina oricalcia* (Müller, O.F.) (Chrysomelidae), Beckenham Place Park, Bromley, West Kent, 6.vi.1995, swept; *Bruchela rufipes* (Olivier) (Urodontidae), Hither Green NR, West Kent, 10.vii.1996, two swept in rough grassland; *Rhinoncus albicinctus* Gyll. (Curculionidae), Beckenham Place Pond, Bromley, West Kent, 23.v.1995, swept from pond-side vegetation.

Levey, B. & Pavett, P.M.—A selection of uncommon beetles collected at two Welsh parkland sites, during a research programme in collaboration with Countryside Council for Wales. Species marked with an asterisk (*) are thought to be new to Wales.

(1) Species collected at Dinefwr Deer Park, Llandeilo, Carmarthenshire. *Hadrognathus longipalpis* (Mulsant & Rey) (Staphylinidae), 1.x.1996, on cut end of large felled oak trunk; *Selatosomus bipustulatus* (L.) (Elateridae), 22–31.v.1996, in aerial interception trap in lower canopy of ancient oak; *Dirhagus pygmaeus* (F.) (Eucnemidae), in ground level flight interception trap; *Ptinus subpilosus* Sturm (Ptinidae), 12–27.vi.1996, in ground level flight interception trap; *Phloiophilus edwardsi* Stephens (Phloiophilidae), 20–27.ix.1996, in aerial interception trap in lower canopy of ancient oak; **Sphindus dubius* (Gyll.) (Sphindidae), 5–27.vi.1996, in ground level flight interception trap; **Enicmus brevicornis* (Mannerheim) (Lathridiidae), 12–21.vi.1996, in ground level flight interception trap; *Hypulus quercinus* (Quensel) (Melandryidae), 5–12.vi.1996, in aerial interception trap in lower canopy of ancient oak; *Conopalpus testaceus* (Olivier) (Melandryidae), 14.vi.1996, beaten from foliage of ancient oak containing red rot; *Pyrrhidium sanguineum* (L.) (Cerambycidae), 14.iv.1996, teneral adult taken under bark of oak bough resting against tree; **Xyleborus dispar* (F.) (Scolytidae), 5–12.vi.1996, in aerial interception trap in lower canopy of ancient oak.

(2) Species collected at Llanover Estate, Gwent. **Triarthron maerkeli* Märkel (Leiodidae), 20–26.vi.1996, in ground level flight interception trap; **Ptinus sexpunctatus* Panzer (Ptinidae), 13–20.vi.1996, in aerial interception trap in lower canopy of ancient oak; **Caenoscelis subdeplanata* Brisout (Cryptophagidae), 13–26.vi.1996, in ground level flight interception trap; *Symbiotes latus* Redtenbacher (Endomychidae), 13–20.vi.1996, in aerial interception trap in lower canopy of ancient oak; **Enicmus rugosus* (Herbst) (Lathridiidae), 6–26.vi.1996, mainly in aerial interception traps, but also by ground level flight interception traps and malaise traps; **Aderus populneus* (Creutzer) (Aderidae), 12.ix.1996, in artificial birds nest made of hay, placed in a rot hole of beech tree.

Lott, D. A.—23 species of beetles from Croome Park, Worcs., collected in May and June 1996. *Eutheia formicetorum* Reitter (Scydmaenidae), in decaying heartwood of beech; *Stenichnus godarti* (Latreille) (Scydmaenidae), in rotten log; *Xantholinus angularis* Ganglbauer (Staphylinidae), in decaying heartwood of oak; *Euryusa sinuata* Erichson (Staphylinidae), in decaying heartwood and grass in oak; *Aulonothroscus brevicollis* (de Bonvouloir) (Throscidae), beaten from dead oak branches; *Malthodes crassicornis* (Mäklin) (Cantharidae), beaten from dead oak branch; *Globicornis nigripes* (F.) (Dermestidae), on hogweed flower; *Trinodes hirtus* (F.) (Dermestidae), beaten from dead oak branches; *Hadrobregmus denticollis* (Creutzer)

(Anobiidae) beaten from dead branch of field maple; *Opilo mollis* (L.) (Cleridae), beaten from dead oak branches; *Korynetes caeruleus* (Degeer) (Cleridae), beaten from dead oak branches; *Atomaria morio* Kolenati (Cryptophagidae), in grass trap in hollow oak; *Orthoperus nigrescens* Stephens (Corylophidae), beaten from oak and in grass traps; *Enicmus rugosus* (Herbst) (Lathridiidae), beaten from dead oak branch; *Alphitobius diaperinus* (Panzer) (Tenebrionidae), in grass trap at foot of old oak; *Abdera biflexuosa* (Curtis), beaten from oak branches; *Aderus populneus* (Creutzer) (Aderidae), beaten from dead oak branches; *Scraptia testacea* Allen (Scraptiidae), beaten from dead oak branch; *Mesosa nebulosa* (F.) (Cerambycidae) beaten from dead oak branch; *Tropideres sepicola* (F.) (Anthribidae), beaten from dead oak branches; *Anthribus fasciatus* (Forster) (Anthribidae), beaten from oak branches; *Curculio villosus* F. (Curculionidae), beaten from oak branch; *Ernoporus fagi* (F.), beaten from dead oak branch.

McCLENAGHAN, I.—A selection of interesting beetles, many of which were collected using a 120w m.v. light trap fitted with a much smaller container under the lamp. *Lasiotrechus discus* (F.) (Carabidae), Southam, Warks, SP424614, 19.vii.1995, in m.v. light trap; **Bembidion punctulatum* Drapiez (Carabidae), Wellesbourne, Warks, SP25, 6.v.1993, this sand quarry site has now been returned to an agricultural field; **Bembidion femoratum* Sturm (Carabidae), Ryton Wood Pool, Warks, SP372727; **Perigona nigriceps* (Dejean) (Carabidae), Southam, Warks, SP424614, 20.vii.1995, in m.v. light trap; *Leiodes cinnamomea* (Panzer) (Leiodidae), Hidcote, Glos., 24.x.1996, a dead specimen in a fountain, a truffle feeder; *Liocyrtusa vittata* (Curtis) (Leiodidae), Southam, Warks, SP424614, 27.viii.1995, in m.v. light trap; *Ptenidium punctatum* (Gyll.) (Ptiliidae), Southam, Warks, SP424614, 29.vi.1993 and 5.v.1995, in m.v. light trap; *Ptenidium pusillum* (Gyll.) (Ptiliidae), Southam, Warks, SP424614, 7.v.1993, in m.v. light trap; *Oligella foveolata* (Allibert) (Ptiliidae), Southam, Warks, SP424614, 24.vi.1992, in m.v. light trap; *Oligella intermedia* Besuchet (Ptiliidae), Southam, Warks, SP424614, 27.viii.1991, in m.v. light trap; **Smicrus filicornis* (Fairmaire & Laboulbène) (Ptiliidae), Southam, Warks, SP424614, 28.viii.1995, in m.v. light trap; *Cypha longicornis* (Paykull) (Staphylinidae), Southam, Warks, SP424614, 1.ix.1995, in m.v. light trap; *Phyllopertha horticola* (L.) (Scarabaeidae), Fanore foreshore, the Burren, Co Clare, L21, 1.vi.1995, three melanics and a typical specimen; *Agrypnus murinus* (L.) (Elateridae), Fanore foreshore, the Burren, Co Clare, L21, 1.vi.1995, under a stone on sandy soil and from an ants nest, and Port Ballintrae, Co.Antrim, C94, 22.vi.1988, a new county record; *Lampyris noctiluca* (L.) (Lampyridae), Edenbridge, Kent TQ4446, 6.vii.1995, in m.v. light trap; *Meligethes exilis* Sturm (Nitidulidae), Fanore foreshore, the Burren, Co Clare, L21, 1.vi.1995; *Henoticus californicus* (Mannerheim) (Cryptophagidae), Southam, Warks, SP424614, 27.vii.1995, in m.v. light trap; *Atomaria fuscata* (Schoenherr) (Cryptophagidae), Southam, Warks, SP424614, 21.viii.1995, in m.v. light trap; *Mycetaea hirta* (Marsh.) (Endomychidae), Port Ballintrae, 2.ix.1992, two found dead in a lamp shade in doors, a dry rot feeder; *Endomychus coccineus* (L.) (Endomychidae), Oxford, SP4805, 10.x.1996, a melanic specimen with black head and pronotum taken in honey fungus in a west Oxford city garden, with a typical specimen from Thorndon Park, Brentwood, Essex, TQ69, 16.ix.1979; *Mycetophagus quadripustulatus* (L.) (Mycetophagidae), Southam, Warks, SP424614, 20.vii.1995, in m.v. light trap; *Colydium elongatum* (F.) (Colydiidae), Micheldever Woods, Winchester, N. Hants, SU53, 31.v.1993, under beech bark, an RDB3 species known from a few sites in southern England; *Strangalia quadrifasciata* (L.) (Cerambycidae), Wigton, Gatehouse of Fleet, Kirkcudbright, NX56, 12.v.1996, found emerged from a small roadside stump.

MANN, D. J.—*Tesarius mcclayi* (Cartwright) (Scarabaeidae), near Port Talbot, Glam., SS78, several found on sand dunes in 1995, a species new to the British Isles; *Cassida sanguinosa* Suffrian, North Devon, SS43, many found on Sneezewort *Achillea ptarmica*, previously only recorded from Ireland in the British Isles.

MANN, D. J. & PAVETT, P. M.—15 species of Coleoptera found at Allt-yr-Esgair (also known as Allt House Wood), Brecknockshire, SO1223 during 1996. *Oligota apicata* Erichson (Staphylinidae), in fungi on a dead ash tree and under beech bark, believed to be new to Wales; *Platycis minutaus* (F.) (Lycidae), 14.ix.1996, several on dead oak trunks; *Ctesias serra* (F.) (Dermestidae), 15.vi.1996, larvae under hawthorn bark and 22.vi.1996, adult beaten from dead oak branch; *Ptinomorphus imperialis* (L.) (Anobiidae), 22.vi.1996, one beaten from oak branch; *Enicmus brevicornis* (Mannerheim) (Lathridiidae), 14.ix.1996, one under beech bark, believed to be the second Welsh record; *Hypulus quercinus* (Quensel) (Melandryidae), 15.vi.1996, one beaten from hawthorn, believed to be the third Welsh record; *Melandrya caraboides* (L.) (Melandryidae), beaten from dead oak, under fungi on ash and by searching on dead oak and beech at night; *Orchesia minor* Walker (Melandryidae), on several occasions by beating dead hawthorn branches; *Cicones variegatus* (Hellwig) (Colydiidae), 14.ix.1996, one under beech bark, believed to be new to Wales; *Ischnomera cyanea* (F.) (Oedemeridae), 22.vi.1996, two by beating hawthorn blossom; *Oncomera femorata* (F.) (Oedemeridae), 15.vi.1996, one to m.v. light and 22.vi.1996, one by beating dead oak; *Pyrochroa coccinea* (L.) Pyrochroidae), 22.vi.1996, one by beating oak branches; *Stenostola dubia* (Laicharting) (Cerambycidae), 15.vi.1996, one to m.v. light; *Anaglyptus mysticus* (L.) (Cerambycidae), several by beating hawthorn blossom and on a dead cherry tree; *Magdalis cerasi* (L.) (Curculionidae), 22.vi.1996, two beaten from a dying apple tree, believed to be new to Wales.

MENZIES, I. S.—(1) British *Donacia* (Chrysomelidae) beetles. *Donacia aquatica* (L.), Burton Mill Pond, West Sussex, 14.vi.1991 & 30.v.1994, sweeping *Carex*; *Donacia bicolora* Zschach, Moor's River, Hurn, S. Hants, 29.vi.1994, on *Sparganium erectum* in edge of river, and Thundry Meadows, Elstead, Surrey, 7.viii.1995, on *Sparganium erectum* in River Wey; *Donacia cinerea* Herbst, Virginia Water, Surrey, 16.viii.1990, on *Typha angustifolia*, and Burton Mill Pond, West Sussex, 14.vi.1991, on *Typha latifolia*; *Donacia clavipes* F., Burton Mill Pond, West Sussex, 25.v.1991 & 22.v.1995, on *Typha latifolia*; *Donacia crassipes* F., Burton Mill Pond, West Sussex, 10.vii.1991, on *Nuphar lutea* in lake, and Ober Water, New Forest, S. Hants, 26.vii.1991, on *Nymphaea alba* in stream; *Donacia dentata* Hoppe, Amberley Wild Brooks, West Sussex, 2.viii.1990 & 11.viii.1990, on *Sagittaria sagittifolia*; *Donacia impressa* Paykull, Burton Mill Pond, West Sussex, 25.v.1991, swarming on flowers of *Carex paniculata*; *Donacia marginata* Hoppe, Burton Mill Pond, West Sussex, 14.vi.1991, on *Sparganium erectum*; *Donacia obscura* Gyll., Loch Garten, Easterness, 10.vi.1992, on *Carex* leaves; *Donacia semicuprea* Panzer, Amberley Wild Brooks, West Sussex, 20.vii.1991, on leaves of *Glyceria maxima*; *Donacia simplex* F., Bourne Bottom, Bournemouth, Dorset, 25.v.1991 & 14.vi.1991, on *Sparganium erectum*, and Burton Mill Pond, West Sussex, 10.vii.1991, on *Sparganium erectum*; *Donacia sparganii* Ahrens, Barcombe Mills, East Sussex, 25.viii.1990 & 28.vii.1991, on floating leaves of *Sparganium emersum* in River Ouse flood relief channel; *Donacia thalassina* Germar, Bolder Mere, Wisley, Surrey, 5.vi.1994, swarming on flowers of *Carex acutiformis* at lake margin, and Burton Mill Pond, West Sussex, 8.vi.1995, single example on *Carex*; *Donacia versicolorea* (Brahm), Amberley Wild Brooks, West Sussex, 2.viii.1990, on *Potamogeton*; *Donacia vulgaris* Zschach, *Plateumaris affinis* (Kunze), Burton

Mill Pond, West Sussex, 30.v.1994, on *Carex*, and Thursley Hammer Pond, Surrey, 30.v.1994, on *Carex*; *Plateumaris braccata* (Scopoli), Burton Mill Pond, West Sussex, 28.vi.1991 & 30.v.1994, on *Phragmites australis*; *Plateumaris discolor* (Panzer), Thursley Common, Surrey, 2.vi.1968, and Abernethy Forest, Easterness, 8.vi.1992, on Carex; *Plateumaris sericea* (L.), Sapperton Canal, Stroud, Glos, vi.1947, and Thursley Hammer Pond, Surrey, 2.vi.1994, on vegetation at pond margin; *Macroplea appendiculata* (Panzer), Talkin Tarn, Cumberland, 6.vi.1992, amongst submerged leaves of *Myriophyllum alterniflorum*.

(2) Examples of colour change in Chrysomelidae: possibly due to ageing or exposure. *Donacia bicolora* Zschach, Thundry Meadows, Elstead, Surrey, 4.viii.1995: a series of four adults from *Sparganium erectum* beside the River Wey which were of a blue/violet coloration; *Cryptocephalus hypochaeridis* (L.), two specimens off yellow composite flowers from Buckland Hills, Surrey, 5.vi.1989, both with normal metallic-green coloration, three specimens from Chipstead, Surrey, 29.viii.1955, and one specimen from Howell Hill, Cheam, Surrey, 10.ix.1996, all off yellow composite flowers, showing a marked smoky-black discoloration; *Cryptocephalus parvulus* Müller, O. F., three specimens from Lavington Common, West Sussex, 15.vii.1996, of the usual metallic-blue coloration, three specimens beaten off birch at Wisley Common, 5.ix.1996, mostly black (two have a faint marginal blue reflection on the elytra, possibly referable to var. *barbareae*).

MORRIS, M. G.—Some European and Macaronesian species of *Auletobius* (Attelabidae—Auletobiini). *Auletobius convexifrons* (Wollaston), from various localities on Tenerife and la Gomera, 10–20.xii.1995, by general beating, endemic to the Canaries; *Auletobius cylindricollis* (Wollaston), from various localities on Tenerife, 9–12.xii.1995, on *Rubus*, endemic to the Canaries; *Auletobius maculipennis* (du Val), Pto. di Teulada, Sardinia, 3.v.1996, beaten from *Tamarix*, rather scarce in southern Europe; *Auletobius maderensis* (Wollaston), from various localities in Madeira, 22–26.xi.1994, mainly on *Rubus*, endemic to Madeira; *Auletobius politus* (Serville), near Assemini, Sardinia, 3.v.1996, beaten from *Tamarix*, rather scarce in southern Europe; *Auletobius pubescens* (Kiesenwetter), from various localities in Mallorca, 13-14.iii.1992, and Cadiz Province, Spain, 8–9.iv.1992, on *Cistus*, common in southern Europe; *Auletobius* sp., Pto. S. Nicolas, Gran Canaria, 16.iii.1994, beaten from *Tamarix*, possibly an undescribed species.

OWEN, J. A.—Some beetles encountered in 1994, 1995 and 1996. *Pseudophonus griseus* (Panzer) (Carabidae), Wimbledon, Surrey, 2nd half July 1995, at m.v. light; *Microlestes minutulus* (Goeze) (Carabidae), Grain, West Kent, viii.1996, on the shore under sea-weed on very coarse sand; *Oligella intermedia* Besuchet (Ptiliidae), Epsom, Surrey, viii.1996, in the exhibitor's garden; *Oxytelus migrator* Fauvel (Staphylinidae), Headley Warren, Surrey, 1st half April 1995, in flight interception trap; *Euryporus picipes* (Payk.) (Staphylinidae), R.S.P.B. Abernethy Estate, Easterness, vii.1994, in pitfall trap in pine forest; *Dacrila pruinosa* (Kr.) (Staphylinidae), Headley Warren, Surrey, early April 1995, in flight interception trap; *Bythinus macropalpus* Aubé (Pselaphidae), Diss, East Norfolk, i.1996, in mole's nest; *Atomaria pseudatra* Reitter (Cryptophagidae), Thomson Common, West Norfolk, x.1995, in sedge tuft; *Anommatus diecki* Reitter (Bothrideridae), Epsom, Surrey, vii.1995, in underground pitfall trap in exhibitor's garden; *Stilbus atomarius* (L.) (Phalacridae) Woodbastwick Fen, x.1995, in reed debris; *Raymondionymus marqueti* (Aubé) (Raymondionymidae), Epsom, Surrey, vii.1995, in underground pitfall trap in exhibitor's garden; *Anthonomus humeralis* (Panzer) (Curculionidae), Ashtead Common, Surrey, vi.1995, beaten off crab apple.

PARSONS, M. S.—Beetles attracted to u.v. light traps in 1996. *Odontaeus armiger* (Scopoli) (Geotrupidae), Friston Forest, East Sussex, 21.vii.1996; *Oncomera femorata* (F.) (Oedemeridae), Holywell, Eastbourne, East Sussex, 13.viii.1996; *Arhopalus rusticus* (L.) (Cerambycidae), Friston, Forest, East Sussex, 27.vii.1996, and Pagham Harbour, West Sussex, 5.viii.1996.

PORTER, D. A.– Four species of Coleoptera taken in the exhibitor's garden at Hailsham, East Sussex, TQ585103, during 1995. **Perigona nigriceps* (Dejean) (Carabidae), 19.vii.1995, one specimen to m.v. light; *Parabathyscia wollastoni* (Janson, E. W.) (Leiodidae), 12.viii.1995, many in underground pitfall trap at base of old hornbeam, (it was also numerous in a similar trap set in a garden at Bridport, Dorset); **Anommatus diecki* Reitter (Bothrideridae), 22.viii.1995, two in underground pitfall trap at base of old hornbeam; *Aderus populneus* (Creutzer in Panzer) (Aderidae), 31.vii.1995, several to m.v. light over a period of approximately one week.

WHITTON, P.—Some Carabidae taken between 1994–96. *Elaphrus uliginosus* F., Berrow, North Somerset, ST291525, 20.iv.1995, on soft soil at the edge of a reed-bed; *Bembidion quadripustulatum* (Serville), Holme, Norfolk, TF707443, 26.vii.1996, running on muddy pond margin; *Bembidion quinquestriatum* (Gyll.), West Bay, Dorset, SY470899, 30.viii.1994, under rock on beach at base of cliffs; *Amara anthobia* Villa, R.H.S. gardens, Wisley, Surrey, TQ058581, 11.v.1996, amongst weeds on a sandy footpath; *Amara equestris* (Duftschmid), Thetford Heath N.N.R., West Suffolk, 30.vii.1996, in pit-fall trap, and East Ebb near Eype, Dorset, SY431913, 1.ix.1994, on sandy soil at base of undercliff; *Harpalus smaragdinus* (Duftschmid), R.A.F. Barnham, West Suffolk, TL8680, 22.vi.1996, under leaves in a lichen-covered sandy area; *Licinus depressus* (Paykull), Maidscross Hill, Lakenheath, West Suffolk, TL7282, 30.vii.1996, amongst low plants on sandy soil; *Stenolophus teutonus* (Schrank), Barton-on-Sea, S. Hants, SZ227931, 15.iv.1995, at plant roots on damp undercliff; *Odacantha melanura* (L.), Berrow, N. Som. ST291526, 20.iv.1995, on reeds in a reed-bed; *Masoreus wetterhalli* (Gyll.), Holme, Norfolk, TF715452, 27.vii.1994, in pit-fall trap in sand dunes.

HEMIPTERA

ALEXANDER, K. N. A.—Two uncommon species found during the National Trust's Biological Survey. *Eurydema oleracea* (L.) (Pentatomidae), Polesden Lacey Estate, Surrey, 12.ix.1996, from chalk grassland and dry heathland habitats; *Myrmedobia distinguenda* Reuter (Microphysidae), Long Mynd, Salop, vi.1996, frequent beneath cushions of western gorse (*Ulex gallii*).

HALSTEAD, A. J.—A live nymph of the fly bug *Reduvius personatus* (L.) (Reduviidae), found in the kitchen of a house in Brentford, Middx on 6.ix.1996, being reared on larvae and pupae of the beetle *Ptinus fur* L.

HAWKINS, R. D.—Insects from northern France, 1996. Calais/Boulogne area: *Eurygaster austriaca* (Schrank) (Scutelleridae), sandy hill, Ambleteuse, 3.ix.1996; *Cydnus aterrimus* (Forster) and *Geotomus punctulatus* (Costa) (Cydnidae) from sand dunes south of Boulogne, 11.ix.1996. Joint meeting with the Evreux entomological society: *Graphosoma italicum* Müller (Pentatomidae), Rochers de St. Adrien, near Rouen, 1.vi.1996, several on cow parsley (*Anthriscus sylvestris*); *Lygaeus equestris* (L.) (Lygaeidae), Rochers de St. Adrien, 1.vi.1996.

Dicranocephalus medius (Mulsant & Rey) (Stenocephalidae), Kenley Common, Surrey, 6.vi.96; mating pair climbed into rucksack left on downland recovered from

scrub, with much wood spurge (*Euphorbia amygdaloides*), and were discovered later in a plastic bag full of collecting tubes. *Metopoplax ditomoides* (Costa) (Lygaeidae), Kenley Common, 30.vii 96, on leaf of foxglove *Digitalis purpurea* by horse ride through strip of woodland; *Neottiglossa pusilla* (Gmelin) (Pentatomidae), Kenley Common, 6.vi.96, swept from acid grassland.

HODGE, P. J.—*Stictopleurus abutilon* (Rossi) (Rhopalidae), Shortheath Common, N. Hants., SU7736, 15.viii.1996, several swept off mixed herbage growing in sandy area; *Emblethis denticollis* (Horváth) (Lygaeidae), near the Warren, Oakhanger, N. Hants., SU7735, 18.viii.1996, abundant in sandy field at roots of stork's-bill (*Erodium cicutarium*). *Nysius senecionis* (Schilling) (Lygaeidae): Hyde Common near Fordingbridge, S. Hants., SU1712, 8.vii.1996, swept in numbers off ragwort; near The Warren, Oakhanger, N. Hants., SU7735, several swept in a sandy field; and near Halling, W. Kent, TQ7063, 30.viii.1996, one male on sandy ground near ragwort (*Senecio jacobaea*); these are new vice-county records. *Idiocerus ustulatus* (Mulsant & Rey) (Cicadellidae), near Halling, W. Kent, TQ7063, 30.viii.1996, several swept off aspen; *Ulopa trivia* Germar (Cicadellidae), A27 road verge near the Newmarket Inn, Falmer, E. Sussex, TQ3709, 27.viii.1996, a male and female in vacuum sample; *Oliarus leporinus* (L.) (Cixiidae), Matley, New Forest, S. Hants., SU3307, 3.viii.1996, one swept; *Oliarus panzeri* Löw (Cixiidae), Rocks Farm, Westfield, E. Sussex, TQ8017, 7.viii.1996, one swept from marshy meadow near River Brede.

JONES, R. A.—Some notable and interesting bugs from various south London sites taken recently. *Oliarus panzeri* Löw (Cixiidae), Crystal Palace Park, Surrey, many hundreds swept, 24 & 25.vii and 5.viii.1996; also taken at Beckenham Place Park, Kent, 27.vii.1995; and Dulwich Park, Surrey, 8.vii.1996. *Asiraca clavicornis* (F.) (Delphacidae), Hither Green N.R., Kent, several swept 6.vi.1996; also taken at Chinbrook Orchard, Grove Park, Bromley, Kent, 18.vi.1996; Gargoyle Wharf, Wandsworth, Surrey, 10.vi.1996; and Blackheath Hill, Kent, 3.x.1995. *Eupelix cuspidata* (F.) (Cicadellidae), Hither Green N.R., Kent, 7.vi.1996, by sweeping. *Placotettix taeniatifrons* (Kirschbaum) (Cicadellidae), Dulwich Park, Surrey, 17.x.1996; the colony discovered in 1993 (Jones, R.A. *Br. J. Ent. Nat. Hist.* **6**: 139–140) is as strong as ever in the large rhododendron garden. *Eurydema oleracea* (L.) (Pentatomidae): red form, Gargoyle Wharf, Wandsworth, Surrey, 10.vi.1996; white/yellow form, Chinbrook Orchard, Grove Park, Bromley, Kent, 10.vii.1996. *Neottiglossa pusilla* (Gmelin) (Pentatomidae), Hither Green NR, Kent, very many swept 7 & 27.vi.1996 and 22.viii.1996. *Stephanitis rhododendri* Horváth (Tingidae), Dulwich Park, Surrey, 17.x.1996; the colony discovered in 1993 (Jones, R.A. *Br. J. Ent. Nat. Hist.* **6**:139–140) continues to thrive. Throughout the year, many nymphs and adults were seen, causing the typical brown-stippled damage to the leaves. *Orsillus depressus* Dallas (Lygaeidae), Brenchley Gardens, Peckham, Surrey, 17.x.1996, several swept from Lawson's cypress; also found at Dulwich Park, Surrey, 17.x.1996. At both of these localities, *O. depressus* was in the company of the shield bug *Elasmostethus tristriatus* (F.).

KIRBY, P.—*Spathocera dahlmanni* (Schilling) (Coreidae), Sandy Heath, Beds., TL204492, 15.ix.1996, abundant in a partly vegetated sand quarry; *Liorhyssus hyalinus* (F.) (Rhopalidae), Sandy Heath, Beds., TL204492, 15.ix.1996, nymphs and adults common on stork's-bill (*Erodium cicutarium*) in a disused sand quarry; *Acompus rufipes* (Wolff) (Lygaeidae), Sawbridgeworth Marsh, Herts., TL491158, 27.iii.1996, beaten from stack of cut sedge; *Drymus latus* Douglas & Scott (Lygaeidae), Higham Marshes, Kent, TQ710750, 21.ix.1995, taken by pond net in a ditch close to the sea bank; *Drymus pumilio* Puton (Lygaeidae), Sawbridgeworth Marsh, Herts., TL491158, 27.iii.1996, beaten from stack of cut sedge. *Emblethis*

denticollis Horváth (Lygaeidae): Bedford, TL052488, 13.vi.1996, amongst dry grass on sandy ground beside disused railway line; Willersmill Wildlife Park, Cambs., TL394483, 2.ix.1996, amongst ruderal vegetation on calcareous soil; Sandy Heath, Beds., TL204492, 15.ix.1996, amongst sparse ruderal vegetation in sand quarry. *Eremocoris podagricus* (F.) (Lygaeidae), Southorpe Roughs, Northants., TF073032, 1.vi.1996, amongst hawthorn litter at the edge of limestone grassland. *Ischnodemus quadratus* Fieber (Lygaeidae): Folkestone Warren, E. Kent, TR2538, 6.vii.1993; Shakespeare Cliff, E. Kent, TR2939, 28.v.1993; common amongst tor grass (*Brachypodium pinnatum*) on upper cliff slopes. *Lasiosomus enervis* (Herrich-Schäffer) (Lygaeidae), Castle Hill, Folkestone, E. Kent, TR213379, 5.vii.1993, swept from tall calcareous grassland; *Megalonotus praetextatus* (H.-S.) (Lygaeidae), Sandy Heath, Beds., TL204492, 15.ix.1996, amongst moss in recently developed sparse grassland in a sand quarry; *Megalonotus sabulicola* (Thomson) (Lygaeidae), Netherton, Peterborough, Northants., TL171991, 17.viii.1996, in a mercury vapour trap in an urban garden. *Metopoplax ditomoides* (Costa) (Lygaeidae): Bletchingley, Surrey, TQ335520, 11.viii.1995, abundant beneath mayweeds on the embankment of the M25 and on nearby disturbed ground; Sandy Heath, Beds., TL204492, 15.ix.1996, amongst sparse ruderal vegetation in a sand quarry. *Nysius senecionis* (Schilling) (Lygaeidae), Sandy Heath, Beds., TL204492, 15.ix.1996, amongst sparse ruderal vegetation in a sand quarry; *Peritrechus distinguendus* (Flor) (Lygaeidae), Dungeness, E. Kent, TR075167, 26 30.v.1993, amongst dead leaves beneath prostrate broom on concrete; *Pionosomus varius* (Wolff) (Lygaeidae), Three-cliff Bay, Gower, Glam., SS5388, 15.vi.1993, on partly-vegetated but stable sand in dunes; *Raglius alboacuminatus* (Goeze) (Lygaeidae), Higham, W. Kent, TQ715727, 9.ix.1995, abundant amongst black horehound (*Ballota nigra*) on low roadside bank; *Rhyparochromus pini* (L.) (Lygaeidae), Horner Wood, Exmoor, Som., SS895440, 31.vii.1994, in a small stone quarry in woodland; *Trapezonotus ullrichi* (Fieber) (Lygaeidae), Pendine, Carm., SN233078, 15.vi.1993, on flower of ox-eye daisy (*Leucanthemum vulgare*) on the upper slopes of a coastal cliff, during a period of prolonged rain; *Acalypta brunnea* (Germar) (Tingidae), Horner Wood, Exmoor, Som., SS895440, 31.vii.1994, brushed from moss on an oak trunk; *Adelphocoris seticornis* (F.) (Miridae), Pinged, Pembrey, Carm., SN423036, 19.ix.1994, swept from lightly-grazed rushy pasture with abundant large bird's-foot trefoil (*Lotus dispar*); *Adelphocoris ticinensis* (Meyer-Dür) (Miridae), East Ruston Common, E. Norf., TG340280, 10.ix.1994, common on purple loosestrife (*Lythrum salicaria*); *Capsus wagneri* Remane (Miridae), The Boardwalks Local Nature Reserve, Peterborough, Northants., TL177982, 16.vii.1995, swept from winter-flooded wetland vegetation bordering the River Nene close to the centre of Peterborough; *Lygus pratensis* (L.) (Miridae), Oak Banks, near Hythe, E. Kent, TR167367, 7.ix.1993; swept from lush vegetation at a sheltered woodland edge; *Pachycoleus waltli* Fieber (Dipsocoridae), Sutton Heath & Bog, Northants., TF089000, 28.iv.1996; *Aepophilus bonnairei* Signoret (Aepophilidae), Lee Bay, N. Devon, SS478466, 27.ix.1996, in intertidal rock crevices; *Hebrus pusillus* (Fallén) (Hebridae), Shorne Marshes, W. Kent, TQ685743, 9.ix.1995; amongst vegetation at a ditch margin.

PORTER, D.A. *Stictopleurus abutilon* (Rossi) (Rhopalidae), Shortheath Common, N. Hants., SU771363, 15.viii.1996; Oakhanger, N. Hants, SU769360, 15.viii.1996; believed to be new to N. Hants. Breeding colonies are obviously well established in this area. A nymph taken on 13.x.1996 had produced an adult by 24.x.1996. *Corizus hyoscyami* (L.) (Rhopalidae), Brede High Wood, E. Sussex, TQ795203, 26.ix.1992, a single specimen swept in a rough grassland clearing, an interesting inland locality for this usually coastal species; *Ortholomus punctipennis*

(Herrich-Schäffer) (Lygaeidae), Camber, E. Sussex, TQ953185, 20.vi.1990, in sand dunes, new to Sussex; *Metopoplax ditomoides* (Costa) (Lygaeidae), North Woolmer, N. Hants., SU8033, 13.x.1996, a single example amongst a large number of *Nysius ericae* (Schilling) on sparsely vegetated ground with pineapple weed (*Matricaria matricarioides*) and corn spurrey (*Spergula arvensis*); *Oliarus panzeri* Löw (Cixiidae), Bulverhythe, Hastings, E. Sussex, TQ767093, 6.viii.1996.

Hymenoptera

Archer, M.E.—Some aculeate solitary bees and wasps from the 1995 season. Chrysididae: *Hedychridium cupreum* (Dahlbom), 28.viii, Devil's Spittleful, Worcs. Sapygidae: *Sapyga clavicornis* (L.), female, 22.vi, Caydale, N. Yorks. Pompilidae: *Arachnospila minutula* (Dahlbom), female, 2.viii, Messingham Sand Quarry, Lincs. Sphecidae: *Oxybelus argentatus* Curtis, male, 3.viii, North Walney NNR, Cumbria, and female, 29.vi at Hartlebury Common, Worcs; *Argogorytes fargei* (Shuck.), female, 20.vi, Fulford Ings, York, and female, 4.vi at Beningbrough, N. Yorks. Apidae–Andreninae: *Andrena tibialis* (Kirby), female, 13.iv, Messingham Sand Quarry, Lincs; *A. bimaculata* (Kirby), female, 28.vi, Devil's Spittleful, Worcs; *A. humilis* Imhoff, male, 5.v, Devil's Spittleful, Worcs, and female, 29.vi at Hartlebury Common, Worcs; *A. nigriceps* (Kirby), female, 28.vi, Devil's Spittleful, Worcs. Apidae–Halictinae: *Lasioglossum brevicorne* (Schenck), female, 29.vi, Hartlebury Common, Worcs; *Sphecodes reticulatus* Thomson, male, 12.viii, Roydon Common, Norf.; *S. crassus* Thomson, female, 23.vi, Gibraltar Point, Lincs; *S. ferruginatus* von Hagens, female, 29.vi, Hartlebury Common, Worcs. Apidae–Anthophorinae: *Nomada pleurosticta* H-S., female, 29.vi, Hartlebury Common, Worcs; *N. lathburiana* (Kirby), female, 5.v, Devil's Spittleful, Worcs. Apidae–Melittinae: *Dasypoda altercator* (Harris), male and female, 10.viii, Hartlebury Common, Worcs. Dr Archer also showed a selection of aculeate bees collected from mainland Europe, with preliminary identifications requiring checking against named specimens.

Foster, A. P. & Alexander, K. N. A.—A selection of the more interesting aculeate bees found in 1996 during the National Trust's Biological Survey. Apidae Andreninae: *Andrena carbonaria* (F.), 15.v, Boat Cove, Perranuthnoe, W. Corn. Apidae Anthophorinae: *Nomada fucata* Panz., 15.v, Chynhalls Point, W. Corn.; *N. lathburiana* (Kirby), 5.vi, Clent Hills, Worcs; *N. pleurosticta* H-S., 12.vi, Saddlescombe Farm, W. Sussex.

Halstead, A. J.—Some scarce or local sawflies taken during 1996. Cimbicidae: female *Trichiosoma vitellinae* (L.), col. I. Perry, 14.vii, Skipworth Common, near Skipworth, Yorks. Pamphiliidae: female *Pamphilius varius* (Lep.), on aspen leaf, 15.vi, Whitmoor Common, near Guildford, Surrey. Tenthredinidae: female *Caliroa tremulae* Chevin, swept from aspen, 16.vi, California Country Park, Long Moor, Berks; female *Fenella nigrita* Westw., col. B. Hardwick, 17.vii, Duncombe Park, Yorks; female *Rhogogaster dryas* (Benson), swept from aspen, 23.vi, Whitmoor Common, Surrey; *Tenthredo maculata* Geoff., swept from grass at woodland edge, 2.vi., Whitmoor Common, Surrey; male *T. vespa* Retz., col. C. Spilling, 18.vii, Haugh Wood, near Pickering, Yorks; female *Nematus leionotus* (Benson), swept from sallow, 28.iv, Bentley Meadow BBC Reserve, Alice Holt Forest, Hants. Also shown were four species with larch-feeding larvae which are occasionally of economic importance in forestry plantations. These were male *Cephalcia lariciphila* (Wachtl), col. K. Merrifield, 17.vii, Scugdale Beck, near Heathwaite, Yorks; female *Pristiphora wesmaeli* (Tischbein), 14.vii, Wheldrake Wood, near Wheldrake, Yorks;

female *P. laricis* (Hartig), 18.vii, Raincliffe Wood, near West Airton, Yorks and female *P. erichsonii* (Hartig), col. A. Stubbs, 18.vii, Hayburn Wyke, Yorks.

HALSTEAD, A. J. A display of thirteen out of the seventeen British species of sawflies and other Symphyta with larvae that feed on the foliage or stems of deciduous oaks. These included the dead wood feeder *Xiphydria longicollis* (Geoff), which began to colonize England during the 1980s, and the stem-boring *Janus femoratus* (Curtis). Larvae of *Profenusa pygmaea* (Klug) develop as leaf-miners while those of *Caliroa annulipes* (Klug) and *C. varipes* (Klug) graze away the leaf surface. The larvae of the other species shown, *Arge rustica* (L.), *Periclista albida* (Klug), *P. lineolata* (Klug), *P. pubescens* (Zaddach), *Allantus togatus* Panz., *Apethymus serotinus* (O.F. Müller), *A. filiformis* (Klug) and *Mesoneura opaca* (Klug) eat the entire leaf.

HAWKINS, R.D.—Some solitary bees collected in Surrey and Kent during 1996. Apidae–Anthophorinae: *Nomada fucata* Panz., 30.iv and 18.vii, females flying over loose bare soil of horse rides, Farthing Downs, Surrey; *N. fulvicornis* F., 17.vi, female at flowers of *Myosotis scorpioides* by a small pond, Spring Park, W. Kent; *N. flavopicta* (Kirby), 22.viii, female flying low over chalk downland, Riddlesdown, Surrey. Apidae–Melittinae: *Melitta tricincta* (Kirby), 22.viii, male and female taken at flowers of *Odontites verna* at Riddlesdown, Surrey.

HODGE, P. J.—Four species of aculeate Hymenoptera taken in 1996. Chrysididae: *Omalus violaceus* (Scop.), swept off low vegetation in a forest glade, 7.vii, Naphill Common, Bucks. Apidae Andreninae: *Andrena gravida* Imhoff, a female on a tall umbel growing in disturbed shingle, 13.vi, at Rye Harbour, E. Sussex (first British record since 1961); *A. coitana* (Kirby), a female on a hogweed umbel, *Heracleum sphondylium*, 7.viii, at Rocks Farm, Westfield, E. Sussex. Apidae Anthophorinae: *Nomada obtusifrons* Nylander, a male of this cleptoparasite of the previous species and found 2.viii on the same site, being swept from tall marshland vegetation in a meadow beside the River Brede.

JONES, R. A.—Some notable and interesting Hymenoptera taken recently from various south London sites. *Hylaeus cornutus* Curt. (Apidae: Colletinae), Crystal Palace Park, Surrey, 24.vii.1996, on the wing, a male. Although originally given RBD3 status, it has recently been found in several Kent sites and is now listed as notable A. *Ammophila sabulosa* (L.) (Sphecidae), Gargoyle Wharf, Wandsworth, Surrey, 10.vi.1996. Although a common and widespread species of sandy places, this site was unusual in that it was a derelict rubble-covered plot on the River Thames near central London. *Dolichovespula media* (Retz.) (Vespidae), Beckenham Place Park, Bromley, Kent, 27.vi.1995, a queen found hibernating under a log. This wasp is now a very common breeding species in the south London area. *Bethylus boops* Thomson (Bethylidae), Nunhead, 28.vi.1992, running around on a newspaper being read in the garden, the sixth British record of a species only recently discovered here. Another specimen was found running around inside on the glass of french windows of the house on 13.vi.1995.

PORTER, D. A. Some local Hymenoptera taken in Sussex and Dorset in recent years. Chrysididae: *Omalus violaceus* (Scop.), in a garden, 17.vi.1996, Hailsham, E. Sussex. Sapygidae: *Sapyga clavicornis* (L.), on a dead rowan tree in garden, 20.vi.1995 and 18.vii.1996, Hailsham, E. Sussex. Apidae Andreninae: *Andrena cineraria* (L.), on the foliage of alexanders, *Smyrnium olusatrum*, 25.iv.1996, Crumbles, Eastbourne, E. Sussex; *A. lapponica* Zett., from a strong nesting colony in bare sandy gravelly patches among heather, 20.iv.1992, Portesham, Dorset—apparently new to the Dorset list. Apidae Anthophorinae: *Eucera longicornis* (L.), visiting gladiolus flower in garden, 11.vi.1996, Hailsham, E. Sussex. Ichneumonidae:

Netelia sp., rapidly running over a barkless fallen apple bough and appearing to be exploring borings of bark beetles, *Scolytus mali* and *S. rugulosus*, 22.vii and 7.viii. 1996, Hailsham, E. Sussex.

ROBERTS, S. P. M.—A selection of the target species for the second BWARS Provisional Atlas due to be published in 1997. Chrysididae: *Chrysis viridula* L., female, 27.v.1989, Chideock, Dorset, also female, 15.vii.1996, Stephen's Castle, Dorset. Tiphiidae: *Methoca ichneumonides* Lat., female, 4.vii.1991, Crock Hill, New Forest, Hants. Mutillidae: *Myrmosa atra* Panz., female, 18.vii.1992, Studland Heath, Dorset, and male, 13.vii.1994, Sandford, Dorset; *Smicromyrme rufipes* (F.), female, 19.vii.1996, Upton Heath, and 18.vii.1992, Studland Heath, Dorset, also males 9.vii.1996, Stephen's Castle, 18.vi.1992, Town Common, 22.vii.1996, Winfrith Heath, all Dorset. Pompilidae: *Episyron rufipes* (L.), male, 18.vii.1992, Studland Heath, Dorset, female, 10.vii.1994, Morden Bog, Dorset; *Ceropales maculata* (F.), male and female, 22.vii.1995, Dibden Marshes, Hants. Sphecidae: *Tachysphex nitidus* (Spin.), male, 6.vi.1996, Stephen's Castle, Dorset and female, 24.vi.1993, Chamberlayne's Heath, Dorset; *Ectemnius dives* (Lep. & Brullé), female, 6.viii.1994, Holton Heath, Dorset; *E. continuus* (F.), male, 22.vii, and female, 29.vii.1995, Dibden Marshes, Hants; *E. rubicola* (Duf. & Perris), female, 22.vii.1995, Dibden Marshes, Hants; *Mellinus arvensis* (L.), male, 6.viii.1987, Holt Heath, Dorset, female, 28.vii.1992, Higher Hyde Heath, Dorset; *M. crabroneus* (Thunb:), female (*in coll.* F.H. Haines), 19.vii.1910, Wood Street, Dorset. Apidae—Melittinae: *Melitta dimidiata* Morawitz, male and female, 4.vii.1993, Great Cheverell Hill, Wilts; *M. leporina* (Panz.), male, 29.vii.1995, Dibden Marshes, Hants, female, 19.viii.1991, White Barrow, Tilshead, Wilts; *M. tricincta* Kirby, male, 25.vii.1995, Dibden Marshes, Hants, female, 5.viii.1993, Clearbury Ring, Wilts. Apidae–Megachilinae: *Stelis ornatula* (Klug), female, 29.vii.1994, Holton Heath, Dorset; *Osmia aurulenta* (Panz.) male and female collected as pre-pupae 10.iii.1991 and reared, Easton Quarries, Portland, Dorset; *O. bicolor* (Schr.), male and female, 29.iii.1990, Garston Wood, Dorset, and female, 3.v.1993, Middleton Down, Wilts. Also shown were draft maps produced with the DMAP package for inclusion in the BRC/BWARS provisional atlas for publication in 1997.

UFFEN, R. W. J.—Some aculeates new to the list for Hertfordshire that is being compiled by the exhibitor. Tiphidiidae: *Tiphia minuta* V.d. Lind, male, 6.vii.1996, Mardley Heath, Welwyn, male, 18.vi.1996, Danesbury, Welwyn, female, 12.vi.1996, Commonswood, Welwyn Garden City. Chrysididae: *Hedychridium roseum* (Rossius), male and female, 5.viii.1996, Tyttenhanger Sandpits, Colney Heath; *H. ardens* (Lat.), males, 4.viii.1996, Patmore Heath, Furneaux Pelham. Pompilidae: *Dipogon variegatus* (L.), female hunting on ground and upturned tree root ball, 7.viii.1996, Commonswood, Welwyn Garden City. Sphecidae: *Astata pinguis* (Dahlbom), 26.vii.1996, in a field at Tyttenhanger; *Stigmus pendulus* Panz., female storing immature alate aphids in beetle tunnels in dead standing oak, 24.ix.1996, Tyttenhanger; also male *S. solskyi* Morawitz, 18.vi.1996 from the same site and a female, 19.vii.1994 from Tyttenhanger Pits. Apidae Megachilinae: *Megachile versicolor* F. Smith, female, 15.viii.1996, on ragwort, Bayfordbury, Hertford. Also shown were three males and a female *Sphecodes niger* Sichel (Apidae: Halictinae). These were collected from about 40 skimming over the soil on a roadside bank at Sacombe, Herts, at about 2 pm, 16.ix.1996 (temperature 24°C). Potential hosts seen were mostly *Lasioglossum morio* (F.) but *L. leucopum* (Kirby) and *L. villosulum* (Kirby) were also present. The chrysid wasp, *Hedychridium coriaceum* (Dahlbom), 7.vii.1996, Dinton Pastures Country Park, Winnersh, Berks, was also shown.

Neuroptera

Porter, D. A. A single micropterous specimen of the lacewing *Psectra diptera* (Burmeister) swept from a roadside verge on the edge of the South Downs at Plumpton, E. Sussex, 3.ix.1996. It is not recorded for East Sussex in the Provisional Atlas by Colin Plant (1994).

Orthoptera

Hawkins, R. D.—A grasshopper, *Oedipoda caerulescens* (L.) collected 11.ix.1996, sand dunes near Dannes, south of Boulogne, France.

Illustrations

Brown, K. A series of photographs illustrating the life-cycle of the small eggar *Eriogaster lanestris* (L.), showing that the main reason for any marked fluctuation in numbers is climatic. Examples of the moth and its most frequent parasite *Exorista fasciata* were also shown.

Hoare, D. I. B. Photographs of British Coleoptera taken in 1996. *Leptura fulva* (Cerambycidae) on a flower head of *Olearia* in his garden at Winchester, South Hampshire, 17.viii.1996. The bee chafer, *Trichius fasciatus* (Scarabaeidae) on a flower head of *Cirsium vulgare* in Glen Affric, Easterness, 10.ix.1996. A female great diving beetle, *Dytiscus marginalis* (Dytiscidae) caught floundering in waterlogged peat in Glenfeshie, Easterness, 8.ix.1996.

Jones, R. A. An exhibit entitled "Silly Bu**gers" showing entomological blunders in the press. This showed, for example, a washing machine advert with a woman admiring a butterfly supposedly settled on the palm of her hand except that it was obviously a set specimen with the pin sticking out. An insecticide advert promised to "get" insects such as ground beetles and spiders, both the gardener's friends, as well as whirligig beetles and water boatmen, completely inappropriate insects to associate with fruit, vegetable and flower sprays. There was a selection of scorpion drawings with either six or ten legs, and a tin of Boots moth repellent suggesting that clothing, furs and blankets were under attack from Lappet Moths. Even the cartoonist Gary Larson, who often uses insects in his "Far Side" cartoons gets it wrong: At a medieval jousting contest, a man in a white coat and first aid box examines a worried-looking knight in armour. With his ear pressed against the knight's breast-plate he says "Ooo! You're right Sir Dwayne 'If I knock right here, I can make him start buzzing Ooo, and he's really angry' ". The knight, of course, should not be worried at all, because, as we all know, bee and wasp stings are modified from the insects' egg-laying apparatus, hence a "him" is unarmed and cannot sting.

Revels, R. C. - Colour photographs of wildlife from his photo library. These ranged from birds and mammals to fungi and wild flowers. Insects included were bred aberrations of the common blue, *Polyommatus icarus icarus* (Rottemburg) ab. *radiata*, ab. *obsoleta*, ab. *striata* and ab. *costaextrema*, the life history of the 2- and 7-spot Ladybirds, wasps and dragonflies.

Thomas, R. A display for English Heritage showing the main habitat types and the proportion of Historic Properties which have a nature conservation designation. English Heritage is the Government's advisor on the historic environment and its conservation, managing about 400 properties in the nation's care. One aspect of

conserving the historic environment is the recording of animals and plants. Sites holding the most important bat roosts, interesting wall flora or good grassland are known, but very little is known about sites of entomological importance. Interesting records or offers to conduct entomological surveys would be welcome. One such survey of the aculeate wasps and bees in Yorkshire will influence site management.

WARING, P., KENDRICK, R. and GALSWORTHY, T.—A display of photographs drawing attention to the important wildlife sites in Hong Kong and the moths which they support, including the forest at Tai Po Kau and the mangrove swamps at Mai Po marshes. Recently published work was described and proposals outlined for future research by Roger Kendrick to start in January 1997. Moths featured in the photographs included: *Clanis bilineata* (Walker) (Sphingidae) from Sai Kung Country Park (see Waring, Thomas and Li 1994 *BJENH* **7**: 181–191); *Ischyja manlia* (Cramer) (Noctuidae) from the forest at Tai Po Kau; *Cerura priapus* (Schintlmeister, in manuscript) (Notodontidae) from Sai Kung Country Park, a new species, now being described; *Fascellina chromataria* (Walker), (Geometridae) from Sai Kung Country Park.

YOUNG, D.—A photograph taken from a European Space Agency satellite of the Dungeness area of Kent, a site well known to entomologists.

MISCELLANEOUS

WILSON, M. R.—A portable suction sampler for insects. Commercially available "leaf blower/sucker" machines powered by two-stroke engines can be used as highly effective insect samplers. They are light enough to carry around all day and at around £80 (or less) they are relatively inexpensive. The cost will be more than repaid with the quantity of material that can be collected in a short time. In operation a net bag is inserted into the inlet tube, and held at the front with an elastic band. The only modification needed is adding a piece of metal mesh in the inlet tube. This has the dual effect of supporting the netbag during operation and preventing the net reaching the fan should it become detached. The exhibitor has used such a machine for several years; it is particularly effective in short grass habitats, in sucking invertebrates from grass tussocks and the base of rank grassland, and in bog habitats. Large numbers of specimens of leafhoppers and planthoppers have been caught, from deep sphagnum bog in conditions that would have a sweep net use impossible and hand searching difficult (to say the least).The quality of the specimens is excellent and even small nymphs are caught. The sampler net is tipped into another larger net and selected specimens removed. It is possible to keep the entire catch if quantitative samples are required. Several accounts of such studies have been published (e.g. Stewart, A. J. A. & Wright, A. F. A new inexpensive suction apparatus for sampling arthropods in grassland. *Ecological Entomology* 1995: 98 102) and the machines compared with others such as the DVac. Some improvements to the design of the net bag have been made. At first a simple net sleeve was used but the net folded over the front of the tube wore away quite quickly. Using a calico front end of the net appears to have solved that problem.

BENHS FIELD MEETINGS

Mawddach Valley woodlands, near Abergwynant, Merionethshire, 9 July 1996

Leader: **Paul Waring**. This was a joint meeting between the BENHS, the North Wales Invertebrate Group (NWIG) and Butterfly Conservation (BC) and was part of the BC Woodland Campaign which aims to draw attention to invertebrate conservation issues in woodland. The leader was joined by nine members and guests, some of whom were also members of NWIG and or BC and included Adrian Fowles, invertebrate specialist for the Countryside Council for Wales (CCW). In the evening our numbers were supplemented by four members of the local RSPB staff, including the reserve warden Reg Thorpe and assistant warden Ian Sims. The meeting involved two of the RSPB holdings in the Mawddach Valley woodlands. We spent the first part of the day at Cwm Mynach (SH686228). Habitats included mixed broad-leaved woodland and damp grassland. During this part of the meeting Joan Morgan found and later determined the cranefly *Pedicia schummeli* which she had not encountered before during her extensive recording work in north Wales, from which there are few records of this species.

In the afternoon we investigated the woodlands of Coed y Gribin (SH682167) on the Coedydd Abergwynant reserve, to which most of us returned for light-trapping after an evening meal in the local pub. Mike Hull operated his m.v. light over a vertical sheet and I set up a Robinson trap deep in a splendid streamside gorge of the

Fig. 1. Some of the party assembling in the streamside woods by the Abergwnant Trekking Centre.

Fig. 2. Paul Waring beating the mature limes of Coed y Gribin while Mike Hull examines his sweep-net catch.

Gwynant, under large and mature small-leaved lime trees *Tilia cordata* Miller. Although the time of year was right, no scarce hook-tip moths *Sabra harpagula* (Esp.) were seen, but it was certainly worth a try for this species, the caterpillars of which feed only on small-leaved lime in Britain. The moth is only known currently from the vicinity of the Wye Valley, on the borders of Gloucestershire and Monmouthshire.

The light-trapping produced some useful moth records. Species seen included the Welsh wave *Venusia cambrica* Curt., galium carpet *Epirrhoe galiata* (D.&S.), northern spinach *Eulithis populata* (L.), satin lutestring *Tetheella fluctuosa* (Hübn.), Brussels lace *Cleorodes lichenaria* (Hufn.), Blomer's rivulet *Discoloxia blomeri* (Curt.), satin beauty *Deileptenia ribeata* (Clerck), beautiful snout *Hypena crassalis* (F.) and good numbers of the purple clay *Diarsia brunnea* (D.&S.), grey arches *Polia nebulosa* (Hufn.) and green arches (*Anaplectoides prasina* (D.&S.).

Norman Binstead camped overnight up at Cwm Mynach where he operated an m.v. trap by a pool on the roadside and an actinic trap on the nearby marsh, from 22.00 hours until 06.00 hours. Of the 60 species of moths he recorded, the more noteworthy captures were the satin lutestring, galium carpet, Welsh wave and beautiful snout.

Meanwhile, as a parallel exercise, I ran a Robinson trap all night from Abergwynant Lodge (SH681177) on the edge of Abergwynant Woods, courtesy of the RSPB, on the night of the meeting and the night before. This produced a list of 53 species of macro-moth including the scallop shell *Rheumaptera undulata* (L.) and the muslin footman *Nudaria mundana* (L.) as well as the satin lutestring, Blomer's rivulet, Welsh wave, satin beauty, Brussels lace, green arches and beautiful snout.

Fig. 3. Mike Hull with his vertical sheet light-trapping apparatus and onlookers at Coed y Gribin.

Little out of the ordinary was reported amongst the other insect orders during the meeting, apart from *P. schummeli*, but the species lists are given here in full for reference.

From Coed y Gribin and determined by Adrian Fowles: the somewhat local diplopod *Polyxenus lagurus* (L.) (Polyxenidae), the common caddis fly *Philopotamus montanus* (Don.) (Philopotamidae) and the following beetles: the scolytids *Xyloterus signata* (F.) (nationally notable) and *X. domesticus* (L.) (local), the cerambycids *Pogonocherus hispidus* (L.) and *P. hispidulus* (P. & M.) (both local) and *Rhagium mordax* (Degeer.) (common), the local cisid *Cis alni* Gyll., and the following common beetles: *Atrecus affinis* (Payk.) (Staphylinidae), *Malthodes marginatus* (Latr.) (Cantharidae), *Anaspis maculata* Fourc. (Scraptiidae) and *Strophosoma melanogrammum* (Forst.) (Curculionidae).

From the following sites, all determinations by Joan Morgan. Cwm Mynach: the common earwig *Forficula auricularia* L., the dung beetle *Geotrupes stercorosus** (Scriba) (Geotrupidae) (several seen), the click beetle *Dalopius marginatus* (L.) (Elateridae), the soldier beetle *Rhagonycha fulva* (Scop.) (Cantharidae) (common), the longhorn beetle *Rhagium bifasciatum* F. (Cerambycidae), the weevils *Otiorhynchus singularis* (L.) and *Phyllobius pyri* (L.), the craneflies *Austrolimnophila ochracea** (Meig.) (one swept), *Limonia dumetorum* Meig. (two in cop.) and *Pedicia schummeli* (Edw.) (one swept), the rhagionid *Rhagio lineola* F., the empid *Phyllodromia melanocephala** (F.), the syrphid *Sericomyia silentis* (Harris), the dolichopodid *Dolichopus atripes* Meig., *D. ungulatus** (L.) and a female probable *D. trivialis* Hal.

The asterisked species were also recorded by Joan at Coed y Gribin, along with the caddis fly *Limnephilus auricula* Curt., the lacewing *Hemerobius marginatus* Steph., the cranefly *Ormosia nodulosa* (Macq.), the dolichopodid *Sciapus platypterus* (F.) and the sciomyzids *Limnia unguicornis* (Scop.), *Tetanocera elata* (F.) and *Trypetoptera punctulata* (Scop.).

I would like to thank Reg Thorpe and Ian Sims (Warden and Assistant Warden of the Mawddach Valley RSPB reserves) for their assistance and support in organising the meeting and for overnight accommodation at Abergwynant Lodge. Full species lists and copies of this report have been supplied to the RSPB and CCW.

Horner Wood (Dunkery and Horner NNR), Exmoor, Somerset, 3 August 1996

Leader: **Mike Edgington**. The meeting was hosted by the National Trust, who own the site. Nigel Hester, the Countryside Manager for the Holnicote Estate, of which the NNR is a part, introduced the proceedings. Mike Edgington then led a small but elite group up the Horner Water Valley. Here a fast-flowing stream cuts a narrow valley through western oak woodland. The group contained a dipterist, a lepidopterist and a coleopterist. The overall species list was not very long and contained only one nationally scarce species: *Neopachygaster meromelaena*, a stratiomyid. The staphylinid, *Dianous coerulescens* was found in the streamside vegetation. No additions to the list of nationally rare and scarce tipulids from this site were made on this occasion.

The moth trapping involved 3 m.v. lights and an actinic trap. Seventy-six species were recorded, including the nationally scarce dotted carpet (*Alcis jubata*), which is abundant at this site. Also recorded were beech-green carpet (*Colostygia olivata*) and Welsh wave (*Venusia cambrica*), both of which are extremely scarce in Somerset. The most unusual catch was a purple hairstreak (*Quercusia quercus*).

Glen Derry and Glen Quoich, Braemar, Aberdeenshire, 10 August 1996

Leaders: **Keith Bland** and **Mark Young**. The National Trust for Scotland recently took ownership of Mar Lodge Estate in Aberdeenshire and are keen to obtain records of all groups of animals and plants from the area. Ten members and friends met on 10 August and worked Glen Derry (upstream of Derry Lodge) and the lower section of Glen Quoich, joined for part of the time by the NTS ranger, Peter Holden.

Both glens retain Caledonian pine wood remnants, with blilberry (*Vaccinium myrtillus*) and heather (*Calluna vulgaris*) dominating the ground vegetation and with some juniper scrub in places. Deciduous trees are very sparse, except for some sallows and rowans along the burns. Glen Derry has some small pools and marshy areas, but more notably also has a series of deer enclosures. Within these, both the ground vegetation and the juniper are distinctly longer. The weather was cool and there was heavy drizzle from mid-morning until early afternoon. Thereafter, the sky cleared and there was full sunshine by late afternoon; however the clear skies remained and the evening became very cool. An m.v. light and two Heath lights were run until 11.30 p.m., but few insects were attracted.

Most recorders were lepidopterists, but some Diptera were collected from Glen Quoich, some Coleoptera from both glens and Betty and Bob Smith searched for Odonata in Glen Derry. A full set of records has been sent to NTS, with comments on the few scarce species.

The poor weather did not favour Odonata and only three common species were recorded, two of these as larvae. However, Bob and Betty found a thriving colony of water voles around a lochan in Glen Derry. This is a scarce species in lowland areas

of Aberdeenshire now, but is found in semi-isolated colonies along the headwaters of several rivers. Latrines and runs were abundant in Glen Derry.

No rare beetles were recorded and only one interesting fly. This was *Palloptera usta*, an RDB3 species found by Iain McGowan in Glen Quoich. Overall, 67 Lepidoptera were found, including several characteristic of highland valleys, but there were few highlights in the cool weather. An interesting feature was a strong flight of scarce silver Ys (*Syngrapha interrogationis*) in the afternoon sunshine, together with smaller numbers of migrant silver Ys (*Autographa gamma*). In late afternoon some common blue (*Polyommatus icarus*) and painted lady (*Cynthia cardui*) butterflies nectared and basked on scabious flowers at Derry Lodge. The best records were of *Bryotropha galbanella* and, at light, a single cousin german (*Paradiarsia sobrina*). Both of these species are well known in the Braemar area.

The rather poor weather reduced the catch at this meeting, but NTS would welcome further records from their area. If you intend to visit, please contact Peter Holden at Mar Lodge, Braemar.

Dinton Pastures, Hurst, Berkshire, 10 August 1996

Leader: **David Young**. This field trip was another in the continuing series organized over the past few years to record the insects present within Dinton Pastures Country Park. As far as moths are concerned, August is often a surprisingly disappointing month, lying as it does between the peak of activity associated with July and before the autumn species are on the wing.

The weather conditions were not unreasonable, being cloudy and mild although quite windy. There was occasional slight rain during the evening until torrential rain arrived at 1 a.m. to bring an abrupt halt to the proceedings. Three m.v. traps were run on the NW corner of Black Swan lake, and 'sugar' was applied to tree trunks in this area. A fourth m.v. trap was run at the rear of the Pelham-Clinton Building.

A total of 84 species were recorded during the evening. None appear to be particularly noteworthy in the context of Berkshire Lepidoptera, but it is hoped that the final list will add something to our knowledge of the Lepidoptera from this site.

Amongst the 21 species of Microlepidoptera recorded were specimens of *Cochylis atricapitana* (Steph.) *Eudemis profundana* (D.&S.) and it is a sign of the times that one notes the presence of any elm-feeding species. *Coenobia rufa* (Haw.) was noted and it is always a pleasure to see *Catocala nupta* (L.) feeding on a 'sugar' patch. Migrant species were represented by *Nomophila noctuella* (D.&S.), which had been abundant everywhere during 1996, and the familiar duo of *Autographa gamma* (L.) and *Agrotis ipsilon* (Hufn.).

Prawle Point, Devon, 21 September 1996

Leader: **R. McCormick**. By the time Paul Butter and I had arrived at the meeting point, a couple of the participants were already there. People kept coming until well after dark and in the end the group finished up with 12 including myself, a mixture of members from BENHS, Butterfly Conservation and Devonshire Association. This was a magnificent turnout on a night that did not have a lot of promise.

The night was clear, with a half moon, and moderate north-easterly winds which picked up to fresh after 23.00. In all there were 5 traps put out which seemed to be in the lee of the breeze: my three were placed behind a hedgerow but the traps of Dave Gibbs and Norman Binstead were exposed to the wind when it picked up. The few

moths that did arrive came in small numbers and half of the species seen were singletons or twos.

The most interesting species were *Leucochlaena oditis* (Hübn.), beautiful gothic, the only place I have recorded this species so far; *Mythimna vitellina* (Hübn.), the delicate, a fairly common migrant that has turned up on several sites; *M. l-album* (L.), L-album wainscot, a mainly coastal species; *M. unipuncta* (Haw.) white-speck wainscot, another migrant that is seen in small numbers most years; *Xanthia aurago* (D.&S.) barred sallow, a species that has turned up on several sites; *Gortyna flavago* (D.&S.) frosted orange, seen in a few localities but more coastal in the south west; *Helicoverpa armigera* (Hübn.) scarce bordered straw, a migrant species that has probably bred locally from the influx in June and one that has been seen all over Devon and *H. peltigera* (D.&S.), bordered straw, another migrant species that was probably home bred. We saw a lot of the commoner migrants which were probably left over from recent migrations, with a couple probably being home bred. In all there were 43 species recorded including the micromoths; a couple of new ones were added by Dave Gibbs who stayed all night, but the rest of us packed up by around midnight.

Ashley Hill Forest, Maidenhead, Berkshire 27 October 1996

Leader: **Ian Sims**. After heavy rain overnight the leader met one member at 10.00 h at the venue (OS map ref. SU834812). The area is one of mixed broadleaf and coniferous woodland managed by the Forestry Commission. The weather remained dull, overcast and breezy all day, though fortunately the rain held off. The late season meant that most trees and shrubs, except rowan, had abundant foliage still despite the rather late date of this meeting.

The sheltered rides and paths were worked through the forest westwards towards the Dewdrop public house where lunch was taken. Different rides were then examined on the return route to the meeting point where by 16.00 h the poor light made it difficult to locate mines so the meeting closed. A total of 82 species of Microlepidoptera were recorded from seven families, the majority being recorded from occupied or vacated mines in leaves. The following species are noteworthy:

Nepticulidae: *Ectodemia heringi* (Toll), vacated mines abundant in oak (*Quercus robur*); *Stigmella splendidissimella* (H.-S.), mines in dewberry (*Rubus caesius*); *S. speciosa* (Frey), two vacated mines in sycamore (*Acer pseudoplatanus*); *S. obliquella* Hein, vacated mine in smooth-leaved willow (*Salix* sp.). Tischeridae: *Tischeria dodonaea* Stt., one mine in oak. Tineidae: *Nemapogon clematella* (F.), characteristic larval workings on dead coppiced hazel with the fungus *Diatrype disciformis*. Lyonetidae: *Bedellia somnulentella* (Zell.), vacated larval mines in field bindweed (*Convolvulus arvensis*). Gracillariidae: *Caloptilia rufipennella* (Hübn.), old cones common on sycamore (*Acer pseudoplatanus*); *C. semifascia* (Haw.), vacated cone on field maple (*Acer campestre*); *Phyllonorycter cerasicolella* (H.-S.), two mines in cherry (*Prunus cerasus*); *P. dubitella* (H.-S.), mines common in an unidentified species of sallow with very large leaves (4–6 inches long); *P. cavella* (Zell.), mines common in birch (*Betula pendula*); *P. lautella* (Zell.), mines abundant in seedling oaks; *P. geniculella* (Rag.), mines common in sycamore. Coleophoridae: *Coleophora albitarsella* Zell., larval cases common on ground ivy (*Glechoma hederacea*).

A species list has been sent to the Forestry Commission, whose permission to hold this meeting is gratefully acknowledged, and to the County Recorder for Lepidoptera.

Belize Expedition Workshop, Dinton Pastures, 14 December 1996

Organizers: **Paul Waring, Graham Collins and Adrian Spalding**. This workshop was attended by nineteen members, many of whom registered interest in taking part in subsequent expeditions. As a result, we now have enough personnel for at least two more expeditions.

In the morning session PW gave a brief introduction to the objectives of the first BENHS expedition to Belize and the locations of the British dependencies and former dependencies within the Commonwealth. This was followed by an illustrated talk on the expedition, featuring photographs and details of the base camps used, so that participants on future expeditions would know what to expect in terms of living and working conditions. The study sites and techniques used to survey the Lepidoptera were illustrated and discussed, along with photos of the moths, butterflies and other wildlife encountered.

After lunch GC showed slides of some of the non-lepidopteran invertebrates we found and AS described work on the behaviour of the ithomiid butterflies we saw. Plans and dates for a second expedition were discussed. The rest of the afternoon was spent by members examining set specimens of the Lepidoptera brought back for identification and arranging them taxonomically in several cabinet drawers, using a variety of identification guides and keys to help recognize the major families and subfamilies and to familarize members with taxa which are poorly represented in Britain.

The speakers were very pleased with the enthusiastic response from members to this workshop and would like to thank Dr Ian McLean, Indoor Meetings Secretary, for organizing the slide projection and other facilities and helping to arrange the room before the morning session.

Fig. 4. One of the groups examining specimens from Belize during the Expedition Workshop. Left to right: Roger Kemp, Graham and Anona Finch, Jim and Barry Fox, Graham Collins and Gavin Boyd.

SHORT COMMUNICATION

Roost-sharing behaviour in two sphecid wasps.—Whilst visiting Anurhadapura in central Sri Lanka in September 1994 I noticed that a hanging pot-plant outside my hotel room had attracted some sphecid wasps to roost in the early evening of the 23rd. A large (20 mm long) black and red specimen perched atop a trailing stem whilst about 35 smaller (15 mm long) black ones rested below (Fig 1).

At the time I took them to be different sexes of a single dimorphic species, but they have now been tentatively identified by Mr C. R. Vardy as males of *Sphex sericeus* (F.) and *Chlorion lobatum* (F.) respectively.

Roosting in male bees is well known (e.g. O'Toole & Raw, 1991), but less so in wasps. There are, however, two recent reports of roosting wasps. Starr & Hernández (1995) found several males of *Pepsis sericans* Lepeletier, a pompilid, aggregating on an acacia bush in Cuba one hot and sunny afternoon, and Vardy (1995) found mixed males of two sphecids, an *Ammophila* species and *Prionyx bifoveolatus* Taschenberg, clamped by their mandibles to two adjacent bushes on an Argentine hillside during a cloudy mid-day as a few raindrops began to fall.

In Anurhadapura the two wasp species settled down at about 18.00 hours to spend the night together on the hanging plant. They were undisturbed by my close approach and electronic flashguns. Next morning at 08.00 hours they were gone, but some returned (including the lone *Sphex*) to a neighbouring hanging plant the next evening.

My thanks to Mr C. R. Vardy for offering names to my slide and advising on a preliminary draft of this short note.—RICHARD A. JONES, 13 Bellwood Road, Nunhead, London SE15 3DE.

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Vardy, C. R. 1995. Sleeping aggregation of neotropical Sphecinae. *Sphecos* **29**: 12.

Fig. 1. Roosting sphecids: males of *Sphex sericeus* (top) and *Chlorion lobatum* (below) on the trailing stems of a hanging pot plant, Anurhadapura, Srik Lanka, 23.ix.1994.

LETTER TO THE EDITOR

More on the BENHS logo—after much soul-searching we have our Society logo! Imagine my surprise when I was sent, by one of my Spanish colleagues, the volume of programme and resumés for the 1996 Iberian Congress of Entomology, which I had hoped to attend. . . . I have photocopied the cover! — PETER H. LANGTON

SHORT COMMUNICATION

***Sciapus maritimus* Becker (Diptera: Dolichopodidae) in Britain.**—Whilst attending the annual summer field meeting of the Dipterists Forum at Ayr in 1995 I visited the coastal dunes at Turnberry (NS/19.05) on 3.vii in company with other members of the party. On the seaward side of the dunes I swept, from amongst the scattered vegetation, several male specimens of a *Sciapus* which I subsequently identified as *maritimus*, using the key in the paper by Meuffels & Grootaert (1990). Mr J. H. Cole who was in the party tells me that he also collected examples of this species.

This appears to be the first confirmed occurrence of the true *Sciapus maritimus* in Britain and bears out, in part, the prediction of Speight (1991) that all four of the western European species of the *contristans* group (of which *maritimus* is one) will be found in Britain.

The publication of the paper by Meuffels & Grootaert was noted by Mr C. E. Dyte in the *Empid and Dolichopodid Study Group Newsheet* No. 10, September 1991, commenting that it demonstrates that there has been much confusion over both the recognition of, and names applied to *Sciapus contristans* and its relatives. Mr Dyte has recently pointed out to me (*in litt.*) that males running to *maritimus* in the key in Assis Fonseca (1978) could be *maritimus*, *basilicus* or *zonatulus*; this means records of *maritimus* in the British literature could relate to any of these species. It is likely, though not certain, that British material previously under the name *maritimus* would be *zonatulus* because no specimens of true *maritimus* or *basilicus* have hitherto been reported from Britain.

I am obliged to Mr C. E. Dyte and Mr J. H. Cole for helpful advice and to the latter for permission to report his record. My thanks also to Dr P. Grootaert for the gift of his joint paper.—R. CROSSLEY, 1 The Cloisters, Wilberfoss, York YO4 5RF.

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Cover illustration: Rosel's bush cricket, *Metrioptera roeselii* (Hagenbach). Photo: Richard Jones

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THE HITHERTO UNKNOWN MALE OF *CHAETOPLEUROPHORA SPINOSA* (DIPTERA: PHORIDAE)

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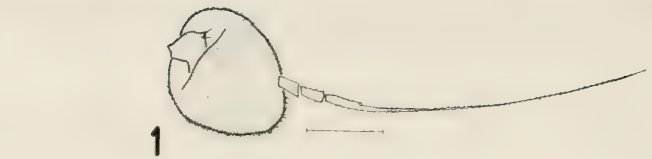
Schmitz (1941) provided a key to the six known species of Palaearctic *Chaetopleurophora* Schmitz, along with detailed descriptions. However, *C. spinosa* Schmitz has remained known from the holotype female only, which was collected in the Netherlands. On a visit to the Museum Koenig (Bonn) in 1996 I found a specimen of a male standing under "*Chaetopleurophora* sp.". It was labelled "Kemberg b. Trallenbach [or possibly "Trallmbach"] 5/6. 44. 20/54". Kemberg is in Germany, due south of Wittenberg. The specimen proved to be undescribed and in Schmitz's key it runs to the *C. spinosa, C. spinosior* Schmitz, *C. spinosissima* (Strobl) group of species. However, it will not run out to any of these as it combines possession of two pre-apical bristles on the front tibia with five pre-apical bristles on the middle tibia and only a single pre-apical anterior bristle on the hind tibia. The female holotype of *C. spinosa* differs in having only one pre-apical bristle on the front tibia. Otherwise the relatively small size and the rest of Schmitz's (1941) description of this female leave little doubt that the male specimen from Kemberg is the hitherto undescribed male of *C. spinosa*. It is characterized below.

Chaetopleurophora spinosa Schmitz

Male. Frons brown and clearly broader than long (high). The robust supra-antennal bristles about three-quarters length of antials, which are further from them than from anterolaterals. The latter and antials in an almost straight transverse row, but antials about twice as far apart as either is from an anterolateral. Mediolaterals very slightly lower on frons than pre-ocellars, but the four bristles almost equally spaced. With 38 hairs, and with microtrichia largely restricted to vicinity of vertex. Brown antenna as Fig. 1. Palps pale dusky orange yellow with a longer apical bristle, four shorter pre-apicals and 6–7 short stout spine-like bristles further back. Proboscis with small brown labrum and mainly brown labella, which are well developed but somewhat shortened distally. Thorax brown, but paler on much of pleural regions. Mesopleuron with 10–12 hairs and a strong bristle near hind margin. Each side of scutum with a humeral, two notopleurals (the front one long and robust, the hind one short and weak), two pre-alars (the front one being stronger), an intra-alar, a post-alar, and a shorter pre-scutellar dorsocentral bristle. Scutellum with four bristles, the anterior pair being at most as long and strong as dorsocentrals, the posterior pair being longer and more robust. Legs brown, but trochanters more pale brownish yellow. All five fore-tarsal segments with a posterodorsal hair palisade. Front tibia with an anterodorsal bristle at end of first third and also at end of second third. Middle tibia with a dorsal bristle at beginning of second quarter and at beginning of apical third; with an anterodorsal bristle at end of first quarter and in middle of second quarter; with an anterior bristle just before middle of apical third; and a short anteroventral in second half of last quarter. Hairs below basal half of hind femur shorter and less robust than those of anteroventral row of outer half. One hind tibia with eight and one with seven pre-apical bristles. First third with an anterodorsal followed by a dorsal; second third likewise, but on one leg there is a



Figs. 1 2. *Chaetopleurophora spinosa* male. 1: left antenna. 2: left face of hypopygium. Scale bars = 0.1 mm.

dorsal before the anterodorsal as well as below it; last third with two dorsals and a strong pre-apical anterior bristle. Spines of apical combs of posterior face all simple. Wings 1.98 mm long. Costal index 0.452. Costal ratios 3.74: 2.16 : 1. Costal cilia 0.10 mm long. Hair at base of vein 3 about as long but not so robust. A single longer bristle on axillary ridge. Vein Sc runs to R_1, but pale and cell Sc very narrow. Veins yellowish brown. Membrane distinctly grey tinged. Haltere yellow with much of knob more whitish yellow. Abdomen with brown tergites with short hairs which are only a little longer at rear of tergite 6. Venter brown with a few hairs below. Hypopygium brown and as Fig. 2.

The difference in the chaetotaxy of the two hind tibiae serves to caution against placing too much weight on the presence or absence of individual bristles. Whether the difference between the number of bristles on the front tibiae of the male above and those of the female holotype of *C. spinosa* is a case of sexual dimorphism, or of

variation within both sexes of the species, can only be determined by examination of further material.

Acknowledgements

I am grateful to Dr Hans Ulrich (Museum Koenig, Bonn) for allowing me to remount the specimen on a slide. My work on Phoridae is supported by funding from the Isaac Newton Trust (Trinity College, Cambridge).

Reference

Schmitz, H. 1941. Phoridae. In: Lindner, E. (Ed.). *Die Fliegen der palaearktischen Region* **4(33)** (Lieferung 141): 65–128.

SHORT COMMUNICATION

***Platypalpus bilobatus* Wéber (Diptera: Hybotidae), and *Chelifera astigma* Collin (Diptera: Empididae) in northern England**—*Platypalpus bilobatus* was reported as new to Britain by D. A. Smith (*Entomologist's Mon. Mag.* 1990; **126**: 59) on the basis of a single male taken at Grays Chalk Quarry, Essex 31.vi.1981, and several specimens at the same site in the following year. An appeal by me for further records in *Empid and Dolichopodid Study Group Newsheet* No. 14 (February 1996) produced no response and I here report what therefore appears to be the second British locality for this species.

Four males and two females were collected in Forge Valley Woods National Nature Reserve near Scarborough, North Yorkshire between 15 and 30.vi.1995 where they occurred in an area of calcareous flushes on a wooded hillside. Initially I could not name the specimens and I am obliged to Dr Milan Chvála for suggesting that they may be of this species and to Jonathan Cole for subsequently confirming the identification.

There was no difficulty in naming several male specimens of *Chelifera astigma* collected in the same locality on 28 and 30.vi.1995 and single examples of what are possibly females of this species on the latter date and 12.viii.1995. Originally described by J. E. Collin in 1927 on the basis of a single male collected by Dr J. H. Wood at Churchyard Dingle, Herefordshire 4.vii.1907 (*Entomologist's Mon. Mag.* **43**: 94), the capture of a single male at Cwm Sere, Brecon 28.v.89 was reported by Dr Adrian R. Plant in *Empid and Dolichopodid Study Group Newsheet* No. 8 (February 1990). In his note, Dr Plant included an illustration of the male genitalia which is not figured in Collin (*British Flies* **6**: Empididae).

There is an undated record of this species from Sabden in *The Diptera of Lancashire and Cheshire Part 1* by L. N. Kidd and A. Brindle, published by the Lancashire and Cheshire Fauna Committee in 1959, and an unpublished old record from Beattock, Dumfriesshire which needs tracing and confirming.—Roy Crossley, 1 The Cloisters, Wilberfoss, York YO4 5RF.

MONODIAMESA EKMANI BRUNDIN (DIPTERA: CHIRONOMIDAE), CONFIRMED NEW TO BRITAIN AND IRELAND

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On 16th August 1982 six *Monodiamesa* pupal exuviae with bulbous thoracic horns were collected by PHL from Loch Tay at Kenmore. Without associated adults their specific identity was uncertain. They were keyed in Langton (1991) as *Monodiamesa* Pela. In a manuscript list of additions to the British chironomid fauna, Langton (1993) provisionally recorded the species as *Monodiamesa ekmani* Brundin. Further material collected by LAM in Lough Neagh, Northern Ireland, during 1994/5 confirms the species to be *ekmani*. *Monodiamesa* adult development is extremely precocious, even for a chironomid: before the last instar larva has finished feeding there is already a well developed adult hypopygium within the pharate pupa. A male larva at this stage of development has provided characters to achieve specific identification, despite the distorted condition of the hypopygium. *M. ekmani* larvae were partially described by Brundin (1952) from non-cleared specimens; this new material allows for larval descriptions to match those given for Nearctic species by Sæther (1973). Only the female of *M. tuberculata* Sæther has been previously described (Sæther, 1973, 1977), and that from a decomposed pharate adult. A reared adult *ekmani* enables the first full description of a female *Monodiamesa*.

LARVA

Fourth instar

Material. Lough Neagh: single larvae 11.vi.94, 5.i.95, 29.iii.95, 12.vi.95; 1 larval exuvium 29.v.95 (LAM).

Length 8.7–10.2 mm ($n = 4$). Head capsule length 0.50–0.56 mm ($n = 4$).

Head. Antennal segments 50–60, 22–26, 5–8, 2 μm long ($n = 3$). Basal antennal segment 18–22 μm wide; distance from base to ring organ 25–28 μm; blade 11 μm long (Fig. 1d). Labrum and palatum as in Fig. 1a. Premandible 56–70 μm long ($n = 3$). Mandible (Fig. 1b) 110–145 μm long ($n = 4$), seta interna with 6 serrated setae and 1 longer smooth seta. Mentum as in Fig. 1c, 6 lateral teeth, width between apices of lower mental teeth 105–115 μm ($n = 3$). Ventromental plate with 2–6 ($n = 4$) fine setae underneath, maximum width of plate 20–22 μm ($n = 4$), length from apex of lower mental tooth to plate apex 76–90 μm ($n = 4$). Length of postmentum (mentum + submentum) 310–340 μm ($n = 5$).

Abdomen. Procerci 65–90 μm long ($n = 4$), each with 6–8 apical setae (440–620 μm long) and 2 lateral setae (80–140 μm long). Supraanal setae 360 μm long ($n = 1$). Anal tubules 108–140 μm long, 34–55 μm wide ($n = 3$). Posterior parapods 200 μm long ($n = 2$).

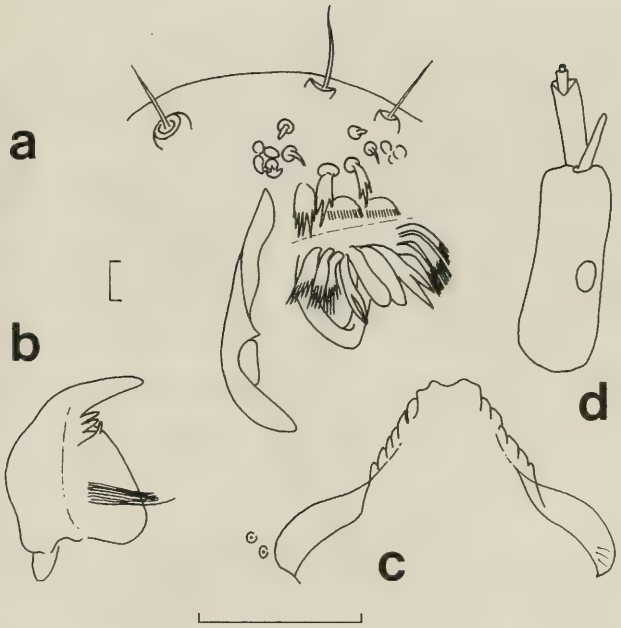

Fig. 1. *Monodiamesa ekmani* fourth instar larva, a: labrum and palatum; b: mandible; c: mentum; d: antenna. Scale a, d = 0.01 mm; b, c = 0.1 mm.

Third instar

Material. Lough Neagh: 1 larva 29.iii.95 (LAM).

Length 5.3 mm. Head capsule length 0.32 mm.

Head. Antennal segments 26, 20, 4, • (unmeasurable on specimen) μm long. Basal antennal segment 11 μm wide. Premandible 38 μm long. Mandible 80 μm long, with 6 setae in seta interna. Distance between apices of lower mental teeth 36 μm. Ventromental plate with 2 fine setae underneath, maximum width of plate 14 μm, length from apex of lower mental tooth to plate apex 40 μm. Length of postmentum (mentum + submentum) 180 μm.

Abdomen. Procerci 36 μm long, each with 6 apical setae (160 μm long). Supraanal setae 340 μm long. Anal tubules 60 μm long, 28 μm wide. Posterior parapods 100 μm long.

PUPA

Loch Tay specimens are keyed and figured in Langton (1991) (*Monodiamesa* Pela).

New material: 1 pupal exuvium 29.v.95 Lough Neagh, Northern Ireland, from a reared female (LAM).

Exuvial length 7.6 mm. Thoracic horn 1.0 mm long, 2.6 times as long as wide. Anal lobes 1.4 times as long as broad.

Adult female

Material. Lough Neagh, 1 reared female 29.v.95 (LAM).

Colour. Gold; thorax with scutal stripes brownish, the median stripe darker anteriorly, the laterals with a brown spot posteriorly; posterior part of postnotum brown; a brown spot laterally below and a little in advance of the wing base; pre-episternum browned beneath; legs brown from knees to claws.

Head. Setae: verticals + postorbitals 7 9, clypeals 22. Palps: palpomeres 44, 64, 140, 100, 255 µm long. Antenna: pedicel 56 µm long, 25 µm wide; flagellomeres 76 80, 48/56, 56/60, 76, 76/80, 170/190 µm long, AR 5.6/6.8.

Thorax. Antepronotum with 10 lateral setae, 13 dorsocentral setae, 4 prealar setae, 1 supralar seta. Scutellum with about 25 setae. Wing 3.2 mm long. Costal extension 110 µm. Membrane without macrotrichia; brachiolum with 2 setae, R with 15 17, R_1 with 15 18, R_{4+5} with 7, squama with fringe of 30 setae. Venarum ratio (length of Cu divided by length of M) 1.0.

Legs. (Lengths in µm. LR leg ratio; ratio of metatarsus length to tibial length.)

leg	fem	tib	tar1	tar2	tar3	tar4	tar5	LR
1	110	138	102	54	38	26	20	0.74
2	120	130	56	36	26	19	18	0.43
3	128	156	88	50	38	22	20	0.56

Leg spurs: on foretibia 55 µm long, midtibia 55 55 µm long, hindtibia 65 95 µm long; pseudospurs 30 µm long; on midleg 2 on first and second tarsal segments, on hindleg 2 on first tarsal segment. Comb of hind tibia with 14 spines.

Genitalia Fig. 2.

Observations on the hypopygium of a pharate adult male

Figure 3 depicts the hypopygium of a male within a pharate pupa (12.vi.95, Lough Neagh, LAM). It is obviously severely distorted. Its interest lies in the double longitudinal folding of the larger of the basal appendages of the coxite: away from midline below, towards midline above. If this is the normal condition of the pharate male, presumably the appendage is flattened by hydrostatic pressure on eclosion.

Discussion

European *Monodiamesa* species are extremely similar. The bulbous thoracic horn of the pupa excludes *bathyphila* (Kieffer), and at 1 mm long or less, also *alpicola* (Brundin), for which a length of 1.4 mm is given by Brundin (1952). The wing length of the reared female and that derived from the Loch Tay pupal exuviae wingsheath lengths (using the conversion graph in Langton, 1984) is 3 mm. According to Pagast (1947) the winglength of *nitida* (Kieffer) is 4 mm; Brundin (1949) gives 3.2 3.5 mm for *ekmani*. The figure of the hypopygium of *nitida* in Reiss (1968) shows the basal spine of the coxite set on a distinct tubercle. Although the hypopygium figured here is distorted, the spine shows no basal tubercle, a character *ekmani* shares with *alpicola*. The conclusion is that the species described here is *ekmani*, despite the curiously squat gonostyles of the pharate male hypopygium (which, however, appears to have experienced some developmental trauma).

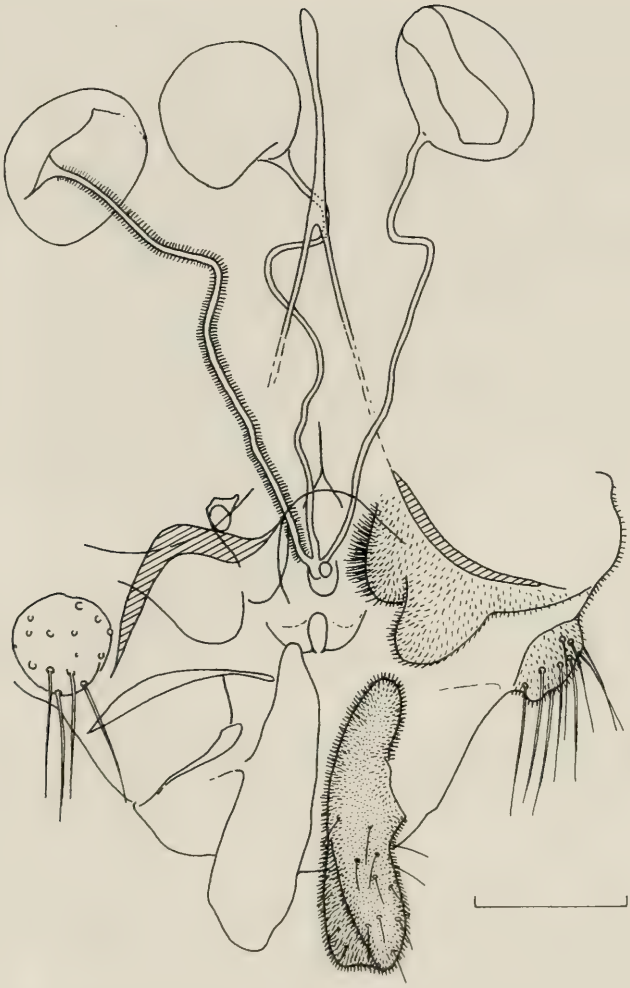

Fig. 2. *Monodiamesa ekmani* female genitalia ventral view. Scale = 0.1 mm.

Ecology and geographical distribution

Six pupal exuviae were collected on Loch Tay, on 16.viii.82. However, it is likely that the records for *Monodiamesa* sp. larvae collected in Lough Neagh during April 1982 (Carter & Carter, 1983) represent the earliest record of *ekmani* for the British Isles.

In the course of regular sampling by LAM and C. Carter in Toome Bay, at the north-west corner of Lough Neagh, *Monodiamesa* larvae were found throughout 1994 and 1995 at depths of 5 metres or less. Lough Neagh is the largest freshwater

Figure 3. *Monodiamesa ekmani* hypopygium of pharate adult male. Scale = 0.1 mm.

lake in the British Isles. It has a surface area of 383 km^2, a catchment area of 4453 km^2, an average depth of 8.9 m, a maximum depth of 34 m, a capacity of 3.45×10^9 m^3 and a water retention time of approximately 1.3 y (Stevens & Gibson, 1977). The majority of its 125-km shoreline (Carter, 1993) is exposed and rocky; the remaining 32 km consists of sheltered sandy bays. Typically during the summer in the sandy bay area stands of *Phragmites australis* (Cav.) Trin ex Steudel and or *Typha latifolia* L. replace stands of submerged macrophytes, e.g. *Elodea canadensis* Michx., *Potamogeton pectinatus* L. and *P. filiformis* Pers. (Carter & Murphy, 1993). The Brundin (1958) system of lake classification based on the bottom fauna would place the lough in the IIIa or moderately eutrophic category (Carter, 1973). However, other workers have pointed out that other factors such as nutrient levels and primary production would place the lough in a more eutrophic category (e.g. Carter, 1973). Annual average total phosphorus was 104.7 mg m^3 (range 7 206) for 1994 and 120.5 mg m^3 (range 58 200) in 1995 (J. Livingstone pers. comm.). This places the lough above the average for the eutrophic category according to the OECD report (1982). The morphology of the lough ensures that the water is well mixed and, apart from brief periods of calm weather during the summer, there is little thermal stratification or depletion of oxygen in the bottom waters (Gibson, 1986). Permanent ice cover in the winter months is extremely rare; only minimal freezing occurs around the lake margins. Below 8 metres the bottom sediment is mud (mean grain size 0.01 mm), above this there is a transitional zone (mean grain size 0.1 mm) and inshore the substratum consists of a mixture of sand (mean grain size 0.20–0.25 mm) and stones (Carter, 1973).

Brundin (1952) summarized the distribution of *ekmani* in Sweden: though widely distributed in subarctic lakes, it was known only from the Vättern in the south. He surmised that in south and middle Sweden it is most probably restricted to the deepest and coldest lakes (the Vättern has a surface area of 1900 km^2, a maximum depth of 119 m and is oligotrophic (Brundin, 1949)). He also recorded larvae from a depth of 27 m in a northern lake, Stora Blåsjön. In contrast no larvae were obtained from Lough Neagh below five metres, where the numbers peak at around four metres, with a maximum of 1120/m^2 (C. Carter pers. comm.).

Loch Tay is the fourth largest Scottish Loch with a volume of about 15×10^8 m^3, a surface area of 26.4 km^2, a mean depth of 61 m and a maximum depth of 155 m; like Lough Neagh it rarely freezes over (Murray & Pullar, 1977). In contrast to Lough Neagh, Loch Tay is oligotrophic, with an average annual total phosphorus concentration of 7 mg/m^3 (I. Fozzard pers. comm.).

According to Sæther (1983) *Monodiamesa* larvae are found most commonly on sandy substrata. Carter & Carter (1983) found the larvae on the crest of the sand bar closest to shore, but not on the crest of the outer bar, suggesting a low tolerance to disturbance. It would appear that some large lakes in temperate regions of the West Palaearctic can provide the undisturbed sandy substratum and year-round high oxygenation that *Monodiamesa ekmani* requires.

Acknowledgements

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SHORT COMMUNICATION

***Drymus pumilio Puton* (Hemiptera: Lygaeidae) in Surrey**.—A single example of this rare bug was swept from rideside weedy grassland in Preserve Copse immediately to the east of Polesden Lacey (TQ138522), 10.ix.1996. This wood is probably of plantation origin, having at present mature standard oaks of very uniform age plus a mixture of exotic tree species. The canopy is very sparse due to severe storm damage in 1987 and subsequent heavy suppression of any regrowth by rabbit grazing. The wood lies on the clay-with-flints cap of the North Downs and the soils are neutral. The grassland includes frequent *Hypericum perforatum*, a feature of other sites mentioned by Kirby (1992). This is a nationally scarce bug with a thin scattering of reports across lowland southern Britain from Kent to Monmouthshire, and equally scarce throughout its range—it appears to be confined to western Europe. So far as I am aware this is the first record from Surrey.—K. N. A. Alexander, National Trust, 33 Sheep Street, Cirencester, Glos. GL7 1RQ.

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THE SEARCH FOR *TIRADELPHE SCHNEIDERI* ACKERY & VANE-WRIGHT, 1984 (LEPIDOPTERA: DANAINAE)

W. JOHN TENNENT

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I have every faith in Guadalcanal, if only for the fact of its being the only island in the Solomons where it is practicable to get to any height . . . . I am not quite mad enough to attempt a mountain trip there—at least not without knowing a great deal more than I know at present. A. S. Meek, *A Naturalist in Cannibal Land*, 1913, p. 181.

Tiradelphe schneideri Ackery & Vane-Wright (1984) was described as a new genus and species from two females taken in 1965 by a Royal Society-sponsored expedition (RSE) to the Solomon Islands, on or near the summit of Mount Popomanaseu, Guadalcanal. The specimens were said to have been taken in open vegetation above the forest line, at about 2300 m, in the first week of October 1965 (Ackery & Vane-Wright, 1984: 212). The date of capture was corrected to the first week of November 1965 (Vane-Wright & Boppré, 1990: 197). *T. schneideri* is a remarkable butterfly; for a discussion of the unique features of *Tiradelphe* and its potential importance in answering some interesting evolutionary questions, see Vane-Wright & Boppré (1990). The genus is still only known from the two original female butterflies (Fig. 1).

The Imperial College Solomon Islands Expedition 1996 (ICSIE), comprising three undergraduates (the author, James Hogan and Heather Whitney) from Imperial College of Science, Technology and Medicine, London, endeavoured to re-discover *T. schneideri* in July 1996. Although the expedition failed to achieve this aim, it did reach the summit of Mount Popomanaseu, and the considerable bureaucratic and travel difficulties experienced in visiting the mountains of central Guadalcanal warrant recording. The aim of this paper is to provide information which might assist any expedition seeking to find *T. schneideri* in the future.

PREVIOUS EXPEDITIONS

The decision to mount ICSIE was made in July 1995, a year before travelling to the Solomons. Efforts made to find detailed information on Mount Popomanaseu and its environs involved correspondence with biologists and ecologists in the UK, Australia, New Zealand and the USA. Despite claims that some individuals had reached the summit of Popomanaseu since the Royal Society Expedition in 1965, only one successful attempt can be confirmed. Geoff Dennis, an Australian who lived in the Solomons for many years and who had an intimate knowledge of the country's wildlife, died in August 1995. Perhaps he was aware of other successes, but if so no documentary or other evidence appears to be available.

So far as is known, the only expedition with the express purpose of re-discovering *T. schneideri* was mounted in the 1980s by a professional entomologist and an author of popular butterfly books, but they failed to reach Mount Popomanaseu, primarily because of the poor health of the latter (R.L. Smiles, pers. comm.). When ICSIE reached the mountain summit, a book, wrapped in plastic and contained in a tin in an effort (only moderately successful) to protect it from the weather, was found to contain details of previous visits. The RSE entry was dated 4 November 1965 (coincidentally, the author's 16th birthday!) and the only other 'expedition' recorded

Fig. 1. The two original females of *Tiradelphe schneideri*.

as having reached the summit since that date was a Mr Moto, a solitary Japanese man studying mosquitoes in December 1987.

The RSE was a major expedition which spent about 1 year in the Solomons studying a variety of specialist subjects (Corner, 1969). The land party stayed in the islands for 6 months (P.N. Lawrence, pers. comm.). Collection of lepidoptera was not a specific aim and in early November 1965 the expedition spent several days in the area of Mount Popomanaseu, where butterflies were collected, apparently by native porters. ICSIE was fortunate in obtaining the services of Alan Kilivisua, now 55 years old, who was a porter on the RSE 30 years before.

Routes to Mount Popomanaseu

At 2330 metres, Mount Popomanaseu is the highest mountain in the Solomon Islands. It lies in the central mountain region of Guadalcanal, where travel is potentially dangerous due to the frequency of landslips associated with high rainfall. Moss forest clothes the upper slopes of Mount Popomanaseu and adjacent summits

and ridges. In planning the expedition, three possible routes to Popomanaseu summit were researched and considered. The expedition chose a route from the north-east; it transpired that this was the route taken by the RSE but, with the benefit of hindsight, a route from the south may have been better. Although equally or more demanding physically, and possibly more difficult logistically, it would certainly have been shorter and may have avoided some of the expense and bureaucratic troubles experienced as a result of going through Gold Ridge village. Thickly forested slopes, combined with narrow ridges with exceptionally steep sides, made travel difficult. The author has some experience in jungle navigation, but would have found difficulty in reaching the summit without the services of a guide. Routes considered, with relative merits, were as follows.

A. From the north-east, through the village of Gold Ridge.

Advantages. (i) It is now possible to drive to Gold Ridge village, making this the shortest route. (ii) Porters are available at Gold Ridge (but see comment).

Disadvantages. (i) The name Gold Ridge is derived from the fact that gold is found in the area. For this reason local people are suspicious of the motives of visitors and also used to demanding (and getting) relatively large amounts of money for access fees. (ii) Permission to pass through Gold Ridge may be refused. (iii) The route from here to Popomanaseu involves crossing two ridges about 1200 m, with a low point of about 500 m on the Sutakiki river between them.

Comment. Although not marked on any map the author has seen, there is a logging track from the road on the north coast of the island to the village of Gold Ridge, which lies at 580 m. The track is in good condition but a 4WD is necessary. It crosses one major river and this may not be possible when in flood, even with a 4WD. There is a path, indistinct and not at all obvious in places, from Gold Ridge to the Popomanaseu Massif; the path continues south to the Weather Coast from a ridge to the north-east of Mount Popomanaseu. The route from this ridge to the mountain summit had to be cut.

At the time of the ICSIE visit, negotiations were almost complete for Gold Ridge village and the surrounding area to be purchased by the Ross Mining Company of Australia. The plan is for villagers to be re-located and the days of the village, as it exists today, are numbered. Presumably it will still be possible to reach the area by vehicle when mining work begins.

B. A route from the west or north-west.

Advantages. (i) So far as is known, there are no villages on this route.

Disadvantages. (i) This is the longest of the potential routes; the topography almost certainly makes it the most difficult.

Comment. Having examined all three routes through binoculars (so far as this is possible) from the summit of Mount Popomanaseu, this potential route seems exceptionally difficult and is probably not worth further consideration.

C. From the south—the Weather Coast.

Advantages (i) This is the shortest distance. For a fit person, travelling light, it is probably possible to reach the summit from the coast in about 2 days. (ii) Although there is at least one village en route, the attitude of villagers to visitors is not known. It is possible that the kind of demands made by the people of Gold Ridge village, may be avoided.

Disadvantages. (i) This is also the steepest route; landslips may play a significant role in periods of high rainfall. (ii) The south coast is called the 'Weather Coast' for good reason. Rainfall here is considerably more than on the north coast. (iii) Getting

to the start point may not be easy. There is no ferry from Honiara and irregular flights go from there to Avu Avu on the south coast, still some distance from the mouth of the Koloula river—the logical start point for an ascent from the south.

Comment. Although we were led to believe that there was no path from the south coast, we encountered a woman on a ridge north of Mount Popomanaseu, who had walked from there. When we reached the point of divergence from the 'main' path to the summit, the route straight on, which our guides said went to the south coast, appeared no better or worse than that from the north-east. With hindsight, this may have been ICSIE's first choice of route.

Trek from Gold Ridge Village

Accompanied by 13 porters, the three ICSIE members left Gold Ridge village on the morning of 21 July 1996 and reached the summit of Popomanaseu on 27 July. Gold Ridge lies at approximately 580 m altitude and the mountain summit is 2330 m; the route necessitated crossing two ridges, each about 1200 m, with a fall to below 500 m at the Sutakiki river between them. The going was slow, partly due to the necessity for acclimatization, but primarily because much of the route was very steep and slippery. Mr Tim Turner, an Australian who was invited to join us in Honiara, was obliged to return to Gold Ridge after one day due to equipment failure.

Mount Popomanaseu

The ICSIE final camp was made at about 200 m below the eastern summit ridge, due to the proximity of fresh water and because the guides were ill-equipped for the cold and wet weather on the exposed ridge above. A route, the last section of which was almost vertical, was cut to the ridge, a climb which became more difficult each day as it became more slippery due to rain and constant use. A further path was cut along the ridge to the summit. The summit of Mount Popomanaseu was said to be subject to local religious tambu (taboo), effectively prohibiting anyone setting foot there (Vane-Wright & Boppré, 1990: 197). In fact, although the guides were wary of a 'giant' they firmly believed lived on the summit, no objections were raised when the author asked them to erect a small shelter on the summit in order to be on site for the first rays of the sun the following morning. Of our guides, only Alan Kilivisua had ever been to the top of the mountain previously and the remainder seemed quite excited to be there for the first time, taking quantities of vegetation away as souvenirs.

The habitat where *T. schneideri* was said to have been taken was 'in open vegetation above the forest line' (Ackery & Vane-Wright,1984: 212). There is, in fact, very little open vegetation in the summit region. The summit ridge itself is 'open', in the sense that there are only shrubs and grass on the narrow ridge, and the crowns of trees below the ridge barely rise above it.

There is an open, water-logged, area between ridge and summit, consisting almost exclusively of the sedge *Paramapania parvioracteata* (Cyperaceae), and the summit itself supports a few stunted *Dacrydium magnium* (Podocarpaceae). However, the area is thickly covered in luxuriant vegetation, including the large-leaved *Dipteris conjugata* (Dipteridaceae), fern-like *Gleichenia vulcanica* (Gleicheniaceae) and *Lycopodium cernuum* (Lycopodiaceae) which combine with shrubby *Eugenia* spp. (Myrtaceae), *Davallia repens* (Davalliaceae) and *P. parvioracteata* to form a densely matted carpet 0.5–1.5 m deep, almost impossible to move through. Paths through this vegetation must be cut, and straying off them is impossible, a circumstance which makes collecting flying insects a difficult and arbitrary affair.

Results

The timing of ICSIE's visit was restricted by College terms. Although it was known that the first *Tiradelphe* specimens had been collected in November, many insects fly all year round in the tropics and, since individual Danaine butterflies are robust and are known to have a relatively long life span, it was hoped that seasonality would not be a significant factor.

However, it is clear that ICSIE failed to obtain specimens of *T. schneideri* simply because it was not flying. The expedition reached the summit ridge in very misty conditions on 26 July 1996 and, some two hours later, when the mist cleared and the sun appeared, a large black-and-white Danaine butterfly was seen by the author at close range. From its size and wing shape, it is believed that this was a female *T. schneideri* but, since it was not secured, it could not be identified with certainty. No further specimens of this kind were seen. Over the next six days, a total of 52 man-hours were spent in daylight on the summit area, with locations being split when more than one of the expedition members was there. Three nights were spent on the summit itself, in order to take advantage of the early morning period when butterflies were active. This included sufficient periods of good weather for it to be clear that *T. schneideri* was not flying.

The reason is strongly suspected to be one of seasonality. The RSE material was deposited at The Natural History Museum in London, where the accessions number 1966-1 was allocated. It included an estimated total of 58,588 insects of all orders and it would be a daunting task to establish exactly what species of butterflies, now for the most part incorporated in the main collection, were collected. However, some insight into the relative numbers of some butterfly species on the wing at the time the two expeditions visited the summit of Mount Popomanaseu, may be obtained by examining three taxa: *Parantica garamantis* Godman & Salvin, 1888 (Danainae), *Delias messalina orientalis* Arora, 1983 and *Delias alberti tetamba* Arora, 1983 (Pieridae).

According to Ackery & Vane-Wright (1984: 185), virtually nothing is known about the distinctive *P. garamantis* which appears to be confined to the islands of Guadalcanal and Bougainville (Papua New Guinea). Its discovery by the RSE near the summit of Popomanaseu was reported by Ackery & Vane-Wright (1984: 185) and there are two specimens bearing this data in the National Collection. ICSIE found *P. garamantis* to be a common butterfly in the forests of the central Guadalcanal mountains, including the route to Mount Popomanaseu, and about 30 individuals were seen on and around the summit over a period of six days. Its flight is slow and it is easy to approach. The two known specimens of *T. schneideri* were caught by native porters (Ackery & Vane-Wright, 1984: 212; Vane-Wright & Boppré, 1990: 197) and one might expect a large, general collection made in an arbitrary fashion to contain a significant number of *P. garamantis*, if it had been on the wing in any numbers.

Delias messalina orientalis and *Delias alberti tetamba* were described from material collected by the RSE, on the Solomon islands of Santa Isabel and Guadalcanal. The former included a solitary female paratype from Popomanaseu and the type series of the latter comprised eight males, all from Santa Isabel. Prior to the ICSIE, the female of *D. alberti tetamba* was unknown.

At the time of the ICSIE visit, *Delias* species were the commonest butterflies seen on the summit of Popomanaseu and adjacent ridges. Of the two species present, *D. alberti* was the most frequent and 23 individuals were captured, including several females (Tennent, in prep). *D. messalina* was present in smaller numbers and six individuals of both sexes were collected. Although the topography makes collecting

difficult, it is remarkable that only one *Delias* specimen was collected by the RSE and this supports the view that butterfly species flying at this altitude were quite different in early November 1965 and late July 1996.

Status of T. Schneideri

T. schneideri is accorded the status of 'endangered species' in the current International Union for the Conservation of Nature and Natural Resources Red List of Threatened Animals (R. I. Vane-Wright, pers. comm.) primarily, if not wholly, because of its apparent restriction to a very small area of Guadalcanal. The indigenous rainforests of the Solomon Islands are said to be under serious threat from logging (Baird, 1996) and, although logging has certainly had a significant impact on the Solomons generally, the rugged terrain and difficulty of movement in central Guadalcanal makes it unlikely that logging will ever be commercially viable. The known habitat of *T. schneideri* is therefore very effectively protected by its topography.

It is highly unlikely that any Danaine species will ever achieve the commercial value to collectors of *Ornithoptera*, *Papilio* or *Delias* species and it is interesting that, despite its stated importance to science, there has only been one known attempt to re-discover this species since its description twelve years ago. One cannot help feeling that if *T. schneideri* had been a swallowtail with some commercial value, specimens would have found their way into commercial butterfly catalogues before now, despite the difficulties of collection. The Solomon Islands became independent from British protection in 1978 and it is probable that travel in remote areas has become more difficult since that time. There are some unusual features relating to travel in the Solomon Islands. For example, there are three levels of government: the National Government, Provincial Government and, most importantly, an ancient system of land rights which requires authority of local land owners before entering any land. Application for a research permit was supported by the Ministry of Forests, Environment and Conservation and a permit was issued to ICSIE by the Ministry of Education and Human Resources Development. Subsequent demands, some quite outrageous, were made by Guadalcanal Provincial Government officers and by local landowners.

A post-expedition report which includes details of difficulties experienced by the ICSIE, names of porters, latitude and longitude of ICSIE sub-camps and other practical details which may be of value in planning, has been prepared. Copies are lodged at the Linnean Society, London, the Royal Entomological Society, London, the Royal Geographical Society, London and The Natural History Museum, London.

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Development, Honiara, supported the project and arranged issue of a research permit. Mr Myknee Sirikolo and Mr Hane Moffat (SOL-Honiara), The National Herbarium, Honiara, found the time to identify dried plant material.

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SHORT COMMUNICATION

An unusual encounter with Dotted Chestnut moths *Conistra rubiginea* (Noctuidae).—On 28.ix.97, I found three adult Dotted Chestnut moths inside the hollow base of an oak tree, which was occupied by large numbers of the ant *Lasius fuliginosus*. One of the moths was a perfect imago, but the other two were still in the process of expanding their wings. All three were hidden amongst oak leaf litter and debris on the floor of the cavity, but the ants showed no interest in the moths, even when disturbed, running over them even as they vibrated their wings. The presence of recently emerged moths suggest that the caterpillar host plant may well have been nearby. Skinner (1984) mentions the paucity of data regarding the early stages of this moth.—Jonty Denton, 26 Bow St, Alton, Hants GU34 1NY.

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CONSERVATION OF BUTTERFLIES AND OTHER ENDEMIC SPECIES IN THE FUNCHAL ECOLOGICAL PARK, MADEIRA

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Madeira, a mountainous island of volcanic origin, is situated off the west coast of North Africa. Together with the Azores, Canary Islands, Cape Verde Islands and a number of other smaller islands, Madeira is part of the geographical region known as Macronesia. Madeira was uninhabited until its colonization by the Portuguese before the thirteenth century (Press & Short, 1994). At this time, about 60% of the island was covered by climax evergreen forest (laurisilva). Seven centuries of human activity, particularly the felling and burning of the native vegetation to construct terraces for agriculture or to produce pasture for grazing livestock, has reduced the area of laurisilva to about 10,000 ha (16% of the island). Most of the remaining laurisilva is now found in the north of the island (Press & Short, 1994: fig. 8).

The island is mild and wet at all times of year, and frost is virtually unknown. Dense coastal fogs develop over the island and water droplets condense out from the fog on to the leaves of the laurisilva trees, or (at higher altitudes above the laurisilva zone) on to the leaves of tree heathers (*Erica arborea* L.) and bilberry scrub (*Vaccinium padifolium* Sm.). The water then flows down the steep slopes to the coast in natural or constructed (levadas) water courses.

The laurisilva consists of four dominant tree species (all members of the family Lauraceae) and a range of associated plant species, many of which are endemic to Madeira or the Macronesian islands, (Press & Short, 1994). A number of endemic animals such as the laurel pigeon (*Columba trocaz* Heineken) (Câmara, 1997), and large white (*Pieris brassicae wollastoni* Butler) and Madeiran brimstone (*Gonepteryx cleopatra maderensis* Felder) butterflies (Lace & Jones, 1984; Owen & Smith, 1993), are also associated with the laurisilva.

The loss of laurisilva to mechanical destruction and introduction of invasive plants such as eucalyptus (*Eucalyptus* spp) has altered the hydrology of the island by reducing the water available from the condensation of fog clouds. In fact, water is now being transferred across the island from the wetter north to the populous capital city of Funchal on the drier south side of the island. In addition, the endemic species associated with the laurel forests are under threat. The assemblage of endemic Madeiran butterfly species may already have been reduced by historical destruction of the laurisilva before scientific records were begun. Species currently present in the butterfly fauna, such as *Pieris brassicae wollastoni*, also appear to be under threat (Owen & Smith, 1993).

A number of parks and projects have been established in Madeira to address the conservation and restoration of laurisilva. The present paper describes one such project in The Funchal Ecological Park (Parque Ecológico do Funchal), and is presented here as the Park's staff are assisted by students and staff from conservation and related courses at Brinsbury College, West Sussex. The Park is keen to attract the interest of scientists from abroad. After giving a broad outline of the project, the current paper concentrates on a visit made to the park by a group of Brinsbury students in mid-May 1997.

Parque ecológico do funchal

The Park was established by the Council of Funchal in 1994 as a centre for environmental education. It is situated on the southern slopes of Madeira, just north of Funchal and covers an area of about 1000 ha. The highest point of the Park lies at an altitude of 1800 m near the Pico do Arierio. The Park extends downwards as far as the point where two streams, the Ribeira do Pisão and Ribeira de Santa Luzia, converge no more than 520 m above sea level.

The deep valleys situated in the area and the 1200 m difference between the northern and southern extremes of the Park have led to the creation of microclimates and a number of vegetation zones, which support a wide diversity of plants and associated animals. Some slopes, especially at higher altitudes, support smaller shrubs such as heather (*Erica* sp) and bilberry (*Vaccinium*). One such community supports the last surviving nucleus of Madeiran rowan (*Sorbus maderensis* Dode), one of Madeira's rarest endemic plants. Other areas support cedars and pines (*Cedrus* sp and *Pinus* sp), but there are only vestiges of ancient laurisilva left within the Park. Much of the laurisilva zone, where indigenous species once existed, has been invaded by *Eucalyptus* spp and *Acacia* spp, and biodiversity has been significantly impoverished.

The main aims of the Park are to re-establish and conserve the indigenous flora and fauna within the area, and to make the area an attractive place for study by scientists and students from Madeira, Portugal and abroad.

Conservation projects

Brinsbury College has been associated with the Park since its outset. Students have contributed to much of the initial work, particularly the felling of invasive *Eucalyptus* for re-establishment of laurisilva with nursery-reared plants. College staff have trained and assessed the Park wardens in chain-saw and associated skills. A thorough map of the water courses (both natural and constructed levadas) has been made and students have repaired some levadas. A number of surveys are now underway to map the Park's flora and fauna. In particular, we hope to identify the species of invertebrates (especially insects) present in the Park and intend to study the insect species that the indigenous birds are feeding on at different times of year.

Visit in may 1997

We spent a week (12–19 May) based at Casa do Barreiro (970 m). This is one of the houses situated in the park and used to accommodate visitors. Funchal, visible far below at sea level, always appeared warm and sunny. However at Casa do Barreiro, the weather was fitful, with rain and frequent fog. The weather was far from ideal for butterflies or other insects. However, we made daily excursions from the house in the hope that weather would improve, and finished mapping the water courses. A few male and female clouded yellow butterflies (*Colias crocea* L.), including a white female (f. *helice*) were seen flying in a flowery clearing.

On 14 May, the weather improved and endemic Madeiran speckled wood butterflies (*Parage xiphia* Fab.) were seen among pine and holm oak (*Quercus ilex* L.) trees above Casa do Barreiro. During a shopping visit to Funchal we saw long-tailed blue (*Lampides boeticus* L), small white (*Artogeia rapae* L.) and monarch (*Danaus plexippus* L.) butterflies in the flower-beds around Reid's Hotel. Two species of red

admiral (*Vanessa atalanta* L. and *V. indica callirhoe* Hübner) were flying together in The Botanical Gardens in Funchal.

We set a moth trap running in the evenings and are currently identifying the species captured. We spent much of two dangerous nights perched on crags around Pico do Arieiro (1810 m) at the top of the Park trying to net and ring endemic Zino's petrel (*Pterodroma madeira* Mathews). There may be as few as fifty of these rare seabirds left, and a conservation project is underway to study the population of and protect it during the nesting season from nestling predation by rats and feral cats. We set up a net on a terrifyingly steep slope and, though the birds swept by through the darkness making their ghostly calls, none were caught in the net. Another night, we visited a Manx shearwater (*Puffinus puffinus* Brünnich) colony in a steep valley wall of the Ribeira de Santa Luzia. The adults fly in from the sea over Funchal at night and feed their young. One of the Park's major projects is to protect the nestling shearwaters, which like the young Zino's petrels are heavily predated by rats and cats. We heard no birds and were alarmed to notice that rats were working their way up to the shearwater burrows on electric cables.

On a day visit to the Ribeira da Santa Luzia we found small copper (*Lycaena phlaeas phlaeoides* Staudinger) and European speckled wood (*Pararge aegeria aegeria* L.) butterflies. The latter species has been recently introduced to Madeira (Owen & Smith, 1993). We also found *aegeria* in the garden at Casa do Barreiro and in gardens in Funchal. However, we did not see *P. xiphia* and *P. aegeria* flying together. *P. xiphia* was not usually present in domesticated areas.

On 17 May we drove to the north side of the island to study butterflies in ancient laurisilva at c 1300 m below Pico Ruivo. The weather was over-cast, but some *P. xiphia* and *V. indica* were flying. We saw no sign of *P. brassicae* or *G. cleopatra* here or anywhere on the island. However, we did find a single Madeiran buckthorn (*Rhamnus glandulosa* Aiton) tree in the laurisilva. This rare (Press & Short, 1994) species is the food plant of *G. cleopatra* (Higgins & Riley, 1980).

During a visit to pine woods around Casa do Burro (c 1500 m) on 17 May, we investigated habitat that appeared very suitable for grayling (*Hipparchia*) butterflies. We saw some large brown butterflies flying among the pine trees. We were unable to catch any, but they did not fly like graylings and were probably *P. xiphia*. The endemic species *Hipparchia maderensis* Baker is reported to fly in this area at Poiso (Smith & Shreeve, 1993), but not until later in the year.

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SHORT COMMUNICATION

The wild fauna and flora of Kew—The idea of recording this dates back to 1873 when George Nicholson (Curator at Kew 1886–1901) listed the native plants and later enlisted many specialists to study other groups. Unfortunately, bad health prevented him from bringing the project to fruition. In 1906, Sir W. T. Thistleton-Dyer, who had just retired as Director, had always been deeply interested in the possibility of recording everything in a small area and had encouraged Nicholson, at last found time to edit the results himself. He realized of course that recording everything was a dream and took the realistic step of publishing what was available; many groups remained totally untouched. The results were published as *Bulletin of Miscellaneous Information. Additional Series V. The Wild Fauna and Flora of the Royal Botanic Gardens, Kew, 1906*. Some groups were enumerated by members of the Kew staff but most were by outside specialists; many very familiar names are to be found on the contents page, e.g. W. H. Hudson, O. Pickard-Cambridge, D. J. Scourfield, D. Sharp, R. South, etc. Since 1906 32 supplements have been published in the *Bulletin of Miscellaneous Information, Kew*, later to become the *Kew Bulletin*. Many of these deal with very miscellaneous casual records from a wide range of groups, but others are devoted to one group. For over 25 years H. K. Airy Shaw received material for identification and edited ten supplements. After his death in 1985 I took over. Some groups have been covered quite thoroughly, e.g. aphids, butterflies, hoverflies, dragonflies, collembola, molluscs, birds, fungi and flowering plants. Although many records have been picked up from the literature, I feel sure there are many records which have been missed and very many unpublished ones. It would be greatly appreciated if anyone possessing such records or coming across them whilst revising material in museum collections would communicate them to me. There is a move to put this recording on a more sound footing and to establish a database, also to have an official wildlife group at Kew. Except for the initial work, all subsequent recording has been more or less unofficial. For a recognized expert on a group a pass to the gardens could be arranged. On two occasions at least, national societies have held field meetings at Kew which have provided good results. Certain areas at Kew are more or less in a wild state and some may never have been cultivated; these have considerable conservation value. Many introduced creatures have of course been recorded from the greenhouses, particularly in the past. B. VERDCOURT, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB.

THE STATUS OF *STELIS BREVIUSCULA* (NYLANDER) (HYMENOPTERA: APIDAE) IN BRITAIN, WITH A KEY TO THE BRITISH SPECIES OF *STELIS*

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The small, kleptoparasitic megachiline bee *Stelis breviuscula* (Nylander) was added to the British list by Else & Spooner (*in* Shirt, 1987) and Falk (1991) from two specimens collected in West Sussex in 1984 and 1985 by myself and M. Edwards respectively. Since Falk's publication, further specimens have been found in the same county, bringing the number of sites there to five. In addition the species has also been recorded recently from two sites in Surrey. The present paper documents the discovery of all known British specimens and provides details of the species' habits, both in this country and on the continent. A key for the identification of the four species of *Stelis* known from the British Isles is also presented.

S. breviuscula fulfils the criteria of an RDB 1 species in Britain, i.e. an endangered Red Data Book species (Else & Spooner *in* Shirt, 1987).

DISTRIBUTION

Whilst recording aculeate Hymenoptera at Stedham and Iping Commons, to the west of Midhurst, West Sussex, on 8 August 1984, I came across a small bee at rest on a flower of *Senecio jacobaea* L., on the perimeter of the Iping Common car park (SU853220). Identification in the field suggested that it was a small example of the rare *Stelis phaeoptera* (Kirby), a species which I had not previously found in Britain. However, subsequent examination cast doubt on this initial determination and a check later in the *Stelis* collection in The Natural History Museum, London, finally resolved the identification as a male *S. breviuscula* (Nylander), a species not hitherto known from Britain. In Europe, the species is reported to be a kleptoparasite of the megachiline bee *Heriades truncorum* (L.) (e.g. Stoeckhert, 1933; van der Zanden, 1982; Westrich, 1989). The latter species had been found in the early 1980s, in very small numbers (mostly visiting yellow Asteraceae flowers), on the eastern edge of Stedham Common, about a hundred metres east from the spot where the *S. breviuscula* was collected.

In the following year, on 24th July, M. Edwards collected a male *S. breviuscula*, visiting the flowers of a *Hieracium* species, at Midhurst Common (SU877209), to the south of the town. I obtained a further male, visiting *S. jacobaea* flowers, on the roadside very near there on 5 August 1990. On 25 August 1991, M. Edwards, A. Davidson and I collected aculeates at Marina Farm (SU755050), south of Emsworth, on the coast immediately north-west of Thorney Island, West Sussex. There M. Edwards found an *H. truncorum* visiting a *Pulicaria dysenterica* (L.) flower, whilst I obtained a male *S. breviuscula* close by, visiting a flower of the same species. Since then I have found numbers of *S. breviuscula* in the same site. These records are summarized as follows (unless otherwise stated, specimens were found at rest on wooden fence posts): a pair, 25 July 1992; three females and three females, 28 July 1993; three females, three males, 28 July 1996; a female, 8 June 1997 (a very early date for the species); a male, 5 July 1997; and about thirty individuals (both sexes), 14 July 1997 (mostly on wooden fence posts, but two females were visiting *S.*

jacobaea and a further specimen visiting another yellow Asteraceae flower). Thirty specimens is an astonishing number for any *Stelis* species in a single site on one date (of interest, seventeen *H. truncorum* were found on the same occasion, mostly on fence posts, and included a pair in cop.).

In 1997 I found further specimens nearby at Thornham Point (SU764044), on the north-east coast of Thorney Island: a male on a wooden fence post on 8 July, and a female and male visiting *S. jacobaea* flowers on 23 July.

C. W. Plant (pers. comm.) swept a male *S. breviuscula* from a streamside near Warnham, West Sussex (TQ1634), on 27 June 1995. The following year D. Baldock (pers. comm.) collected a female from *S. jacobaea* flowers at Wyke Common (Ash Ranges), Surrey (SU915525), on 16 August, and a female and male there on 24 July 1997. He collected a further female in Sidney Wood, Dunsfold, Surrey (TQ021346), on 7 July 1997. *H. truncorum* also occurred in both these Surrey sites.

In the field *S. breviuscula* closely resembles its host species. The *Stelis* is widely distributed on the Continent, its range extending from southern Finland south to Iberia, and east to Greece. It is also known from North Africa (Algeria and Egypt).

Nesting habits and flight period

The species should be sought wherever *H. truncorum* is established. The latter is a very local bee in Britain, apparently restricted to the south-eastern counties of Buckinghamshire, Hampshire, Greater London, Surrey and West Sussex; there is an unconfirmed record from Essex (Smith, 1846). On the Continent it is a common and very widely distributed species, except in the far north. It nests in holes in dead wood (Nevinson, 1907; Currie, 1954; Yarrow, 1954), and has been observed nesting in dead, broken *Rubus* stems at Oxshott Common, Surrey (D. B. Baker, pers. comm.); specimens have also been observed flying about masonry in Midhurst (M. Edwards, pers. comm.), suggesting that this bee may also nest in suitable fissures in brick walls. Female *H. truncorum* have been reported to utilize *Pinus* resin in their nest construction (Correia, 1976, 1977), though this has not been confirmed for British nests. Nevinson (1907), however, observed a specimen with a lump of unidentified resin adhering to its jaws. Because of its association with pine, Falk (1991) questions the indigenous status of *H. truncorum* in Britain. This is a view based on his premise that *Pinus sylvestris* L. is not native to southern England. He considers it likely that *S. breviuscula* is a recent introduction or colonist from Europe. However, M. Edwards and I have encountered *H. truncorum* in some West Sussex sites which supported no pine (Amberley Wild Brooks, Cocking, and Marina Farm). It is possible that in the absence of pine, resin may be obtained from such shrubs as *Ononis*. There is no evidence to support the supposition that *S. breviuscula* is a recent arrival from elsewhere in Europe.

Both *S. breviuscula* and *H. truncorum* fly as single broods, from late June to August or September.

Identification of British *Stelis* species

S. breviuscula most closely resembles *S. phaeoptera* but the majority of specimens of the former are considerably smaller than those of the latter. The four species of British *Stelis* can be identified as follows. Body length is measured in lateral view from the apical margin of the head to the apex of the gaster.

1. Posterior margins of terga 1–4 of gaster with transverse pale yellow bands. Body length 7–11 mm . . . . . *punctulatissima* (Kirby)
— Posterior margins of terga 1–4 of gaster entirely black. . . . . 2.

2. Terga 1–3 of gaster with a pair of widely separated creamy-yellow spots. Body length 6–8 mm . . . . . *ornatula* (Klug)
— Terga 1–3 of gaster entirely black . . . . . 3.

3. Posterior margins of terga 1–4 of gaster fringed medially with rather dense (particularly in the female), adpressed, silver hairs. Punctures on median portion of tergum 2 of gaster dense, separated by less than a puncture width. Small, slender species, body length 5–7 mm . . . . . *breviuscula* (Nylander)
Posterior margins of terga 1–4 of gaster without median hair fringes. Punctures on median portion of tergum 2 of gaster less dense, separated by a puncture width or more. Larger, robust species, body length 6–10 mm . . . . *phaeoptera* (Kirby)

Acknowledgements

I am grateful to Anne de Potier of The Chichester Harbour Conservancy, Itchenor, Chichester, West Sussex, for permission to collect aculeate Hymenoptera on the proposed Eames Farm/North Deeps Nature Reserve, and to D. B. Baker, D. W. Baldock, M. Edwards and C. W. Plant for their records of *S. breviuscula* and *H. truncorum*.

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THE SEVERN VALE, A NATIONAL STRONGHOLD FOR *LASIUS BRUNNEUS* (LATREILLE) (HYMENOPTERA: FORMICIDAE)

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Jones (1996), in reporting this elusive ant in Kent, included the old provisional 10 km square distribution map (Barrett, 1979). Subsequent recording activity has, however, had a profound effect on our knowledge of its British distribution. In particular we are aware of a large number of additional 10 km square records which alter the perspective of the species as having the Thames Valley as its stronghold in Britain, since we now know of a similarly large stronghold in the Severn Valley, including a new county record for Shropshire. An up-dated distribution map is now provided (Fig.1).

Barrett (1979) includes a small concentration of records along the Severn Vale in Worcestershire, largely based on the work of C.A. Collingwood in the 1960s and 1970s. Most of our records come from Gloucestershire and KNAA has additionally found a site in Shropshire, a new county record. KNAA is also aware of a scattering of new sites between the two stronghold areas and even single sites in N. Essex, W. Sussex and the Isle of Wight. Other Essex records have recently been described by Harvey & Plant (1996).

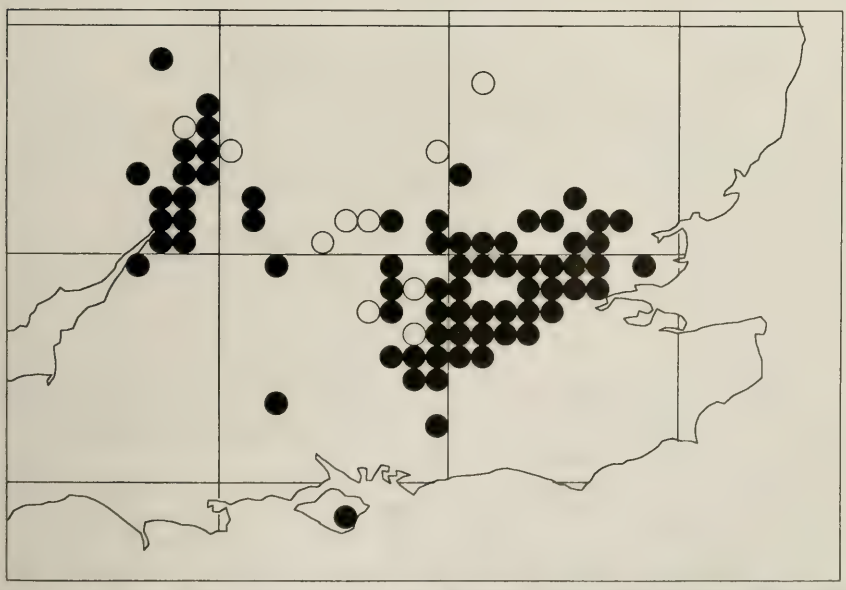

Fig 1. 10 km square distribution map for *Lasius brunneus*. Open circles represent squares with records from the period 1900–69 and where no more recent records have been forthcoming; solid circles are squares where the species has been recorded between 1970 and 1997.

The recognition of the Severn Vale as a major stronghold for the species has developed over the past fourteen years. The rate at which additional records are being made suggests that only a small proportion of the existing sites have been discovered. A distinct preference for old orchards has become apparent (sometimes in almost all the trees therein), as well as widespread use of old hawthorns, in addition to the more usual large open-grown oak trees. The records are as follows:

Shropshire:					
SO78	Dudmaston Park	SO746887	1996	parkland oaks	KNAA
Worcestershire:					
SO96	Hanbury Park	SO943637	1984	parkland oak	KNAA
SO84	Croome Park	SO880443	1996	parkland oaks	KNAA
Gloucestershire:					
SO63	The Old Grange, Dymock	SO688318	1993	parkland oaks	KNAA
SO70	Hock Cliff	SO730090	1996	woodland	KNAA
	Frampton Park	SO753080	1996	woodland	AT
SO71	Elmore river bank	SO791163	1996	old orchard	AT
	Minsterworth Ham	SO793155	1996	old orchard	AT
	Minsterworth Village	SO788172	1996	old orchard	AT
	Minsterworth	SO789176	1996	pub garden	AT
	Hartlands Hill, Lower Ley	SO748157	1995	old orchard	AT
	Bulley Woods	SO769199	1997	woodland	KNAA
SO72	Collin Park Wood, Glos	SO750276	1992	woodland	KNAA
SO80	Little Haresfield	SO810089	1995	old orchard	AT
	Woodland Trust Reserve	SO820097	1995	woodland	AT
SO81	Brookthorpe	SO834127	1994	old orchard	AT
SO82	Wainlode Hill, Glos	SO8425	1986	woodland	KNAA
	Sandhurst Reserve	SO817232	1989	woodland	KNAA
	Meerend Thicket	SO828264	1993	woodland	AT
SO83	Rayer's Hill, Deerhurst	SO873304	1992	woodland	AT
ST69	Whitcliffe Park	ST670970	1993	parkland oaks	KNAA

Other new areas away from the main strongholds are:

Gloucestershire:					
SP11	Sherborne Park	SP185157	1996	field oak	KNAA
SP12	Hyde Mill Meadow	SP176243	1997	hedgerow ash	AT
Berkshire:					
SU29	Buscot Park	SU239973	1995	parkland oak	KNAA
Sussex:					
SU92	Petworth Park	SU976218	1997		KNAA
Isle of Wight					
SZ58	Nunwell	SZ595874	1997	parkland oak	KNAA

Additionally, Nick Blacker has recently found the ant in wood fragments on the Porton Down ranges, S. Wiltshire (SU23) (S. Roberts, pers. comm.). This record plus the new Isle of Wight discovery make it even more surprising that the species has not been found in the New Forest.

The current status of "Nationally Scarce Category A" (Falk, 1991) clearly needs revision. The definition of this category is species believed to occur in between 16 and 30 10km squares. The current provisional distribution map (see Fig. 1) includes 70 post-1970 squares plus an additional 10 for the period 1900–1969. Category B (31–100 squares) would appear more appropriate on current knowledge.

In none of the newly recorded areas is there any real evidence for expansion of the range of the species, rather we suspect that the species is doing very well where it

occurs and that previously it had either not been sought in these areas or else was at lower population densities and eluded detection. It is conceivable that it has become more widespread in the Severn Vale area, but the area has previously been very poorly recorded for ants. *Leptothorax nylanderi* (Forster) is also proving widespread here and some form of association is suggested, but this requires more study. The distribution of the two species nationally overlaps considerably.

Acknowledgements

We would like to thank Mike Edwards, Andy Foster and John Owen for making their records available, Colin Plant and Peter Harvey for information on the Essex colonies, and Stuart Roberts for providing the up-to-date distribution map from the records held by the Bees Wasps & Ants Recording Society. The map was drawn using the DMAP mapping package developed by Dr Alan Morton.

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SHORT COMMUNICATIONS

Firebugs *Pyrrhocoris apterus* (L.) (Hemiptera: Pyrrhocoridae) breeding in Surrey.— A colony of this distinctive RDB1 bug was found by the senior author in Epsom, Surrey (TQ2161) in the summer of 1996. Nymphs and adults have been recorded beside a 50 m stretch of alley-way through the Longmead industrial estate. The colony appears to be centred on the ground beneath an overhanging lime tree. In July 1997, adults and nymphs were abundant on the ground amongst brambles and nettles, and were observed feeding on fallen grass seeds, and blackberries. Smaller numbers occurred beneath a single Common Mallow plant c. 30 m from the lime tree, where they fed on the fallen fruits. However, none were found beneath any of the other extensive patches of Mallow examined in the area.

All the adults examined, c. 30 to date, were short-winged and unable to fly. How the colony came to be here remains enigmatic, constituting as it does the first breeding record for Surrey although specimens were found at Ripley in February 1995 (Halstead, 1995). It will be interesting to see if the colony can survive and spread, joining the increasing list of new immigrants or formerly coastal bugs establishing inland colonies in the south of England. Thanks to Roger Hawkins for his advice and helpful comments.—Diana Ashwell, 94 Farriers Rd, Epsom, Surrey KT17 1LR & Jonty Denton, 26 Bow St, Alton, Hants GU34 1NY.

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A NEW SEED BUG, *EMBLETHIS DENTICOLLIS* HORVÁTH (HETEROPTERA: LYGAEIDAE) FOR BRITAIN, WITH A KEY TO NYMPHS OF *EMBLETHIS*

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Emblethis Fieber is a large, problematic and predominantly Palaearctic seed bug genus, with species particularly abundant in the Irano–Turanian subregion. Only one species, *E. verbasci* (Fab.), a rare British Red Data Book species, was recorded from the British Isles by Southwood and Leston (1959). This bug has subsequently been shown to be *E. griseus* (Wolff), a species with a markedly disjunct British distribution (Judd, 1996; Judd & Hodkinson, 1998). It is known from only the Scilly Islands, Whitesand Bay, Cornwall (the classic locality), and intermittently from Deal, Kent, where it may not be established (Walker, 1900; Massee, 1952).

A second British species, *E. denticollis* Horváth, can now be added to the British list, having been collected from seven separate locations in southern England since 1991. This is a widely distributed Palaearctic and Oriental species. First records for the Channel Islands in 1989, and for two sites in the most south-western part of the Province of Zeeland in the Netherlands in 1992, suggest that it is extending its range in north-west Europe (Aukema, 1996; Judd, 1996).

FIRST BRITISH RECORDS OF *E. DENTICOLLIS*

An adult female *E. denticollis* was swept by N. Straw in Lodge Inclosure, Alice Holt Forest, Hampshire (SU800428) on 15.x.1991 from the edge of a ca. 8 m wide, sheltered, mown ride, running through deciduous woodland. Subsequent records indicate that *E. denticollis* has established in south-east England and is expanding its range. Adults were collected with nymphs by S. Judd near Wickhambreaux, Kent (TR239597), on 22.viii.1993. These were from a population restricted to a 10 m stretch of an exposed, south-east facing, vegetated sandy bank, no more than a metre wide or high, running for 50 m along a single track lane, bordering a recently fallow and weedy, arable field. P. Kirby (pers. comm.) recorded it from Bedfordshire at Bedford (TL052488) on 13.vi.1996, amongst dry grass on sandy ground beside a disused railway line, and from Sandy Heath (TL204492) on 15.ix.1996 amongst sparse ruderal vegetation in a sand quarry. He also found it in Cambridgeshire at Willersmill Wildlife Park (TL394483) on 2.ix.1996, amongst ruderal vegetation on calcareous soil. J. Denton (pers. comm.) has recorded two discrete populations, again in Hampshire, at Oakhanger (SU73-36-), six miles from the first British locality. Adults and nymphs were recorded in abundance from horse-grazed paddocks. It was also associated with *Erodium* on bryophyte heathland.

Details of the Channel Islands locations have not been published but all specimens are from Jersey and were taken by S. Judd in the company of W. J. Le Quesne. Adults and nymphs were collected from Portelet and the Route de Noirmont on 22.viii.1989 and at La Moye two days later.

British populations of *E. denticollis* probably arose from recently arrived continental stock, and this may also apply to records for *E. griseus* from Deal. The eurytopic *E. denticollis* may become common and widespread throughout lowland Britain. The true *E. verbasci* is known from France and the Netherlands (Slater, 1964), from where it may also expand into Britain. For this reason, it is discussed in the species diagnoses.

EMBLETHIS DENTICOLLIS HORVÁTH, 1878

Horváth, 1878: p. 79; Wagner, 1954: figs 13, 26; Stichel, 1957–9: p. 227, figs 553, 555; Seidenstücker, 1963: pp. 655–656, figs 10, 27–30, photograph 7a; Puchkov, 1969: pp. 283–284, figs 153.4 & 154.7; Aukema, 1996: figs 2 & 5.

Diagnosis

Emblethis are straw-coloured gonianotine Lygaeidae with extensive brown and black punctures on the head, pronotum and hemelytra. The characteristic broadly explanate pronotal margin embraces the eye, and the appendages are covered with stout erect and semi-erect setae. A key to the genus is urgently required. The most comprehensive accounts are those of Wagner (1954), Stichel (1957–1959) and Seidenstücker (1963). Aukema (1996) separated the Netherlands species.

Emblethis denticollis (Fig. 1a) (5.0–6.0 mm) and *griseus* (5.5–6.6 mm) are generally smaller than *verbasci* (5.5–7.75 mm). The lateral, explanate pronotal margin is narrower than the width of the tylus in *denticollis* and *griseus* but broader in *verbasci*. It is also narrower than the eye width in *denticollis* but just broader in *griseus*. The black punctures on this and the hemelytral explanate margin are isolated in *denticollis* and *verbasci* but merge to form irregular small markings in *griseus*. The lateral pronotal margins converge more distinctly towards the head in *denticollis* than in *griseus* and *verbasci*, which are more parallel sided. The first metathoracic tarsal segment is less than 1.5 × the length of the other two segments in *denticollis*, 1.9–2.1 × as long in *griseus* and 2.1–2.4 × as long in *verbasci*. The second antennal segment is shorter than the width of the vertex in *denticollis* but longer in *griseus* and *verbasci*. Furthermore, *denticollis* are more elongate than the sub-oval *griseus* and *verbasci* and all three species have distinctive pygophores (Figs 2a–c).

Fifth instar nymphs of British *Emblethis*

Brief reference is made to *Emblethis* nymphs by Butler (1923), Puchkov (1958, 1969) and Slater & Sweet (1961) but it is here appropriate to provide full nymphal descriptions and a key. Descriptions have been supplemented by additional non-British material in the Liverpool Museum collection.

The following abbreviations are used: A antennal segment, MWP mesothoracic wing-pads, R rostral segment, S sternum, T tergum, TBL total body length, Ts tarsal segment.

Emblethis Fieber, 1860

Medium length, sub-oval, almost glabrous, brown and yellow nymphs, with a mottled, red abdomen and stout, short setae on the head and appendages. Head moderately declivant, trichobothria absent, tylus not quite reaching apex of A1, and eyes touching, or sometimes embraced by antero-lateral pronotal margins. Pronotum

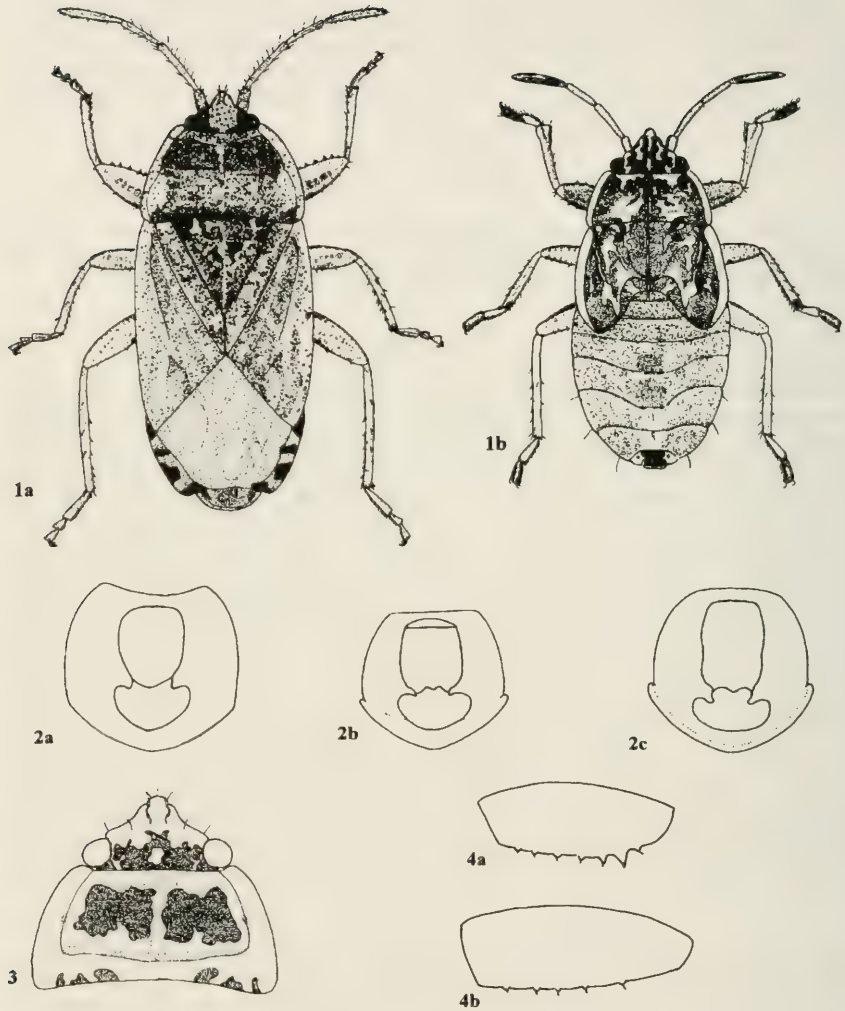

Fig. 1. *Emblethis denticollis*; 1a Adult; 1b Instar 5.
Fig. 2. *Emblethis* pygophores; 2a *E. denticollis*; 2b: *E. griseus*; 2c: *E. verbasci*.
Fig. 3. *E. griseus* instar 5 head and pronotum.
Fig. 4. Instar 5 antero-ventral spines on prothoracic femora; 4a: *E. denticollis*; 4b: *E. griseus*.

trapezoidal to sub-quadrate, with broadly carinate often strongly sinuate lateral margins, a faint transverse posterior impression and deeper longitudinal mesal impression along ecdysial suture. MWP reaching T3. Gland openings, with narrow, rim-like evaporative areas, between T4–5 and T5–6; posterior glands larger and more widely spaced apart. Y-suture absent. Suture T3–4 slightly and T5–6 more strongly curving caudad. S2–3 and S3–4 more deeply impressed and S4–5 curving anteriad,

embracing trichobothria and not reaching abdominal margin. Trichobothria visible in dorsal view, widely spaced on S5, with the pair closer to spiracle 5. Spiracle 4 dorsal, remainder ventral with spiracle 3 often positioned closer to lateral abdominal margin. Prothoracic femora incrassate, with a row of short, fine spines on ventral edge. A1 broader and shorter than A2–4. Rostrum reaching pro- to mesothoracic coxae.

Species examined: *E. angustus* Montandon × 4, *E. brachynotus* Horváth × 1, *E. ciliatus* Horváth × 5, *E. denticollis* × 13, *E. duplicatus* Seidenstücker × 3, *E. griseus* × 35, *E. karamanus* Seidenstücker × 6, *E. verbasci* × 3, *Emblethis* sp. × 45.

Emblethis denticollis Horváth, 1878 (figs 1B,4A)

Colour: Head, pronotum, scutellum and MWP strongly patterned yellow and dark-brown, becoming black on anterior of pronotum and head. Head with five distinct, dorsal, interrupted yellow stripes. Carinate sides of pronotum and MWP yellow-white. Red suffusion sometimes present near eyes, along posterior margins of pronotum and scutellum. Abdomen with numerous small, yellow-white spots, highlighted with brown and red mottling; spots sometimes merging and becoming indistinct. Tergum with distinct red meso-lateral spots on T3–7 and all sutures normally lined with red. Mesal areas on S6–7 and abdominal segments 8–9 brown to brown-black. Appendages yellow; legs, particularly femora, dappled brown; A4, very occasionally apex of A3, Ts1 apices and Ts2 brown to brown-black.

Structure: Body and appendages with very short, adpressed pale pubescence. Prothoracic femora (Fig. 4a) with seven short, fine, dark, antero-ventral spines, with the apical spine more robust. Dark, semi-erect spines on anterior of head, coxae and tibiae, becoming shorter on tarsi, longer and finer on antennae. Rostrum just reaching mesothoracic coxae.

Measurements (mm): TBL 3.9–4.87, head width 0.99–1.13, vertex 0.68–0.77, A1 0.25–0.29, A2 0.59–0.72, A3 0.47–0.54, A4 0.63–0.77, metathoracic femur 1.15–1.35, metathoracic tibia 1.33–1.60, metathoracic Ts1 0.43–0.54, metathoracic Ts2 0.32–0.41.

Specimens measured: × 9, Jersey, La Moye, 24.viii.1989; × 1 Portelet, 22.viii.1989 (coll. S. Judd).

Emblethis griseus (Wolff, 1802) (figs 3,4B)

Colour: Eyes red-brown. Head and pronotum yellow, with interocular area and pronotal lobes brown-black. Scutellum mainly brown, with darker basal corners. MWP yellow with broad, brown, irregularly shaped, mesal markings, extending throughout length. Brown marking extremely variable; sometimes variegated on pronotum, almost absent on scutellum, except for basal corners and very restricted on MWP. Pleura primarily dark-brown. Abdomen with yellow spots, highlighted by brown and some red; spots sometimes faint on margins. Evaporative rim of gland openings, mesal areas on S6–7 and abdominal segments 8 9 brown to black. Red suffusion sometimes evident over body; red most frequently present along sutures, anterior to scent glands and as dark red-brown meso-lateral spots on T4 7. Appendages yellow; tibial and tarsal apices faintly brown, Ts2 and A4 brown and R4 predominantly brown-black.

Structure: Body distinctly oval, with very short, adpressed, pale pubescence. Stout, semi-erect setae on head, coxae, tibiae and tarsi, becoming longer and finer on antennae. Prothoracic femora with an antero-ventral row of seven, small, equal-

sized, fine, dark spines and a faint postero-ventral row (Fig. 4b). Rostrum reaching between pro- and mesothoracic coxae.

Measurements (mm): TBL 3.82–4.95, head width 1.08–1.15, vertex 0.70–0.76, A1 0.27–0.31, A2 0.56–0.63, A3 0.41–0.49, A4 0.56–0.63, metathoracic femur 1.13–1.37, metathoracic tibia 1.35–1.55, metathoracic Ts1 0.49–0.52, metathoracic Ts2 0.31–0.36. Specimens measured: ×7 Cornwall, Whitesand Bay, 13.vii.1985 & ×3 04.viii.1986 (coll. S. Judd).

Key to fifth instar nymphs of British *Emblethis*

1. First metathoracic tarsal segment > or equal to 1.5× length of second tarsal segment. All antero-ventral spines on prothoracic femora equal sized (Fig. 4b). Anterior of head predominantly pale (Fig. 3). TBL 3.8 mm–5.00 mm.
. . . . . *Emblethis griseus* (Wolff)

—First metathoracic tarsal segment < 1.4× length of second tarsal segment. Apical antero-ventral spine on prothoracic femora larger than other spines (Fig. 4a). Head black with 5, irregular, pale, anterior longitudinal stripes (Fig. 1b). TBL 3.9 mm–4.9 mm.
. . . . . *Emblethis denticollis* Horváth

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SHORT COMMUNICATION

Observations of *Ilyocoris cimicoides* (L.) (Hemiptera: Naucoridae) in flight.—Aquatic Hemiptera–Heteroptera exhibit a wide range of polymorphism in wing and flight muscle development (Savage, 1989). Southwood & Leston (1959) state that the Saucer Bug '... possesses fully-developed wings but such reduced musculature that no specimens yet examined have been able to fly: migration probably occurs by nocturnal walking...'

However this bug can often be found in isolated ponds, and must colonize these by some means other than walking. Accidental transference of eggs by waterfowl is one possibility, but the following observations indicate that some individuals disperse on the wing.

On 3–4.ix.1985 Tom Møller and the junior author observed large numbers of *I. cimicoides* flying from a pond in North Zealand, Denmark. Conditions were warm, sunny and calm. Several specimens were found basking on emergent leaves of *Typha*, whilst others sat on leaves of *Potamogeton natans*, and floating pieces of wood. Many took to the air when the breeze abated, but no specimens were seen to take off from the water surface in the manner of Corixids. Their flight was heavy and laboured, but they were able to avoid being caught in a small net. Several were unable to clear the surrounding vegetation and wall, and fell to the ground where they lay still. The stronger fliers appeared to disperse at random, and a soft humming could be heard as bugs passed at close quarters. On the 4.ix. hundreds of bugs took to the air, in a period of about 1 hour.

On 9.iii.97, a single *I. cimicoides* flew low over and landed on the water surface of a wide dyke on 'the Pells', near Lewes, E. Sussex (TQ4011). The weather was unseasonally hot and sunny, and many Corixids and aquatic beetles (*Heterocerus*, *Helophorus* etc.) were flying around.

Clearly some individuals/populations are able to fly, but it is clearly a rare phenomenon. How far such individuals can disperse is unknown, and the genetic or other factors that regulate this capacity remain enigmatic.—JONTY DENTON, 26 Bow St, Alton, Hants GU34 1NY & CHRISTIAN RØRDAM, Hammersholt Byvej 38, Borstingerød, 3400 Hillerød, Denmark.

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MOTHS WHICH HAVE COLONIZED THE ISLE OF WIGHT IN RECENT YEARS

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Eight species of Lepidoptera have colonized the Isle of Wight in this decade, and two wainscots have been breeding here for longer. Details of their establishment, dates, localities and abundance are given here. During the last ten years it has become normal to have mild winters and an early spring. This warmer climate has certainly influenced the appearance of the species considered here, and it will be interesting to see whether other ones will follow in the next decade or so.

EPIPHYAS POSTVITTANA (WALK.) (TORTRICIDAE)

This indigenous Australian species is apparently adventitious to the British Isles. It was first found established at Newquay, Cornwall, in 1936 (Meyrick, 1937), and later spread all through that county and into Devon (see Bradley *et al.*, 1973). The first record for Hampshire was at Alverstoke on 21.ix.62 (Sadler, 1967). It then spread further east and north reaching Kirby Muxloe, Leicestershire, in September 1989 (McPhail, 1990). It was noted in Cardiff, Wales, in 1989 (Hancock, 1989). Prior to 1936, there were several records of specimens reared from larvae imported on New Zealand apples. In New Zealand it is an important pest in fruit orchards and commonly known as the light-brown apple moth or apple leaf-roller (Bradley *et al.*, 1973)

The first example of this variable tortricid in the Isle of Wight was taken at light during an evening meeting of the Isle of Wight Natural History & Archaeological Society at Osborne (SZ523947) on 13.vi.91. I recorded two the following year at Freshwater (SZ337870), on 13.vi & 9.viii.92, and it soon became established in all parts of the Island. It is now the most abundant tortricid that I have recorded, and the larvae have infested *Coronella* in the garden.

PHLYCTAENIA PERLUCIDALIS (HÜBN.) (PYRALIDAE)

The first British specimens were taken flying at dusk at Woodwalton Fen, Huntingdonshire (Mere & Bradley, 1957) on 24.vi.51. Others have occurred in the fens of Huntingdonshire & Cambridgeshire, and also on the coasts of Lincolnshire, Suffolk, Essex & Kent. It was recorded as far north as Rudston in S.-E. Yorkshire in 1983 (Agassiz, 1984).

It was first recorded in the Isle of Wight on 27.vii.95 at Godshill (SZ522818) and a second example was taken at Queen's Bower (SZ569847) on 14.vii.96. It is likely that this species will become firmly established in future years, following the trend on the mainland.

UDEA FULVALIS (HÜBN) (PYRALIDAE)

This species was first recorded from 'the Bournemouth district', 8.viii.27, probably at Parkstone, Dorset, where it was taken in some numbers in the 1930s and bred (Clutterbuck, 1930). Since then it has occurred in Hereford and South Dorset (Beirne, 1954) and a few more times in Hampshire and the Isle of Wight. The larvae

feed on Labiatae, including catmint (*Nepeta cataria*), black horehound (*Ballota nigra*) and meadow clary (*Salvia pratensis*).

This species first appeared at Freshwater on 8 & 11.viii.93, being the first records since 1959, when it became established in west Wight from 1955 to 1959. It has been taken every year since then at Freshwater, with seven in 1996 and two in July 1997. There have been no records outside Freshwater, so it would appear that it is either temporarily or permanently established in west Wight.

Idaea vulpinaria (H.-S.) (GEOMETRIDAE)

There was a considerable migration, either from the south-eastern counties of England or from the Continent along central and south-west England, in late vii & viii.91. Whether this large influx was due to a population explosion in the Thames Estuary or a migration from the Continent is not fully known. During this time there were ten records on the Island with three at Freshwater, three at Niton (SZ506763), and four at Chale Green. It was again noted at Niton in 1992 (two), and Chale Green in 1994 & 1995. The most recent sightings come from Freshwater on 17.vii.97 and Whitwell on 19.vii.97. It would appear that this insect has established itself at a low density in several localities in the south of the Island.

It is moderately common in north Kent, South Essex, the London area, Surrey, and parts of East Sussex, and has occurred annually at Portland, Dorset, since 1990.

Thera cupressata (GEYER) (GEOMETRIDAE)

The first record in Britain was from Walberton, Sussex, on 1.ii.84 and in 1988 there were further records from Studland, Dorset, and St. Ives, Hampshire. In 1989 it was found to be breeding at Swanage.

It was first recorded on the Isle of Wight at Niton on 18.x.90 and appeared the following year at Chale Green. I recorded the first at Freshwater in 1994 and it was locally common at Bonchurch in the summer of 1995. One was recorded from the north of the island at Wootton (SZ539920) on 5.x.97 and it seems to be well established throughout the county.

Eupithecia ultimaria (BOISD.) (GEOMETRIDAE)

This species was added to the British list on the strength of a single specimen taken in a Rothamsted Insect Survey light-trap at St. Martin's, Guernsey, on 20.viii.84 (Riley, 1985). Larvae were subsequently found on Tamarisk (*Tamarix gallica* L.) in Guernsey in the late summer of 1986 (Peet, 1988), but no moths were bred. The first specimen in England was taken on 20.vi.89 at Bishop's Stortford, Hertfordshire (Riley, 1991). On 29.vi.95 one occurred at Southsea, Hampshire, and that same year about two dozen larvae were beaten from Tamarisk at Hayling Island with the first emerging on 27.ix.95.

In the second half of July 1997 larvae were successfully beaten from Tamarisk from localities in Bembridge (SZ645876) (over twelve), Niton (one) and St. Lawrence (SZ535765) (one), and the first moths emerged on 9.viii.97. It would appear that this species is present in the east of the Island but should spread to the west in future years.

EILEMA CANIOLA (HÜBN) (ARCTIIDAE)

This species is locally common along the coasts of north and south Devon, Cornwall, Pembrokeshire, and other seaboard counties in west Wales. A handful of specimens have been reported in the last twenty years from East Sussex and south-east Kent, but it is not known whether they were residents or migrants. Its range abroad extends from southern Europe to western Germany, the Tyrol, Switzerland and South Hungary.

The first record of the species for Hampshire and the Isle of Wight was at Freshwater on 20.viii.92. A second specimen was recorded at the same locality on 11.viii.96 and another two at Bonchurch on 13.viii.96 and 9.ix.97. It is possible that it is breeding at a low density on the cliffs at Freshwater and the Undercliff at Niton. Any future records will confirm this to be the case, and that it has extended its resident range from south-west England.

EUPLAGIA QUADRIPUNCTARIA (PODA) (ARCTIIDAE)

This magnificent moth occurs along the south coast of Devon from Brixham eastwards to Seaton, spreading inland to the edge of Dartmoor. The few specimens recorded outside this area are presumed to be migrants. It is established throughout southern Europe, its range extending to Holland and Belgium. It was known as an inhabitant of the Channel Islands long before it became established in England.

The first record for the Island in recent years was that of a dead example which I found on a track leading from Tennyson Down on 11.ix.91 during a period of considerable migrant activity. A further example was taken at light at Freshwater on 19.viii.93, and the first specimen of ab. *lutescens* was observed at Chale Green (SZ484780) on 11.viii.95 with two other typical ones at Freshwater during the same year. Over a dozen were recorded at Bonchurch (SZ577781) and two at Freshwater in 1996. Seven ab. *lutescens* were recorded at Whitwell (SZ521782) and three at Freshwater in 1997, as well as six normal adults. A further four typical ones were observed at Ventnor (SZ566775) that year. It appears that conditions are conducive for successful breeding and it is now well established on the south of the Island. I am now seeing more examples of it than *Arctia caja* (L.), which has declined in numbers in recent years.

MYTHIMNA ALBIPUNCTA (D. & S.) (NOCTUIDAE)

This is a regular migrant, breeding in southern England in favourable seasons and occasionally becoming temporarily established in the south-east.

In the past two decades this has always been a regular autumnal migrant on the Isle of Wight, and by the late 1980s it seemed to have become established with records both in the summer and autumn from several localities in the south of the Island.

MYTHIMNA L-ALBUM (L.) (NOCTUIDAE)

This species was considered to be a very scarce migrant until the mid-1930s when it was found to be resident in South Devon. Since then it has become established along the southern coastline of England from Sussex to Cornwall, including the Isles of Scilly.

It became established in the west of the Island in the late 1970s and now may be observed in nearly all parts of the county.

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SHORT COMMUNICATION

An unusual refugium site for Old Lady moths?—On the 13.vii.97, I caught a single Old Lady *Mormo maura* L. in a Heath light trap at Bampton in Westmorland (NY5513). Two days later under a nearby bridge, I investigated a large nest made by Dippers *Cinclus cinclus*. The brood had only recently left the nest, which was a sturdy structure made of moss and mud, with a down-turned tubular entrance. It contained no less than twelve adult moths which rapidly flew out when disturbed, landing in dark crevices in the stonework. Several were rather worn but others appeared fresh and undamaged.—Jonty Denton, 26 Bow St, Alton, Hants GU34 1NY.

BENHS INDOOR MEETINGS

25 February 1997

The President, Mr C. HART, announced the death of Col. W. A. C. Carter who had been a member since 1959.

Mr M. J. BLECKWEN showed a specimen of a social wasp he had found in Greater London, October 1996. It was of uncertain identity as it resembled *Paravespula vulgaris* (L.) but lacked the usual facial markings.

Mr A. J. HALSTEAD showed some live beetles, *Bruchus atomarius* (L.) (Col: Bruchidae), that had emerged from some broad bean seeds sent to him from Epsom, Surrey. This beetle lays eggs in the pods while the seeds are developing and the larvae eat out small cavities in the cotyledons. Under natural conditions the adult beetles would overwinter in the seeds and emerge next summer, but they often emerge prematurely when gardeners save bean seeds and store them in the warmth of a house. Despite the holes in the cotyledons, damaged seeds will usually germinate as the embryos are not eaten.

Mr R. MCCORMICK showed a male plume moth he had taken during the day at Prawle Point, Devon, on 7.vi.96. There had been a massive influx of migrant moths the previous day and, as this plume looked unfamiliar, Mr McCormick sent it to Colin Hart for identification. He dissected out the genitalia but was unable to name it, so the specimen was passed on to Cees Gielis. He was of the opinion that the moth was *Stenoptilia aridus* (Zeller), or possibly *S. elkefi*, although the genitalia were not quite right for either species, which are easier to separate as females. Either species would be a first record for Britain.

The following persons have been approved as members by Council: Mr Paul N. D. Butter; Dr Jonty S. Denton; Mr Anthony B. Drane; Mr George H. Green; Miss Sarah Harvey; Mr Patrick G. Haynes; Mr Howard W. Hillier; Mr Bernard L. Jones; Mr Michael C. Powell; Mr Anthony F. Sargeant; Mr Pete Stevens; Mr Mark Tunmore and Dr A. Wakeham-Dawson.

Mr A. J. HALSTEAD noted that as a sign of spring arriving he had seen the hoverfly, *Episyrphus balteatus* (De Geer), flying around at Brookwood, Surrey, on 23.ii.97.

Mr C. HART reported taking *Orthosia gothica* L. and *Biston strataria* Hufn. at light on 21 and 22.ii.97 respectively. These are early dates for these moths.

The Ordinary Meeting was then followed by the AGM, Officers' Reports and the Presidential Address.

A Vice-president, Mr B. Eversham, standing in for the newly elected President, David Agassiz, who was unable to attend, invited comments on the exhibits. Several members confirmed that the social wasp shown by Michael Bleckwen was a male *Paravespula vulgaris*.

11 March 1997

The President, Dr D. AGASSIZ, announced the death of Prof. C. Smith.

Dr D. AGASSIZ showed some examples of the blood vein moth. In the recently published *Checklist of the Lepidoptera of Europe*, the geometrid moth *Timandra griseata* Petersen is shown as being recorded from only Scandinavia and the Baltic states. The more widespread and common species known from Britain is referred to *T. comai* Schmidt. Further details of these species are given in an article by Kaila and

Albrecht in *Entomologica Scandinavica* **25**: (1994) 461–479. Dr Agassiz showed two specimens of *T. griseata sensu strictu* from Finland, provided by Lauri Kaila, with examples of British *T. comai* for comparison; *griseata* is greyer and the pink suffusion around the wing margins is less pronounced. There are slight differences in the female genitalia only, but the moths are said to look different in the field. *T. griseata* occurs in damp meadows and Kaila suggests it might be found in Scotland.

Mr A. J. HALSTEAD showed a live specimen of a green non-British shield bug with white markings on its head and prothorax. It had been sent to the exhibitor by someone who had found it in a pack of watercress purchased from a supermarket in London SE18. The country of origin of the watercress was unknown. Mr R. D. HAWKINS said he thought the shield bug was probably *Nezara viridula* (L.), a species widespread in southern Europe and elsewhere.

The following persons have been approved as members by council: Dr Oliver D. Cheesman, Mr Peter R. Colston, Mr Peter Halliday, Mr Ian Iles, Mr Richard B. Little and Mr. Edward H. Moss.

Mr S. R. MILES reported that he had recently attended a meeting of the JCCBI at which reports were given by representatives of observer organizations such as the National Trust, Biological Records Centre and the Natural History Museum. The Royal Entomological Society representative mentioned that the RES would welcome feed-back on the "Handbooks for the Identification of British Insects" series. Any comments on the series' content, typography, presentation, etc, should be sent to Dr R. Fisher, c/o the RES, 41 Queen's Gate, London SW7 5HR.

Mr E. W. GROVES described a fallen beech tree at Woodmansterne, Surrey, that had some of its roots still in the soil and had remained in leaf last year. Recently he noticed that most of the bark on the underside of the trunk had been ripped off. He later discovered that this was the work of three foals and a donkey.

Dr. R. S. KEY reported that the Amateur Entomologists' Society, in collaboration with English Nature, is producing an invertebrate animal conservation pack of colour transparencies. The 48 slides show various habitat types as well as invertebrate animals. The slide sets are being marketed by the AES and the contact person is Dr D. Lonsdale.

Dr KEY described a visit he had made to South America in a talk entitled "From the Andes to the Caribbean". During his visit to Ecuador and Venezuela he had spent much of his time in the mountainous areas of Ecuador where there is cloud forest. This is a seriously threatened habitat as it is being lost through agricultural encroachment. The constant dampness of a cloud forest allows a profusion of epiphytic plants, especially orchids and bromeliads, to grow on the trunks and branches of trees. Many of the insects seen were quite unfamiliar to someone more used to the European fauna. Examples of insects with cryptic coloration were photographed, and these included moths on tree trunks and katydids in the leaf litter. Dr Key had met an American lepidopterist, Edward Ross, who had been recording moths in the cloud forest for many years but still expected to catch several new moths every time the light trap was set up. Other insects shown included ants with enormous jaws, mantids, bugs and various flies.

After the cloud forest, Dr Key moved on to the Caribbean coast near the Venezuelan border. This area had arid grassland and scrubby woodland with *Opuntia* and other spiny plants. Later he moved up into the high Andes in Venezuela where, despite the altitude, the land is still intensively cultivated. The moorland grassland is regularly burnt in order to stimulate fresh growth for grazing. The flora had many cushion plants, some with woolly foliage which is a water retention feature

often found on montane plants. There were relatively few insects to be seen. Apart from two butterfly species there were some hoverflies visiting flowers on the cushion plants and many brachypterous grasshoppers.

8 April 1997

Dr K. SATTLER showed two specimens of an unidentified moth from Venezuela which cannot be placed in any of the lepidopteran families. The males show some reduction in wing size and the females' wings are shorter. Dr Sattler also circulated a magazine report of a device for inflating the genitalia of moths with a stream of pressurized alcohol. This speeds up the usual process whereby the everted tissues have to be fixed by gradually increasing the strength of alcohol used. The device has been developed by Dr Marcus Matthews, formerly of the Natural History Museum and now working in Australia.

Dr I. F. G. MCLEAN showed two tachinid flies seen on a visit to the breckland near Croxton, West Norfolk, on 31.iii.97. These were a male *Gymnocheta viridis* (Fallén) on a pine trunk, and a pair of *Gonia picea* (Robineau-Desvoidy). The male of the latter was sitting on the tiny flowers of shepherd's cress, *Teesdalia nudicaulis* (L.). Other flies noted at this locality were two chamaemyiid flies, *Lipoleucopis praecox* de Meijere and *Leucopis geniculata* Zetterstedt; the end of March is an early date for the latter species.

Mr R. D. HAWKINS exhibited a live specimen of the RDB1 coreid bug, *Gonocerus acuteangulatus* (Goeze) found on a juniper bush at Merrow Downs near Guildford, Surrey, on 1.iv.97. The traditional location for this bug is Box Hill, near Dorking, Surrey, but it has recently been found at a few other sites. Merrow Downs represents a slight further extension of its range.

Mr. A. J. HALSTEAD showed a live specimen of the Notable-A weevil, *Tapinotus sellatus* (F.), found on the emergent shoots of yellow loosestrife, *Lysimachia vulgaris*, growing by a pond in his garden at Knaphill, Surrey. The *Lysimachia* plants were introduced into the garden about three years ago from the Royal Horticultural Society Garden at Wisley, Surrey. The weevil does occur there and may have been introduced with the plants. It also occurs on the Basingstoke Canal, which is about half a mile away from the Knaphill garden, and so may have flown from there.

Mr R. SOFTLY saw a speckled wood butterfly on the last day of March near the railway line in Hampstead.

Mr J. MUGGLETON reported an early sighting of the muslin moth, *Diaphora mendica* (Clerck). A male came to light in his garden in Staines, Middlesex, on 1 and 2 April, about three weeks earlier than usual.

Mr K. MERRIFIELD noted a shortage of frog spawn in his pond and wondered whether hibernating frogs had been affected by the cold weather early in the new year. Other members reported that frog numbers were normal in their areas.

Mrs G. JEFFCOATE, who is butterfly recorder for Surrey and south London, made available the annual report for her area.

JIM ASHER gave a lecture on Butterfly Conservation's Millennium Butterfly Project. He prefaced his talk by describing the aims of Butterfly Conservation and their concern with the conservation of moths and butterflies and their habitats. He showed slides of various sites around the British Isles with some of the scarcer butterflies found there.

Butterfly Conservation is collaborating with the Biological Records Centre at Monks Wood to produce an audit of the status of butterflies in Britain and Ireland by the year 2000. The previous atlas produced by Heath and Pollard will be 30 years

old by then. The current survey will give an updated picture of the distribution and abundance of butterflies and assist in the setting of conservation priorities. The Millennium Project is building on recording work already conducted during the 1990s which led to the establishment of Butterfly Net during 1993–5. A national recording system has been established which is based on regional recorders to whom individual recorders initially send their records. These records go into a data base from which the Millennium Atlas will be produced. Feedback is an important feature of the scheme in order to keep recorders in touch and motivated. It also enables recorders to be encouraged to visit areas that are under-recorded.

Regional recorders are now in place and instructions for recorders have been published, as have standard forms for recording the data. It is intended that April–October will be devoted to field work, with records being passed to the regional recorders during November–January. After validation the records will be added to the national data base in February–March. Feedback reports to recorders will go out in April in time for the new season. The aim of the survey is to show more than the distribution of species by indicating the abundance of a species within a square. The speaker showed some distribution maps based on records received up to 1995. The most widely recorded species is the small tortoiseshell; other maps showed the local nature of species such as the High Brown Fritillary, Large Heath, Adonis Blue, Chalk-hill Blue and the Silver-spotted Skipper. The maps also showed the influx of Camberwell Beauty and Monarch butterflies during 1995.

13 May 1997

Dr D. S. HACKETT showed a pupa of a male stag beetle, *Lucanus cervus* (L.). The same insect was shown as a larva at the 1996 Annual Exhibition. It had been fed on pieces of wood and apple cores. It pupated on 9 April.

Mr A. J. HALSTEAD showed some larvae of the sawfly *Neodiprion sertifer* (Geoffroy) (Hymenoptera: Diprionidae). They were found on Scots pine at Brentmoor Heath, near West End, Surrey. *Neodiprion sertifer* is sometimes a significant pest in pine plantations and is unusual amongst British sawflies in that it overwinters as eggs on the foliage; most sawflies overwinter as non-feeding pre-pupal larvae.

The following persons have been approved by Council as ordinary members: Mr Gerard H. Band, Mr Malcolm L. Cansick, Miss Chiyo Oguro, Mr Andrew J. Stevens, Dr Mark R. Webb and Mr Andrew Davidson. Bedales School, Hants, and Scottish Natural Heritage, Edinburgh, have become corporate members.

Dr J. MUGGLETON announced that the BENHS is to establish a research fund to support work on the study of insects, the British fauna, conservation, field work and the preparation of checklists. Grants are likely to be in the region of £250 with a total of £1200 available per annum. Grant requests for research concerning leaf-mining insects should be directed to the Hering Fund, which is also administered by the Society.

Mr S. R. MILES announced that a second JCCBI/English Nature conference on invertebrate conservation would be held at Peterborough on 27.ix.97. The topic will be "How to give invertebrate animals a higher profile". A report of the first conference held on 24.ii.96 was made available.

Mr MILES noted that holly blue butterflies were abundant this year. Mr Falk said it was also present in good numbers in the Midlands.

Mr S. J. FALK spoke on insects of urban and post-industrial habitats, with particular reference to Warwickshire. By using scarce-species scores, post-industrial

sites can be shown to be as diverse as ancient woodland, but they currently have little protection. Excavation features, such as former quarries, gravel pits and brickworks, can become important sites for wild flowers and insects. Limestone quarries develop flower-rich grassland and are important for bees and flies associated with snails. Non-calcareous quarries are not so rich, but some of those in Warwickshire cover extensive areas and have subsidiary habitats such as spoil heaps and railway tracks. The variable topography created by quarrying is important for creating situations favourable for insects that require hot conditions. Gravel pits can form a mosaic of successional stages as they flood and gradually become vegetated. Other lakes and swamps can form where old mine workings have caused subsidence.

Transport features provide important linear habitats. Canals are now used and managed mainly for amenity purposes while roads and some railways retain their original purposes. Places where roads and railways have embankments or pass through cuttings are often the best areas for insects because of the warm sheltered habitats provided by the sunny slopes. Abandoned railway lines revert to scrub, and human disturbance by trampling, cycling, and sometimes starting fires, can help to maintain the open aspect. Rabbit grazing is also beneficial.

Industrial waste ground around shut-down factories is often colonized by ruderal plants. Some insects normally associated with coastal areas can also be found in industrial sites that provide similar habitat conditions. Some sites within urban areas have become encapsulated and provide refuges for plants and insects that may have become scarce in the wider countryside. These include places such as cemeteries, parks and gardens.

Mr Falk drew attention to the need for entomologists to identify important sites and make them known to interested parties. Nowadays local authorities are required to produce development structure plans which must take conservation matters into account. Entomologists should participate in the planning process to ensure that their local authority is aware of the need to conserve invertebrate animals. Working in partnership with other conservation organizations, such as the Country Trusts, will add weight to the arguments. Presentation of the facts is important in getting the message across without providing evidence that could be used against the conservation case. The speaker quoted a case study of an inquiry into the development of Herald Way Marsh in which he had participated. He had produced a series of maps for the site, each of which showed the distribution of a scarce insect with its habitat and/or food plant on the site. Also provided for each species were details of its ecology, the likely impact of the development on the species, and any actions that could be taken in mitigation. This study showed that the proposed development would affect about half of the scarce species adversely, and the proposal was turned down.

A modified form of the individual-species site maps has been developed to provide information for the managers of wildlife sites. The maps show where a scarce species occurs within the site, give details of its ecology, and describe management actions that will help or harm that species. This provides useful information to managers and helps provide continuity of management when changes of personnel occur.

10 June 1997

Mr R. SOFTLY showed a female of the Bee Moth, *Aphomia sociella* (Linn.). At Hampstead he sees up to 100 specimens of this moth annually at light from May to early September.

Mr Mike Williams spoke about the work of the West Midlands branch of Butterfly Conservation. This branch of Butterfly Conservation was formed in 1979 and covers the counties of Herefordshire, Shropshire, Staffordshire, Warwickshire and Worcestershire. It was the first branch to be formed; there are now thirty branches. The West Midlands is an interesting geographical region where both northern and southern species reach the edge of their range. The Large Heath (*Coenonympha tullia* (Müller)) and Northern Brown Argus (*Aricia artaxerxes* (Fab.)) are species found in the region which are at the southern edge of their range; the White Admiral (*Ladoga camilla* (L.)) and Marbled White (*Melanargia galathea* (L.)) are species at the northern edge of their range. A number of species are expanding their range in the region and colonizing new sites. These include the Essex Skipper (*Thymelicus lineola* (Ochsenheimer)), Ringlet (*Aphantopus hyperantus* (L.)), Gatekeeper (*Pyronia tithonus* (L.)), and Brown Argus (*Aricia agestis* (D.&S.)). The Brown Argus is interesting as it is colonizing set-aside land and breeding on plants in the geranium family when rockrose, *Helianthemum* sp., is not present. In contrast a number of species have undergone a marked decline in the number of colonies. The Fritillaries seem to have suffered most with an 80% decline in High Brown Fritillary (*Argynnis adippe* (D.&S.)) colonies since 1980, a 67% decline for the Marsh Fritillary (*Eurodryas aurinia* (Rott.)) and a 44% decline for the Pearl-bordered Fritillary (*Boloria euphrosyne* (L.)). One surprising decline has been that of the Wall (*Lasiommata megera* (L.)), which has undergone a 38% decline since 1980.

The West Midlands branch has been involved in a number of ecological projects. A particular success has been with the White-letter Hairstreak (*Satyrium w-album* (Knoch)) where the belief, that mature flowering elms were necessary for completion of the life cycle, was shown to be erroneous and suckers will do just as well. It has been possible to maintain colonies by coppicing existing elms. This work was funded by ATS and is an example of commercial backing. Another project was the work carried out to discover the best hedgerow management for the Brown Hairstreak (*Thecla betulae* (L.)). The butterfly lays its eggs on low-growing blackthorn hedges where they overwinter and are liable to be destroyed by winter hedge cutting. Monitoring egg-laying sites showed that trimming hedges on a 2–5 year rotation maximizes breeding success. Rotational hedge cutting can also save money. Butterfly Conservation has produced a leaflet *Hedgerows for Hairstreaks* which encourages landowners and farmers to manage hedgerows in this way.

The branch is also involved with projects on the High Brown Fritillary and the Large Heath, carries out transect monitoring on a weekly basis at 30 sites and, together with the Worcestershire Conservation Trust, manages two nature reserves in Worcestershire.

8 July 1997

The President, Dr D. J. L. Agassiz announced the death of Mr R. F. Haynes of Killarney, Co. Kerry, a Special Life Member.

Dr Agassiz showed a series of the moth *Argyresthia cupressella* Walsingham, new to Europe, taken in East Suffolk on 28.vi.1997, together with examples of the damage to cypress leaves caused by the larvae. The moth is abundant in the Ipswich area but scarcely extends southwards into Essex; a single record was made near Harwich. The species is a native of the west coast of North America where it is a minor pest of various species of cypress and juniper.

Mr G. Boyd showed a female *Xiphydria prolongata* (Geoff.) Hymenoptera (Symphyta): Xiphydriidae. The specimen was caught flying in mid-afternoon on

5.vii.1997 by B. Dickerson at Cow Lane Gravel Pits, Godmanchester, Hunts. It is said to be local, found mostly in S.E. England and also in Nottinghamshire and Herefordshire. The larvae bore into *Salix*. Mr Boyd also showed a male *Abia* sp (possibly *A. sericea* (L.)), Hymenoptera: Cimbicidae. The specimen had been netted in long grassland on 12.vi.1997 at Le Buisson, Mounot, Charente, France. Two species are known to occur in Britain, but there are five in Europe, so the determination is not certain.

Mr M. SHAFFER exhibited a nearly fully grown psychid larva collected in early December in Cairns, Queensland, Australia. It was identified as a *Metura* sp., possibly *M. elongatus* (Saunders), at the Commonwealth Scientific and Industrial Research Organization in Canberra. However, the case is larger than would be expected for *M. elongatus*, and it is possible that it is a new species. All the material of *Metura* in the Australian National Insect Collection and at The Natural History Museum in London consists of adult males. On the basis of size, the Cairns specimen appears to be a female and males will need to be collected from Cairns before an identification can be made. The larva proved to be polyphagous and has been reared mainly on bramble. The case measured 14 cm. Feeding ceased in early May and the larva pupated. The moth emerged and was seen in the case on 5 July with only the tip of its abdomen protruding from the case, another indication that it is a female. The specimen will be preserved in alcohol and housed at the NHM, London.

Dr I. F. G. MCLEAN exhibited a specimen of the beetle *Opilo mollis* (L.) (Coleoptera: Cleridae) found by his wife on a net curtain next to an open window at his home in Brampton, Cambs., at 23.00 h on 7.vii.1997. This is a Notable species whose larvae develop in rotten wood where they feed on wood-boring beetles. The species is normally associated with ancient broad-leaved woodland, pasture woodland or isolated mature trees. It is recorded from southern and central England, N.E. England and North Wales, and was given Grade 3 Ancient Woodland indicator status by Harding & Rose in 1986. The individual must have travelled some distance as there are no old trees in the immediate vicinity of the house.

Dr AGASSIZ reported that he had taken a specimen of *Hecatera dysodea* (D.&S.) (small ranunculus) in his MV trap at Gravesend on 28.vi.1997. The species has not been seen in Kent since 1909 and is believed extinct in the British Isles, the last record being from 1939.

Mr TONY DAVIS spoke about the Pyralid and Plume Recording Scheme of which he is the Scheme Organizer. He started by outlining the coverage of recorders and records. There are 200 people on the mailing list and two-thirds of these have sent in at least some records. Some 27,424 records have been received to date. He has no recorders from Northumberland, Durham or from much of Yorkshire. Mid-Wales, Scotland and North Devon are also poorly recorded. The best recorded areas are Gloucestershire, Hampshire, the Isle of Man and Surrey. He had received Irish records from Mr K. Bond but the 'Recorder' software he used to plot his records is unable to plot records from Ireland or the Channel Isles, and this is a big problem. Mr Davis then spoke about individual species. The commonest were *Chrysoteuchia culmella* (L.) and *Agriphila straminella* (D.&S.). Of these *A. straminella* is probably the commonest and should be found in every 10km square, but it appears to be under-recorded and is confused with *C. culmella*. Another pair of species that are often confused are *Scoparia ambigualis* (Treitschke) and *S. pyralella* (D.&S.), while the under-recorded *Agriphila selasella* (Hübn.) is confused with the widespread *A. tristella* (D.&S.). One of the characters given by Barry Goater in *British Pyralid Moths* for distinguishing *selasella* and *tristella* is that *tristella* has a yellow or creamy, but never white, median longitudinal streak: this has proved an unreliable

distinguishing feature. It is possible to tell from the recording scheme that some species, such as *Phlyctaenia perlucidalis* (Hübn.), are extending their range, as are *Calamotropha paludella* (Hübn.) and *Myelois cribrella* (Hübn.). The latter species is extending its range quickly and has now reached Cheshire and maybe further north; there is a genuine migrant record of it from Fair Isle. In contrast, *Endotricha flammealis* (D.&S.) whose distribution was originally similar to that of *M. cribrella*, is not spreading. Mr Davis also drew attention to two interesting migratory species. *Margaritia sticticalis* (L.), formerly found in the Breckland and now believed extinct, had produced remarkable invasions in 1995 and 1996 although a newly established colony has yet to be recorded. On the other hand *Catoptria margaritella* (D.&S.) is an established upland species which is also a genuine migrant, and this accounts for records away from upland areas. Mr Davis felt that some species were under-recorded because lepidopterists were always going to the same localities and he made a plea for them to be more adventurous and to visit "unpopular" 10km squares. He ended by saying that there was a large backlog of records to be entered and that, as yet, he had not tackled the literature records; nevertheless he hoped that the maps would be published in the *Moths and Butterflies of Great Britain and Ireland* series in about six years time.

JOINT BENHS/LNHS MEETING

9 September 1997

Mr J. THOMPSON, chairman of the Ecology and Entomology section of the London Natural History Society, announced the death of Mr T. C. Dunn who had been a member of BENHS since 1956.

Mr A. J. HALSTEAD showed a female turnip sawfly, *Athalia rosae* (L.) (Hymenoptera: Tenthredinidae), taken in his garden at Knaphill, Surrey, on 23.viii.97. This species is of irregular occurrence in Britain and its presence here is dependent on migrations from elsewhere in Europe. In the 18th and 19th centuries some spectacular migrations were recorded with widespread defoliation of turnips and related crops caused by the larvae. Contemporary reports of the migrations refer to the adults "in clouds so as to darken the sky" and being "washed up on the shores in layers two inches deep".

Dr D. HACKETT showed a specimen of the rose chafer beetle, *Cetonia aurata* (L.) (Coleoptera: Scarabaeidae). The larva was found under an oak post, in company with stag beetle larvae, on Wimbledon Common on 10.vi.97. The adult emerged between 12–24 August. Dr Hackett also showed a specimen of the weevil *Syagrius intrudens* Waterhouse (Coleoptera: Curculionidae). This species originates from Australia but is now established in Britain. It was found in August on bracken on the Lizard, Cornwall, and may have come from a nearby botanical garden.

Dr D. AGASSIZ reported that he had taken a second specimen of the small ranunculus moth, *Hecatera dysodea* D. & S., on 6.viii.97. Having seen two specimens five weeks apart in the same locality suggests that it may have become established in the Gravesend area. Several members commented on the scarcity of painted lady butterflies compared to last year.

Dr IAN MENZIES gave the third Brad Ashby Memorial Lecture and spoke on half a century of insect encounters in south-west London. Dr Menzies recalled that he

had collected with Brad Ashby since the 1980s and they shared an interest in photographing insects. He showed a series of slides of butterflies, moths, beetles, bugs and crickets. Many of the insects discussed appeared to have declined, especially on sites closer to London north of the chalk escarpment. One of the scarce insects shown was *Cryptocephalus coryli* (L.), which still occurs on Headley Common. It produces a "scotch egg" effect by covering its eggs with excrement. The larvae use the faecal pellet case as protection and enlarge it as they grow, before finally sealing it up and pupating within. Some insects have increased in numbers and these include dead wood insects that benefited from the storms in 1987 and 1990. He showed a photograph of the rare beetle *Lymexylon navale* (L.) swarming in flight at dusk around an oak on Ashtead Common where he discovered it in 1990. Other insects that have become widespread throughout south-west London are Roesel's bush-cricket and the long-winged cone-head. Dr Menzies closed his talk with a series of slides showing how a pupating purple emperor butterfly larva manages to shed its final larval skin without the pupa becoming detached from the leaf.

14 October 1997

Dr J. MUGGLETON brought to the meeting a somewhat battered moth as an example of what drops out of the mail sent to the Society's Secretary. It was a convolvulus hawk moth, *Agrius convolvuli* (L.), sent by a Mrs G. Salmon who found it at Allhallows, Rochester, Kent, on 11.ix.97. She had apparently killed it and then consulted the RSPCA to see if she had done the right thing! They suggested she should contact the BENHS. Dr Muggleton also showed two weevils he had recorded for the first time this summer in his garden at Staines, Middlesex. These were *Otiorhynchus ligneus* Olivier, which was present in large numbers, and *O. crataegi* Germar. The latter, which was on privet, is believed to be an introduction and was first recorded in Berkshire in 1985. Mr A. J. HALSTEAD reported that *O. crataegi* had spread to Knaphill in Surrey and was causing extensive notching to the leaf-margins of a neighbour's privet hedge.

Mr R. D. HAWKINS showed some digital images of live insects made by a computer at the Hi-Tech Wild Trek held at the Swanwick Bug Day on 14.vi.97. The images were produced by Roslyne Ecological of Soberton, Hampshire.

Mr R. SOFTLY showed some colour transparencies of the spider *Araneus quadratus* Clerck and the migrant pyralid moth, *Palpita unionalis* (Hübn.). The spider was abundant this autumn on Hampstead Heath although there appear to be few records for this species in the London area. *Palpita unionalis* was taken in a light trap in Mr Softly's Hampstead Heath garden in late September. Mr HAWKINS noted that the *A. quadratus* had been very common in Surrey this year.

The following persons have been approved by Council as members of the Society: Miss Tessa Archdale, Mrs Lynn Cronin, Miss Elizabeth Douglas, Mr Martin Gore, Mr William Hoff, Mr Stuart Paston, Mr Bryan Pinchen, Dr James Walsh, Mr Jonathan Webb, Mr R. J. Welch, Dr Graham Cooke, Dr Charles David, Mrs Shirley Goodwin, Mr Jonathan Logan, Mr Michael O'Sullivan, Dr Jane Sears and Mr Joe Griffith. The last mentioned person is a junior member.

Dr J. MUGGLETON notified members of a conference to be held on 28.iii.98 by the Royal Zoological Society at Regent's Park on "Captive Conservation of Endangered Invertebrates". He also gave information about a project proposal for collecting insects in Nepal on behalf of the Kathmandu University Museum, which wishes to build up a reference collection. Air fares and expenses would be paid if the project

succeeds in getting funding. The project is being organized by Mr C P Smith, 9 Wigfull Road, Sheffield S11 8RJ.

Dr PETER BARNARD spoke on the British Insect Initiative at the Natural History Museum. After a period during the last twenty years when the Natural History Museum was mainly concerned with overseas insects, it is now once again becoming involved with the British fauna. A working party has been set up to investigate ways in which the Museum and its expertise could contribute to the study of British insects, their biodiversity and conservation. Several topics have been identified and include the following.

- Identification handbooks. There is a need for more keys of a user-friendly nature. The Royal Entomological Society's series is not fulfilling its original aim and many of its published keys are out-dated and/or out of print. It is possible that Museum staff will write keys but they are also able to encourage and assist others to compile keys.
- Bibliography of identification guides. A guide to published literature relating to insect identification is in preparation. The guide will have a chapter on how to locate references and from where to obtain them. There will be general information sections on each group of insects followed by references to further information. An important feature of the guide will be that the references are annotated to give an indication of their contents.
- British insect collections. There are many collections in museums and private hands throughout the British Isles. There are plans to build up a data base of holdings of British insects, including immature stages. By publishing details of these collections it will be possible to recognize gaps that need filling.
- Checklists. The Royal Entomological Society's checklists were published in the 1970s and need up-dating. Conventionally printed lists are not the ideal format as new introductions or taxonomic changes cannot be accommodated until the publication is reprinted. The Museum intends to put the checklists onto an electronic data base that can be continually up-dated and made available on the World Wide Web. Negotiations are taking place with the RES and their authors.
- National biodiversity network. A consortium made up of the Museum, NERC, JNCC, RSPB, the Wildlife Trusts and Biological Curators Group have plans for an electronic network for curators of biological data and collections. An unsuccessful application for funding was made to the Millennium Fund; a new application has been made to the National Lottery Heritage Fund.
- Species action plans. Under the Biodiversity Action Plan some scarce species have been short-listed for action plans. The Natural History Museum is the lead partner for the Killarney fern (*Trichomanes speciosum*), the orange-fruited elm lichen (*Caloplaca luteoalba*) and the mole cricket (*Gryllotalpa gryllotalpa*).

Dr Barnard's talk was followed by a discussion on the British Insect Initiative and the needs of amateur entomologists.

11 November 1997

Mr A. J. HALSTEAD showed a live specimen of an adult bed-bug, *Cimex lectularius* (L.) (Hemiptera: Cimicidae), that had been sent to him for identification from an old people's home. He also showed live specimens of *Newsteadia floccosa* (De Geer)

(Hemiptera: Orthezidae) found on the roots of a *Sedum* in a garden near Pitlochry, Perthshire. These infrequently seen sap-feeding insects, which are allied to scale insects, secrete white waxy plates from their dorsal surface. They were identified by Dr C. Malumphy of the Central Science Laboratory, York. He has recently found *Newsteadia floccosa* on Strensall Common, near York, where it is abundant. Old records refer to it being found in moss, grasses and leaf litter.

The Annual Exhibition and Dinner. Attendance at the 1997 Exhibition was slightly down this year with 241 people signing the attendance book. This was reflected by a reduction in the number of exhibits but the quality was high. Among the more notable exhibits were a ladybird new to Britain spotted by a 5 year old girl; the sawfly *Cimbex connatus* (Schrank) which has not been seen in Britain for many years; a larva and display on the Geranium Bronze butterfly, a South African species that has recently arrived in Britain; a display showing the complex life-cycle of a microlepidopteran recently discovered to be associated with butcher's broom. Mr R. Softly admired the photograph of the fiery clearwing moth but found it disturbing that it had been necessary to accompany the photograph with a plea to entomologists not to collect this species, which is due to become a Schedule 5 species under the Wildlife and Countryside Act. Attendance at the Dinner was slightly up and favourable comments were made on the quality of this year's meal.

Mr R. REVELS showed a series of slides which included a gynandromorph meadow brown and a melanic white admiral, both photographed in the same Bedfordshire wood; some bred aberrant forms of the ringlet, brown argus and common blue; various habitats including set-aside, woods and landfill sites which have become colonized by brown argus in Bedfordshire where it is feeding on wild geranium; some social and solitary wasps.

Mr C. BAKER showed slides of adult Microlepidoptera, some of which showed the distinctive resting postures shown by *Argyresthia* and *Caloptilia* species.

Dr J. MUGGLETON showed some moths photographed in his garden at Staines, Middlesex near the Thames. These included an aberrant *Agrotis exclamationis* (L.) and various pyralid moths, some of which were some distance from their usual habitat as described in Goater's book.

Mr R. SOFTLY showed a photograph of a common quaker moth taken at light on St. Marys, Scilly on the very late date of 12 July; he also showed slides of a plume moth on sea lavender whose larvae have to survive immersion in sea water at high tide.

Mr A. J. HALSTEAD showed some slides recently passed to the BENHS by Bill Parker. They were taken during the 1960s and early 1970s and showed some eminent entomologists of that time, including Baron Charles de Worms, A. J. Duffield, A. M. Massee and Teddy Pelham-Clinton.

Mr K. MERRIFIELD showed a selection of butterflies, bees, flies, beetles, dragonflies, wild flowers and fungi.

Mr N. A. CALLOW showed a wide range of subjects covering most insect Orders photographed during the year, mostly in Britain but also including some in France.

9 December 1997

The President, Dr D. AGASSIZ, welcomed three German visitors, Dr Wolfram Mey, Dr Wolfgang Speidel and Dr Matthias Nuss.

Dr D. HACKETT showed some colour transparencies of the carabid beetle, *Carabus granulatus* L., taken at Totteridge, Hertfordshire in 1997. This is believed to be the first Hertfordshire record for 40 years. He has also showed a picture of stag beetles,

Lucanus cervus (L.) mating, which showed the female clasped in the male's mandibles.

The following persons were elected as members at the Council meeting held on 4.xii.97: Mr M. N. Andrews, Mr M. J. S. Armitage, Dr W. Barritt, Dr C. J. Bennett, Mr A. F. Collyer, Dr T. H. Freed, Mr A. S. Grace, Mr N. Hutchinson, Dr A. J. Marks, Mr I. Masters, Mr J. A. McGill, Mr W. M. S. McIvor, Mr I. Middlebrook, Mr D. J. L. Milner, Mr S. W. Plumb, Mr J. M. Price, Mr R. H. Ramsdale, Dr C. J. Smith, Mr J. L. Snaddon, Mr P. Stirling, Mr P. G. Tannett, Mr P. Taylor, Mr J. Turner, Mr R. J. Vardy, Mr D. Walker, Mr J. A. White, Mr M. J. White and Dr S. Wright. Bristol City Museum and Art Gallery has become a corporate member.

Mr S. MILES made available for inspection reports presented by the organizations that make up the JCCBI at their autumn meeting. He also made available a consultation document on national lists of special areas of conservation made under the European Union's habitats

Mr A. STUBBS opened a discussion meeting on Progress with the Biodiversity Action Plan. He outlined the main events that had occurred since the 1992 Rio Biodiversity Conference. Britain, along with other signatories to the Rio agreement, is committed to devising a national plan for maintaining biodiversity and habitats. Concern that the government was making slow progress led to several conservation organizations, including Butterfly Conservation, forming the Biodiversity Challenge. This produced a report aimed at encouraging the government to set specific targets instead of a list of good intentions. By the year 2000 the government agencies have to regrade, where necessary, all species with RDB/Notable status. Invertebrates present some problems that often do not occur with plants or vertebrates. Assessing the international importance of Britain's populations can be difficult—information on their abundance and distribution elsewhere is often unavailable. It is easier to record declining populations or limited occurrence in Britain. Insects may need other special categories so that species reliant on rare plants or scarce habitats are also regarded as being scarce. Target species have been identified and these have been placed in the short, middle and long lists. The high risk species are those suffering loss of habitat and/or decline in numbers. For action to be worthwhile there must be the possibility of an achievable outcome and this is dependent on identifiable conservation needs that can be put into practice. For many rare insects, little or nothing is known of their needs or current whereabouts in Britain. Some insects with popular appeal can be used as flagship species whose conservation will benefit a wider range of species which need a similar habitat.

Dr D. SHEPPARD spoke on his work with the Species Recovery Programme which began in 1991 with six species and a budget of £100,000. By the end of the first year nine species were in the programme and it currently covers 68 species. Its budget is currently £500,000 so the money is having to be spread more thinly. The core programme covers Schedule 5 species and others with top-grade status. These projects receive 100% funding and there are potentially about 500 species in this category. There is also a grant scheme for species without legal protection status and this can be for up to 50% and may cover a further 1,500 species.

The initial work on a recovery species takes 1–2 years and involves investigations to locate sites where the insect occurs and acquire data on its biology and ecology. A programme of habitat management is recommended and put into the species action plan. The recovery phase takes 5–10 years and the action plan is reviewed and amended each year as necessary. The aim is to achieve favourable conservation status where the insect is able to maintain itself on a long-term basis, is able to maintain its range and its habitat is secured. During the recovery phase the species is

monitored and all aspects of its ecology, biology and habitat management are studied. When the action plan has achieved its aims, the species will continue to be monitored to check that it is sustaining itself. Amateur entomologists are likely to be used in this post-recovery work. Dr Sheppard made it known that the Species Recovery Programme wants to hear from anyone who has ideas for working on species on the short or middle lists. Funding may be available and assistance given in setting up a species action plan.

Mr M. EDWARDS spoke on some of the species that he has studied in recent years in connection with the Species Recovery Programme. The mole cricket, *Gryllotalpa gryllotalpa* (L.), is a rare insect in Britain and has been reported to be extinct. However it is an elusive insect and has been discovered in several widely scattered localities, often occupying quite small areas of suitable habitat. Another insect studied has been the bee-fly *Thyridanthrax fenestratus* (Fallén). This occurs in some sandy heaths in the south of England. Observations on its behaviour suggest its larvae develop in the nests of the solitary wasp, *Ammophila pubescens* Curtis, but this has still to be confirmed. Mr Edwards also spoke about bumblebees. These were the subject of a recording scheme and maps were published in the 1970s. Since then it has become apparent that some species have undergone a dramatic decline in distribution. *Bombus distinguendus* Morawitz was formerly widespread but now appears to be found only in the Western Isles. *Bombus sylvarum* (L.) was widespread in southern England but last year was found in only three sites. These losses may be due to a loss of flowery meadows and overgrazing. There is an urgent need for all of Britain's bumblebees to be remapped to assess their current status.

Mr P. WARING described some of the work he is doing for Butterfly Conservation to develop action plans for some of the scarcer moths. Some of this work began when he was employed by English Nature and predates the Species Recovery Programme.

BOOK REVIEWS

Blowflies by Zakaria Erzinçlioglu. With plates by Sarah Bunker. Naturalist's Handbooks 23. The Richmond Publishing Company Ltd, 1996, 71 pp, paperback, £8.95, hardback, £15—The author of this work is well known for his expertise in forensic entomology and his wide knowledge of the carrion-feeding blowflies. This book is principally about the species with this habit and deals in depth with all aspects of their biology. Throughout the text the opportunities for further research are highlighted, concentrating in the tradition of this series, on what can be achieved by amateur workers.

The colour plates illustrate set insects of ten examples of this family and five members of other related families, which might be mistaken for blowflies; only females are represented, although this is not stated. These are accurately drawn and are an attractive feature of the work, despite the subjects not being among those considered of most aesthetic appeal among the Diptera. However, it should be noted that the colour has not been well reproduced, in particular the metallic blues of several species, especially *Cynomya* and *Melinda*, while the dark metallic green of *Phormia* appears bluish black. All insects are drawn to the same scale but the magnification (apparently about 2.5 times) is not given and nowhere in the text is the size range of the insects stated, possibly because the author considers this variable.

Keys to genera and species (except those of *Pollenia*) are provided and these again are usable for the carrion feeders. The generic composition, however, is based on the checklist included in this work, which follows Kloet & Hincks (1976). This would be all very well if it had not been so extensively superseded by Rognes (1991, Blowflies (Diptera, Calliphoridae) of Fennoscandia and Denmark. *Fauna Entomologica Scandinavica* (volume 24), a work which is cited although the only evidence of it being consulted is the mention of *stelviana* (Brauer & Bergenstamm) (actually the correct name) as an alternative for *Calliphora alpina* (of authors, not Zett.) and the generic placement of *Protophormia terraenovae* (Rob.-Desv.).

Rognes (1991) keys all British species of Calliphoridae, including *Bellardia bayeri* (Jacentkowský) yet to be added to the British list, and should be consulted by anyone wishing to accurately name specimens of this family. Apart from using different specific or generic names for 12 of the British species, Rognes also included the genera *Eurychaeta* (= *Helicobosca*) (formerly in Sarcophagidae), *Melanomya* and *Angioneura* (both formerly in Rhinophoridae), all snail feeders like *Melinda* and *Eggisops*. Rognes (1987, *Syst. Ent.* **12**: 475 502) had previously revised the *Pollenia rudis* group and not only raised *augustigena* Wainwright to specific rank but described a further British species, later synonymized by him with *pediculata* Macq., whose existence has been overlooked by Erzinçlioglu.

It is unfortunate that the editors of this book did not appreciate that the author had been asked to stray outside his area of expertise, in an endeavour to make the work more comprehensive. This is particularly evident by his placement of *cognata* (of authors, not of Meig.) in *Bellardia*; it was included there by Kloet & Hincks (1976) due to a typographical error (corrected by Dear, 1977, *Antenna* **1**: 24) and should be in *Melinda*, where it had previously been placed in the British literature. It will, of course, run to *Melinda* in his generic key (having the 'lower calypter' bare on the upper surface) so cannot be identified from this work.

Bellardia and *Melinda* are now placed in different subfamilies. The biology of *M. cognata* (now known as *M. viridicyanea* (Rob.-Desv.)), which is a snail parasite, is discussed among a few other examples of non-carrion feeding biologies in the family. There is, however, no mention that larvae of the other species correctly placed in

Bellardia are earthworm predators or parasites like *Pollenia*. *Pseudonesia* is now also a synonym of *Bellardia*.

The fossil history of blowflies is touched on. The supposed calliphorid puparium from the late Cretaceous is mentioned as possibly authentic: the author can be excused for this as it has been repeated in several major works, but the editors of the *Dipterists Handbook* (1978) were chastised soon after publication for this being referred to uncritically in their text, by a leading overseas-based dipterist, who informed us that it was actually a rodent dropping. A more recent origin is suggested by the phylogenetic position of the family.

These deficiencies are perhaps peripheral to the main purpose of the book and it is, nevertheless, recommended as a useful introduction to the subject of blowfly biology. It is considered important to mention them because the glossy presentation gives the initial impression that the reader can expect it to be an up-to-date and authoritative work in all respects, which it is not. Overall, it is considered a pity that the opportunity was not grasped to acquaint British readers with the currently recognized composition and nomenclature of the family, rather than adopting the convenience of following previous British literature.

The BENHS is cited among the addresses of Societies; Dipterists Forum is, however, not mentioned! The 200 references to further reading form a valuable appendix to this work, even though on page 2 the author supports the view that too much reading can be a bad thing.

PETER CHANDLER

Thrips by William D. J. Kirk. Naturalists' Handbook 25. The Richmond Publishing Co. Ltd, 1996. 70 pp. soft cover. £8.95. – Readers of other handbooks in this excellent series will be familiar with the format. The introductory section gives some information about the biology and behaviour of thrips, with particular reference to those associated with fungi, foliage, galls and flowers. A key is provided which should enable most thrips to be identified to families and genera. It is not a comprehensive key to all British thrips and only the more common thrips are keyed out to species level. Thrips identification is not for the faint-hearted. It is necessary to prepare the specimens as microscope slides and have access to a good quality microscope. For many species, accurate measurement of certain body parts is required as separation is based on the ratios of these lengths. A section on techniques gives information on collecting and preserving thrips with a step-by-step guide to preparing microscope slides. Line drawings are placed in the page margins to illustrate aspects of thrips' biology and structure. There are also two colour plates that show examples of thrips behaviour and the damage they cause to plants through their sap-sucking feeding activities. The booklet ends with a list of references and further reading.

ANDREW HALSTEAD

Ants by Gary J. Skinner and Geoffrey W. Allen. Naturalists' Handbooks 24. The Richmond Publishing Co. Ltd, 1996. 83 pp. 10 plates (4 in colour). hardback. £15. paperback. £8.95. – This new Naturalists' Handbook admirably fulfils the aims stated by the series editors. It is packed with up-to-date information on ant biology, lucidly and succinctly expressed. It includes clear, user-friendly keys to all British

species; and it enthuses the novice to observe ants in the field and investigate aspects of their natural history as yet unknown.

The introductory chapter distinguishes ants from other groups of insects, considers the possible origins of the Formicidae and of its various sub-families and highlights the diverse lifestyles found even in so impoverished a fauna as that of Britain. This is followed by 31 fascinating pages on aspects of the general biology of ants. Nest formation and maintenance are considered followed by the social structure within nests and the division of labour between castes. The chapter goes on to discuss the determination of caste and aspects of reproduction before moving to sections on food collection with emphasis on the symbiosis between (some) ant species and (some) aphids. The relationship between ants and other organisms (particularly plants, predators and parasites, and the assortment of arthropods to be found lurking in ant nests) concludes the chapter. The authors are not content merely to relay current understanding of ant biology—though this is very well done, with ample references for the reader to pursue—but repeatedly emphasize the limits of understanding; dark corners of ignorance that might be illumined through patient field work by students of natural history. A third chapter of 26 pages is devoted to identification of British species of ant. Separate dichotomous keys for queen ants, males and workers are illustrated by clear marginal drawings of key external features (no need for genitalia preparations). A series of rather disappointingly brief notes on the known distribution and ecology of three dozen of the commoner British species leads to the final chapter, entitled 'techniques'. This gives outline guidance on how to catch and preserve ants (dead), how to keep colonies of them alive for study indoors, and how to undertake a limited range of field investigations. The book ends with 6 pages of references and an index.

An earlier title in the series (*Solitary wasps* by P. F. Yeo and S. A. Corbet) first enticed the reviewer into a stumbling fascination with creatures hymenopterous. Sphecid and Pompilid wasps are, alas, truly solitary. Catch the beast to identify it, and you lose for ever the chance to record its behaviour; keep on watching too long and it will fly off incognito! Ants do not impose this dilemma on the observer. Though one individual may be popped into the killing jar in the cause of nomenclatural probity, its nest sisters will already be coming into view down the trail! Messrs Skinner and Allen can be proud of their accessible and reasonably priced little book, which, I confess, will probably beguile me into extending the scope of my observations during the coming (and subsequent) field seasons.

The National Trust and nature conservation 100 years on, edited by David J. Bullock and H. John Harvey. Academic Press, for the National Trust and the Linnean Society, 248 pp, softback £15.—With 2.2 million members The National Trust (NT) has to take its conservation of countryside and wildlife extremely seriously. Now that it owns 1% of the total area of England, Wales and Northern Ireland (over 234,853 ha) and 885 Km of coastline, it is guardian of many precious habitats and species protected now by UK and EU law. It is sometimes difficult to get inside the National Trust and understand exactly how their conservation strategy ticks, that is, with respect to accessible literature, but published here is a vignette of their evolution and commitment to nature conservation to date.

The book is actually a proceedings of a conference held in 1995 to celebrate the centenary of the NT. It is a multi-authored text with a separate 12 pp booklet of errata! The book is in six parts: grazing as management practice; conservation of

butterflies: conservation of bats: historic parks and pasture-woodlands: habitat restoration, and prospects for the future. Each part, with the exception of the last, has 3–6 chapters which are written mostly by NT employees. There are two substantial chapters written by non-NT employees, Bob Stebbings on bats and Jeremy Thomas on the status of declining British butterflies.

Although the NT's responsibility runs to conserving Britain's 111,900 species of flora and fauna (their figures), its track history has been one of protecting single species, such as the large blue butterfly, or various fritillaries, many of which have their major surviving populations on NT land; this form of conservation is a feature which one of the invited speakers, S. E. Van Wieren, did not wish to denigrate. NT conservation has been with varying success. Work on UK biodiversity (as expounded *après* Rio) does not figure greatly here, though advancement on Coleoptera diversity has been furthered by Keith Alexander's work in historic parks and pasture woodland (30% of 72 species of old pasture woodland occur on NT land). Matthew Oates's work on butterfly conservation on NT land is a breath of fresh air with the flowering of his research. The NT now owns 10% of calcareous grassland—a favoured habitat for butterflies—and 6% of heathland, 3% of blanket bogs—the list goes on. As the NT grows to encompass more of the countryside, and the surviving species survive on fewer habitats, the conservation accountability of the NT increases.

This book is highly recommended as a precious insight into some of the workings of the NT. It is short on policy, but is a useful window on how the tricky field of conservation has been played over the years. However, the pace of change races ahead and the NT must not be caught out in the future.

JOHN FELTWELL

The butterflies of Tunbridge Wells and district by Ian C. Beavis. Tunbridge Wells Museum and Art Gallery, 1995. 86 pp. 8 colour plates. £5.50, paperback.

Tunbridge Wells lies in the folds of some interesting entomological countryside of the High Weald and is close to historically butterfly-rich woodlands and heathlands. The area chosen for this admirable book is essentially the geological area of the Hastings beds which run south-eastwards almost to Rye. It is the same area chosen by Chalmers-Hunt in his *Butterflies and moths of Kent*. Superimposed on this area is a circle of eight miles which embraces the important Ashdown Forest to the south, but does not include Sevenoaks to the north.

Within this area the status of butterflies has been assessed from earliest times (1857) to the present day. The situation is not all pleasing. Of the 61 species historically known from the area there are a mere 50 species after rarest migrants and vagrants are discounted. Ian Beavis breaks the area's butterflies into five groups, the ubiquitous urban species, the common and widespread species, a group of two (the holly blue and wall) both with unpredictable fluctuations in abundance, widespread but local (purple hairstreak, white admiral and ringlet), and a final group of 15 rarer species with more demanding habitat requirements—these include the woodland fritillaries and hairstreaks, and the grizzled and dingy skippers. Some of these might already be extinct in the area.

Like most places in the south-east the open countryside has been 'improved' and its surviving woodlands subject to management alien to butterflies. The most serious decline in butterfly species has been during 1960–70. Woodland fritillaries have declined alarmingly, but the purple emperor is still hanging on in Ashdown Forest:

the grayling has been lost to this area, and the silver-studded blue has declined alarmingly.

For the many lepidopterists who are familiar with the folds, ghylls and warm hollows of the High Weald it is disappointing to read of the former localities which were havens for butterflies. The disappearance of unimproved waysides and patches of woodland and old meadows has been at the expense of insects, and butterflies in particular. Ian Beavis must be congratulated in collating such an important body of information. The pity is that no documents pre-date the mid-nineteenth century when the region must have been a treasure of woodland Lepidoptera.

JOHN FELTWELL

Medical entomology for students by M. W. Service. Chapman & Hall, 1996, x + 278 pp, ISBN 0 412 71230 X, paperback, £19.99.—Medical entomology is not a subject that naturalists can afford to ignore. Although relatively few of us would list it among our specialist interests, we should at least be aware of some of the health hazards that may arise from the interest that certain arthropods take in us as a food source. This is especially important for those whose fieldwork extends to the tropics, but even the relatively tame environment of Britain is not without its hazards, as will have become apparent in recent years from field meeting notices which carry warnings about Lyme disease, a tick-borne condition that is occasionally fatal.

Apart from the matter of personal health hazards, the biology of medically important arthropods is a fascinating subject, which deserves to be studied by amateurs as well as by professionals. Both students and other interested readers will find in Prof. Service's book a source of introductory information on all the major types of disease vector. Although the book is concise, matters of detail are emphasized where they are important. For example, it is explained that fleas are most likely to transmit the plague bacillus, *Yersinia pestis*, when this organism multiplies so much in the flea's stomach that its upper gut is blocked, resulting not only in the regurgitation of bacilli into the host, but also in repeated feeding attempts by the starving insect.

Each of the book's 20 chapters deals with a different taxonomic group of arthropods, with various kinds of Diptera occupying more than half the book. Each chapter ends with a list of sources for further reading. For every group, external morphology is described and illustrated, together with relevant features of internal structure and function. There are also accounts of life cycles, of medical importance and of methods of control. Although trapping techniques and biological control are now used against certain species, the emphasis still seems to be on the use of broad-spectrum pesticides, sometimes in ways that can harm non-target species. Thus, the book raises questions about conservation without answering them, but that is perhaps yet another reason for buying it.

D. LONSDALE

The moths and butterflies of Great Britain and Ireland, Volume 3 (Yponomeutidae-Elachistidae), edited by A. M. Emmet. Harley Books, Colchester, 1996, 452 pages, 8 half-tone and 9 colour plates, £37.50 paperback, £75 hardback.—This is the seventh book in this series to be published in the 20 years since the first volume appeared. The first chapter, written by D. J. L. Agassiz, concerns invasions of Lepidoptera into the British Isles. This interesting and informative account includes a chronological list of species that have become established since the 1800s and sections on the

characteristics that make an invading species successful, the relationship between voltinism and the rate of spread of invaders, and the different patterns of spread observed. It concludes with a section on future likely invaders. The results of the fire-thorn leaf-miner project (*Phyllonorycter leucographella*) and work monitoring the spread of *P. platani* make interesting reading. Statistical methods applied to the data of rate of spread for these moths is used to extrapolate back to the year of probable introduction. This demonstrates the power of such methods when accurate and extensive data are available and the author acknowledges the important role that amateur entomologists played in providing the extensive data set necessary for this exercise.

The remaining text of this volume, 380 pages, consists of a systematic treatment of around 230 species of Microlepidoptera belonging to the families Yponomeutidae, Epermeniidae, Coleophoridae and Elachistidae. This follows the established format, with a description of the imago and other life history stages and the distribution of each species, including a vice-county distribution map. The inclusion of 109 half-tone figures of genitalia, critical for accurate taxonomic determinations, in the body of the text highlights the importance of such detailed scrutiny when identifying members of these families. If the reader is in any doubt of the taxonomic importance of these structures, reference to the colour plates of adult Coleophoridae will dispel this uncertainty. The half-tone plates of the larval cases of this family are a unique and important contribution and will prove of great interest and value to those studying or wishing to start recording this group of Lepidoptera. The indexing has been conducted with its usual precision and includes both a general index of the families and species, and an index of host plants. My only criticism, and a minor one at that, is that no advice on rearing is provided. The Coleophoridae and Elachistidae especially have complex lifecycles and the requirements for overwintering their various life stages, mostly larvae, may have proved a useful addition. Having said this, volume 3 is the weightiest of the books so far published in this series and there are other sources for this information. I hope that future volumes in this series will be as concise and informative as this volume.

I. Sims

The Hymenoptera edited by Ian Gauld and Barry Bolton. Oxford, Oxford University Press, 1996, xii + 332 pp, hardback, £37.50.—This is a reissue of the book first published in 1988 jointly with the Natural History Museum; it comes on thinner, slightly glossier paper, and with a slightly different cover design, but otherwise it is almost identical. Some of the plates are bound in to face different pages and there are a few footnotes regarding the higher classification of the Oxytorinae (*Oxytorus* remains, *Cylloceria* and *Allomacrus* become the Cylloceriinae, other genera to Orthocentrinae), Alomyinae (now part of Ichneumoninae), and Eumenidae (now a subfamily of Vespidae). It is an excellent introduction to the order and after examining the various life-cycles and strategies employed by this astonishingly diverse group of insects, the major part of the work is given over to a family-by-family analysis. There are a few keys to family level followed by full family or subfamily descriptions and details of the various biologies. There are plenty of superb whole-insect illustrations, some commanding whole pages, and 10 colour plates. Identification and other important references are indicated and listed extensively over 48 pages. I would have liked a better index—one that listed all

generic and specific names, but otherwise have no hesitation in recommending this book to anyone who didn't buy it the first time around.

RICHARD A. JONES

True bugs of the world (Hemiptera: Heteroptera): classification and natural history by R. T. Schuh and J. A. Slater. Cornell University Press, Ithaca and London, 1995, xiv + 338 pages, hardback, £66.50.—Living on a series of islands, we British entomologists are apt to view insects in terms of only our own, rather limited faunas. And it sometimes takes a book like this to make us realize just how astonishing is the natural world out there. With about 600 British species, the British Heteroptera are often relegated to a position in the minor orders, but as the book is quick to point out, the suborder is, in fact, the largest and most diverse group of insects with incomplete metamorphosis; they exhibit extreme structural and biological diversity and a majority of the 75 families occur throughout the globe.

After initial chapters on the history of the study of the Heteroptera, collecting, habits, structure and so on, the book is mainly an individual analysis of each of these 75 families, their classification, form, natural history, distribution and faunistics. Each family in turn is examined in terms of its diversity, but also in its relatedness to other families. Various keys define subfamilies and after a discussion on these, sections on specialized morphology highlight the important characters which combine to define the groupings, along with comments on their behaviour or habit and their geographic spread.

Many of the larger families occur across the whole planet, but many of the smaller families are particularly enthralling to an English entomologist like myself. I had never heard of the Lestoniidae, named after Dennis Leston, co-author of *Land and water bugs of the British Isles*, whom an introductory chapter describes as an iconoclastic commoner of flashing intellect. Only two species are known—from Australia—in the genus *Lestonia*. Nor could I imagine the bizarre members of the Polyctenidae, bat parasites first classified as nycteribid flies in the 1860s, then as lice in the 1870s. Other oddities I discovered were the Plokiophilidae, so-called "web-lovers" which scavenge as inquilines in spider webs and the Termitaphididae, minute blind, wingless and flattened creatures which live in termite nests and originally described as a group of aberrant aphids.

By no means all groups are well understood. There is a very short entry for the Velocipedidae, a family with no common name other than the suggested "fast-footed" bugs. Although some of the half-dozen known species from India and South-East Asia were described in the late 19th century, nothing is known of their habits—most specimens were probably attracted to lights.

Finishing with 31 pages of references and an extensive glossary, the book represents a very important contribution to our understanding of the Heteroptera, and presents their classification in a global context. The book is sumptuously produced and beautifully illustrated with line drawings and half-tones of many whole insects and important bits of anatomy. Some of the pictures are works of art in themselves, in particular a full-page illustration of *Pephricus paradoxus*, a spiny and foliaceous coreid bug, is breath-taking in its delicacy. At £66.50, this is moderately expensive book, but such is the price of high-quality authoritative tomes nowadays. Anyone with a passing interest in the true bugs will find interest and inspiration in the book, specialists will not be able to do without it.

RICHARD A. JONES

Urban entomology: insect and mite pests in the human environment by William H. Robinson. London, Chapman & Hall, 1996, xvi + 430 pp, paperback, £24.99.—Although concentrating on the US urban environment, as the author says, most such pests are cosmopolitan. In some cases different species may occur in different parts of the globe, but biologies are essentially similar as are the means of study and the control measures. About two-thirds of the book considers pests under three main headings: domestic pests (cockroaches; fleas, lice and mites; spiders and bugs; flour and fabric pests), "periodomestic" pests (ants, flies and the stinging Hymenoptera) and structural pests (termites and wood-infesting beetles). Here are given the usual expected details of structure, biology, pest status and eradication procedures. However, it is the introductory third of the book which sets it aside from other works on domestic pests. Here the author considers the rise of human development into a social society, with agriculture, settlements, communities and its subsequent urbanization. The invasion of a new "human" environment by once naturally occurring and environmentally balanced creatures has led to the rise of the pest and using examples from human prehistory, the author follows this invasion in some detail. The book is simply and clearly written and aimed at an undergraduate readership, but anyone with an interest in pests or the anthropobiocoenosis (human biological habitat) will find something of worth here.

RICHARD A. JONES

Pollen beetles. Coleoptera: Kateretidae and Nitidulidae: Meligethinae, by A. H. Kirk-Spriggs. Handbooks for the Identification of British Insects 5(6a), Royal Entomological Society, 1996, 160 pp, £23.—There can be no doubt that this is an extremely well-researched and useful publication on a series of difficult and confusing beetle species. It follows the same general pattern as previous handbooks, and covers the 9 British species of Kateretidae and the 37 of Meligethinae. Of these 46 species, 36 are in the complicated genus *Meligethes*, an often trying and tiresome group, and the highly detailed keys and plentiful illustrations are a welcome aid to these beetles' identification. But as well as being one of the most welcome of the R.E.S. handbooks, it is also one of the most annoying—it is badly laid out, it is awkwardly typeset and it is over-long, by at least a third.

Despite the examples set by such books as *British Hoverflies* and the Aidgap keys, and the ease of modern typesetting, the R.E.S. continues an archaic and self-defeating policy for a "handbook" of placing all the illustrations together at the back of the publication. There is nothing more frustrating than reading a key whilst having to flick to at least four other places in the book to look at different sets of diagrams of tibial teeth, body outlines, pubescence patterns and genitalia. Admittedly there is a certain logic in having groups of similar figures together—so as to be able to scan one's eye over a series of like diagrams to pick out the one that best fits the specimen under the microscope—but to have such a great wad of pictures so far removed from the general text of the book is retrogressive and counter-productive. It just does not work well. I have commented on this several times before in book reviews of other recent handbooks.

For some reason, most of the book is typeset with excessive line-spacing. This makes the whole volume look rather amateurish, and the text takes up about a third more pages than is actually necessary. The main species accounts present an ugly hotchpotch of different typesetting styles, with paragraphs of straightforward type abutting large blocks of italic, followed by huge blocks of densely-packed small type.

Several paragraphs are in the wrong format anyway and the whole effect makes reading the book a burden rather than a pleasure.

Added to this, for each species account, a list of all "published records" further increases the book's length, to little advantage. For example, after an already lengthy synopsis of the widespread occurrence of *Meligethes aeneus*, "The commonest and most widespread species in the British Isles"; now who on Earth needs to reflect on a page and three-quarters of records and references for this almost ubiquitous beetle? Rearrangement of the 333 figures, many arranged only four per page, could also have saved a lot of space.

At present, the book spews up an average of over 3 pages of text per diminutive species, when a book of less than half that length would have been more than adequate. This could easily have been achieved by better designed layout and typesetting, and more astute editing in favour of brevity. The scientific content of the handbook is not in doubt, but the whole thing is marred by poor design and confused typesetting. It is very embarrassing that the only good thing I can think to say about the layout and format of the book is that the title appears on the spine! I will continue to use the book to identify these abundant, but often passed-over insects, but it will be a mental struggle every time.

RICHARD A. JONES

The Colour Identification Guide to Caterpillars of the British Isles, by Jim Porter. Viking, London, 1997, xii + 275 pp, including 49 colour plates, hardback, £40.—The eagerly awaited book on the caterpillars of the Macrolepidoptera (*sensu* South) of the British Isles is produced in the same format as Skinner & Wilson's highly appreciated *Colour Identification Guide to the Moths*, and rests easily beside it. The author is known to have worked relentlessly to obtain photographs of larvae, and begins by acknowledging the considerable help he received from fellow lepidopterists who provided him with material which he was unable to find by his own energetic field work and subsequent rearing. He provides a remarkably short list of outstanding desiderata, one of which, *Sedina buettneri*, was re-found just too late for inclusion.

In the Introduction, hints on the rearing and preservation of larvae are given, together with an exhortation to release unwanted bred specimens at the site of capture rather than to kill them or have them "dumped in the garden" — good advice. Brief instructions on photographic apparatus and techniques are included.

The 49 colour plates are composed of a total of 828 photographs, mostly in panels of 18. A few are duplicates which show different colour morphs of the same species; in some others two or more differently-coloured larvae are photographed side-by-side. Only very rarely are younger larvae also depicted; those of *Papilio machaon* and *Acronicta alni* are wisely included, but it would have been nice to see the curious, ant-like baby lobster, *Stauropus fagi*, and one or two others as well. Bonuses include an egg-batch of *Endromis versicolora* and a larval nest of *Eriogaster lanestris*.

All the photographs are of the highest standard and, importantly, have been very well reproduced, but how useful are they for identification purposes? For one thing, all the larvae more or less fill their photograph, so one is not immediately struck by differences in size. For another, larvae are essentially three-dimensional as opposed to set imagines, and alive, so that important diagnostic features such as markings on the prothoracic plate of many noctuid larvae find themselves either hidden in shadow or demurely turned away from the eye of the camera. There is no way round this

except by providing a supporting text which draws attention to such features and it is here, in the reviewer's opinion, the book falls short of being an *Identification* Guide.

The text is in two columns, and each species is allotted a text of some 20 lines under the sub-headings Larva: Foodplant: Habits: Plate No. and source of material. Working backwards, the **source** acknowledges the contributor and states how the larva was obtained. The paragraph on **Habits** is quite extensive, and is interesting and informative. **Foodplants** are given English names only in the text, but there is a useful Appendix with their scientific names for the benefit of foreign purchasers of the book. Under **Larva**, length in mm is given, followed by a brief description of the salient features of the (?last instar) animal, all in about 4 lines. The reviewer feels that a comparative approach would have been much more helpful. For instance, I go beating scrub oaks in September for larvae of *Cyclophora porata*; some geometrid larvae fall into the tray. How can I recognize my quarry? Are these larvae even *Cyclophora* species? I know they are variable, but are there constant diagnostic features I should look for? I would appreciate guidance on how to differentiate the numerous noctuid larvae found under hedges at night in early spring. I get a bit of help when trying to sort out larvae of *Mythimna impura*, *M. pallens* and *M. favicolor*, but how does one recognize the larva of *M. l-album*, in the wild? One way of providing the answer without using more words could be to *italicize* or underline the key features. It is good, though, to have fine photographs of all the easily-recognized species, and one can go a long way towards identifying others by integrating general appearance with foodplant and season. In this sense, the book is an excellent *Guide*.

Perhaps the truth of the matter is that we lepidopterists simply do not know our larvae well enough to write the "ideal" Identification Guide. That being so, Jim Porter has not only made a valuble contribution to lepidopterology, but has provided a long-awaited stepping stone and, above all, a stimulus to others to broaden their entomological horizons by intensifying their studies of the early stages of Lepidoptera and keeping meticulous records. His book is warmly recommended to experienced entomologists and beginners alike. The price, for a book containing so much colour work, is modest by current standards.

BARRY GOATER

SHORT COMMUNICATIONS

***Tachystola acroxantha* (Meyr.) (Lepidoptera: Oecophoridae) reaches Suffolk.**—Several specimens of this species were captured in a Heath trap in my back garden in the centre of Felixstowe from May–September 1997. A single specimen was then identified by Arthur Watchman, the county recorder for Suffolk, and later the identification was confirmed by A. M. Emmet.

This is an Australian species that was previously recorded in the West Country in 1908. It spread slowly along the south coast until it could be found from Cornwall to Hampshire and Somerset. Then in 1995 it appeared near Merseyside in Cheshire where it is extending its range (A. M. Emmet, pers. comm.). Now in Felixstowe this new colony could have two possible origins. Firstly, it could have derived from one of the other British colonies, presumably carried around the coast by sea, or it could be a new influx into the busy port of Felixstowe direct from Australia. As Felixstowe receives no cargo from UK ports it seems reasonable to conclude that this is likely to be a new colony from an Australian cargo shipped this year. However, it is still possible that the moth could be carried around the coast on the deck of any vessel that moves between ports, so it is not possible to be absolutely certain of the origin. The larval food plants include eucalyptus and berberis as well as decaying leaves so there may well be scope in this area for the species to spread as it has done in other locations.

Many thanks to Arthur Watchman for the initial identification and to Maitland Emmet for the up-to-date information about its current status.—Jon Nicholls, 18 Berners Rd, Felixstowe, Suffolk IP11 7LF.

***Priocnemis cordivalvata* Haupt (Hym: Pompilidae) new to Yorkshire.**—In Howell Wood, South Yorkshire, on the otherwise somewhat entomologically unproductive afternoon of 25 July 1997, I swept from the edge of a sandy path next to a small clearing a small, red-banded pompilid wasp which I retained for later examination. The specimen, a female, quickly proved not to be *P. fennica* Haupt, as I had assumed—having recorded this rather uncommon species here a few years ago—nor any *Priocnemis* with which I was familiar, and I tentatively identified it as *P. cordivalvata*, an insect I was fairly certain had not previously been reported in the county.

Two subsequent visits over the following few days failed to find further examples although two female *P. schioedtei* Haupt were obtained on 30 July. Interestingly, these specimens exhibited the habit of burrowing into soil when trapped by a clear-topped box, a behavioural trait observed by Chambers regarding the fossorial escape strategy employed by *P. cordivalvata* (Falk, 1991).

The original specimen was submitted to Dr Michael Archer who confirmed this difficult species and its status in Yorkshire, and to whom I tender my grateful thanks. *P. cordivalvata* is a Notable B species, found sparingly in southern England north to Lincolnshire (Day, 1988).—J. D. Coldwell, 16 Railway Cottages, Dodworth, Barnsley, S. Yorks S75 3JJ.

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Day, M. C. 1988. Spider Wasps. Hymenoptera: Pompilidae. *Handbk. Ident. Br. Insects*, **6**:(4).

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Some solitary aculeates and a moth reared with their parasites from apple logs in Hertfordshire, and a simple way of trapping them. Enid Evans of Berkhamsted, Herts, used to telephone me about the sphecid wasps originating from an old apple tree in her garden. When the tree died and was cut down in spring 1996 I was invited to share the logs with another hymenopterist and installed them upright on concrete in my garden at Welwyn. In 1996 various species were observed nesting in these logs and some, such as *Ectemnius cavifrons* (Thomson) and *Crossocerus megacephalus* (Rossius) certainly came with the logs. Empty sarcophagid fly puparia foretold the emergence of *Macronychia ungulans* (Pand.), the commonly quoted rearing records of which are from just like this situation. The *Macronychia* were found by chance observation expanding their wings or still teneral, but were not seen again. Presumably they visit logs only briefly for oviposition, unlike female *Eustalomyia festiva* (Zett.), which spends hours sitting on logs and tree trunks and oviposits in crevices around the entrance to *Ectemnius* burrows.

Eustalomyia hilaris (Fall.) likewise sits around likely sites for *Ectemnius* nests in wood and is the second commonest species in this situation in Hertfordshire (but has not so far occurred on the apple logs under discussion). I have yet to see *E. histrio*, which Smith (1971) stated to be the most plentiful species in the British Museum collection when introducing *hilaris* to the British list. Either statuses have changed, or the majority of specimens may have been collected in other circumstances.

In 1997 I covered the logs with the tubular form of white, non-woven agricultural fleece, folded over and weighted at the top and simply pushed loosely against the logs at ground level. This proved totally effective in trapping emerging flying insects. Small hymenopterous parasites and wood-boring beetles were retained. Large sphecids failed to chew their way past the threads. This is a more versatile arrangement than the Owen (1989, 1992) emergence cage for beetles (which seals the floor to the sides to trap crawling insects and provided a collecting bottle as in a Malaise trap) and could be used in the field on large items of dead wood or even standing tree trunks if used with a band of crevice-filling material round the top. Some wasps that fly upwards dessicated and died in hot weather. Some shelter and a source of moisture would help. Supplementary rain exclusion on top is needed to prevent absorption through the end grain of upright logs. The cover was removed at times to encourage nesting, but the nesting of some species will no doubt have been impeded.

The deep violet (sometimes black to our eyes) and blue-green rubytailed wasp *Pseudomalus violaceus* (Scop.) is new to the Hertfordshire list. Its host is the black sphecid *Pemphredon lugubris* (F.). Most of the emerging host wasps died before release and none were seen nesting. It cannot be known whether the parasite came with its host or has established from Welwyn stock. More than ten *P. violaceus* emerged in late April and another was trapped in a pan of water on 5.vii.97. Other emergences in 1997 (denoted em.) and nesters (n.) are listed below.

Lep., Oecophoridae: *Esperia sulphurella* (F.) more than ten em. in early May. Dipt., Tachinidae: *Phytomyptera cingulata* (R.-D.) (*Craspedothrix zonella* auctt) em. 1.v (known parasite of *E. sulphurella*). Sarcophagidae: *Ptychoneura cylindrica* (Fall.) 1 em. 1.v and both sexes em. 20.v, *Metopia argyrocephala* (Meig.) em. 15.v, *Macronychia ungulans* (Pand.) several em. 16.v. Anthomyiidae: *Eustalomyia festiva* (Zett.) 1 em. 20.v, others on uncovered logs later.

Hym. Chrysididae: *Pseudomalus auratus* (L.) examining burrow in uncovered log 5.v, *P. violaceus* (Scop.) more than 10 em. from 15.iv. Sapygidae: *Sapyga quinquepunctata* (F.) male em. 1.v, female em. 18.v. Megachilidae: *Osmia coerulescens* (L.) males em. 1.v (probable host of *Sapyga*). Sphecidae: *Trypoxylon*

clavicerum Lep. males em. 18.v, *Crossocerus annulipes* (Lep. & Brullé) 2 males em. 18.v, male em. 29.v, *Ectemnius cavifrons* (Thomson) male em. 18.v and n. later, *Pemphredon inornatus* Say females em. 25.v, *P. lugubris* (F.) female em. 11.iv, male em. 29.v, *Stigmus solskyi* Morawitz male em. 29.v—R. W. J. UFFEN, 4 Mardley Avenue, Welwyn, Herts. AL6 0UD.

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Smith, K. G. V. 1971. *Eustalomyia hilaris* Fallen (Diptera, Anthomyiidae) confirmed as British, with notes on other species of the genus. *Ent. Gazette* **22**: 55–60.

A second Devon locality for the nationally rare weevil *Cathormiocerus attaphilus* Brisout plus a new county record for *Miarus micros* (Germar) (Coleoptera: Curculionidae).—*Cathormiocerus attaphilus* is currently only known in Britain from The Lizard peninsula in West Cornwall and near Wembury in South Devon, and is accordingly given RDB 1 (Endangered) status by Morris (1987). The discovery of a new locality on the south-west Devon coast at The Beacon, Scobbiscombe Cliffs (SX625465), 20 & 21.v.1996, is therefore an important event. A single individual was taken from the maritime therophyte zone on the rocky cliff heads of this poorly-recorded section of the Devon coast, together with frequent specimens of the RDB 3 species *C. myrmecophilus* (Seidlitz) which occurred both on The Beacon and nearby Hoist Point (SX631460).

The vegetation where the *Cathormiocerus* were found typically comprises a sparse cover of annuals and other small or low-growing plants such as *Sedum anglicum* Hudson, *Plantago coronopus* L., *Spergularia rupicola* Lebel, *Jasione montana* L., *Thymus polytrichus* A. Kerner and *Silene uniflora* Roth. This is the MC1, *Armeria maritima—Cerastium diffusum* spp. *diffusum* maritime therophyte community of the National Vegetation Classification (Rodwell, in prep.). This vegetation type is of considerable interest for invertebrates, and other scarce species associated with it at Scobbiscombe include the ant *Leptothorax tuberum* (Fab.), the spider *Steatoda phalerata* (Panzer), grey bush-cricket *Platycleis albopunctata* (Goeze), the beetles *Opatrum sabulosum* (L.) and *Sibinia arenariae* Stephens, and the bee *Nomada fucata* Panzer.

Originally discovered at Whitsand Bay in East Cornwall (Clark, 1906), all subsequent records of *Miarus micros* have come from much further west, mainly the Lizard. Away from the Lizard, it has also been reported from Penzance in 1924 (Alexander, 1997) and Letcha Cliff, St. Just (SW355308), 16.v.1994 (Alexander & Foster, 1995). The adults are relatively easy to find by searching the flowerhead of its laval food plant—sheep's bit *Jasione montana*. During 1996, specimens were readily found in flowerheads on the cliffs above Hoist Beach and along The Beacon, Scobbiscombe, and also at Tregenna Cliffs, Veryan Bay (SW949402), in E. Cornwall, 17.v.1996. The former constitutes a new county record while the latter is the first report from this vice county since Clark (1906). These two new records begin to suggest that it will prove to be widespread along the southern rocky coasts of the south-west peninsula; coleopterists have tended to search for it only on The Lizard in recent years.—KEITH N. A. ALEXANDER, The National Trust, 33 Sheep St, Cirencester, Gloucestershire GL7 1RQ.

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***Hypoponera punctatissima* (Roger) (Hymenoptera: Formicidae) in South-East London.**—I found a single worker of this unusual ant under the loose bark of a sun-baked poplar log in Nunhead Cemetery, (VC 17, Surrey) on 23.x.1996. Despite further searching, it remained a lone specimen. Although often associated with conservatories, bakehouses and other heated buildings, *Hypoponera* is occasionally taken out of doors. According to Bolton & Collingwood (1975), it is widespread but sporadic and because of its uncertain endemicity it was not included by Falk (1991), however records "in the field" are rare. Such records are usually alate females, presumably dispersing and looking for new nest sites; indeed, Saunders (1896) caught one such female at Bromley, Kent, not above half a dozen miles from Nunhead. The fact that my specimen was a worker suggests that a "wild" colony was successful in this case. However, the naturalness of Nunhead Cemetery is debatable, and although it closely resembles a 50-acre woodland, it is surrounded by suburban London and any number of heated buildings from which the species might have ventured.—RICHARD A. JONES, 13 Bellwood Road, Nunhead, London SE15 3DE.

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BOOK REVIEWS

ANNOUNCEMENTS

Entomological Expedition to Madeira, July 1998

Experienced entomologists are needed to assist in a two week field-trip to The Funchal Ecological Park, Madeira in July 1998. The aim of the expedition is to primarily survey the Lepidoptera in the park. However, expertise in other groups would be welcome. The research will be conducted in association with The Parque Ecologico do Funchal, Centro de Ciencia e Tecnologia da Madeira (CITMA) and The University of Madeira.

Accommodation and transport will be provided. If sufficient funding can be raised, the costs of flights and subsistence will be subsidised or covered.

For further information or application to join the expedition (please include a c.v. with your application), contact Dr Andrew Wakeham-Dawson, Mill Laine Farm, Offham, Lewes, East Sussex, BN7 3QB, England. Telephone: 0044-(0)1273-473191.

EDITORIAL APOLOGY

The Editor would like to apologise for the late appearance of the final parts of Vol. 10. The first issue of the 1998 Volume (11:1) should be despatched to members in May.

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ARTICLES

SHORT COMMUNICATIONS

PROCEEDINGS AND TRANSACTIONS

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