THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

VOLUME 19
(1960)

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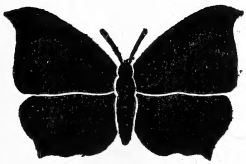
Edited by
W. N. LAWFIELD



The Amateur Entomologists' Society
1 West Ham Lane, London, E15

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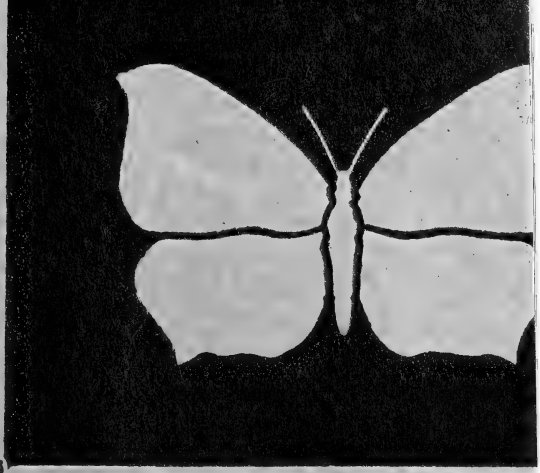

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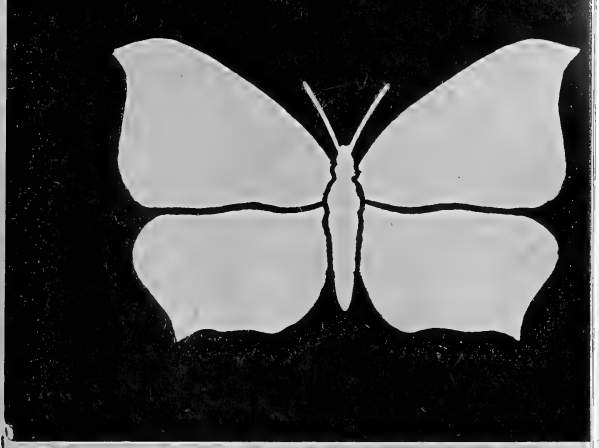

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

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EDITED by B. R. STALLWOOD

AES NOTICE
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Youth matters to: T. S. ROBERTSON, *38 Repton Way, Croxley Green, Herts.*

AES BULLETIN

No. 229

JANUARY 1960

SECRETARY'S LETTER

Members interested in the larvae of the British Lepidoptera will be interested to know that Mr. H. E. Hammond, F.R.E.S., 16 Elton Grove, Birmingham 27, has agreed to act again as Advisor on these larvae. As most members will know, Mr. Hammond preserves the larvae and it is usual for entomologists to send him their spare, less common larvae for preservation. Depending on the needs of the sender, Mr. Hammond either returns some of these, or sends other spares, preserved—or to be "blown". If any members wish to do this, they are requested to enclose 6d. for postage if larvae are required to be returned. The same applies, of course, for larvae sent up for identification only, and not for preservation.

The Field Studies Council has now published the 1960 programmes for the various Field Centres, and these may be obtained from the Wardens of the Centres. The weekly fee is now £8, or for shorter periods, 24/- a day. Members of the AES are reminded that Carnegie Bursaries can be applied for from the Wardens concerned, reducing the weekly fee by £3; AES membership number must be quoted.

The addresses are:—

Dale Fort F.C., Haverfordwest, Pembrokeshire.
Flatford Mill F.C., East Bergholt, Nr. Colchester, Essex.
Juniper Hall F.C., Dorking, Surrey.
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Preston Montford F.C., Nr. Shrewsbury, Shropshire.
Slapton Ley F.C., Slapton, Kingsbridge, Devonshire.
F.C. = Field Centre (not Football Club). Letters to be addressed to the Warden.

D. Ollevant.

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A THIRD BROOD OF *SMERINTHUS OCELLATUS* LINN. (Eyed Hawkmoth)

A fertile female of this species, which came to mercury vapour light at Brockenhurst, Hants, on the 28th May 1959, laid a small number of ova, which subsequently hatched, fed up, and duly pupated at the end of July.

Three of the moths emerged on the 24th, 26th and 28th August respectively, the first two being males and the third a female.

The female paired with one of the males on the 29th August, and commenced laying on the 30th. She laid a total of over 200 eggs altogether. These eggs commenced hatching on the 12th September, and by about ten days later all had hatched.

The first thing we noticed about these young larvae was that they were extremely torpid, and nothing we could do seemed to rouse them from their lethargy. They were supplied *ab initio* with the usual pabulum, i.e., apple leaves. However, the leaves were already somewhat stiff and leathery, owing to the season being somewhat advanced, which might well have been the reason why the larvae, for the most part, refused to feed.

By the end of about ten days only four or five stalwarts were left, in spite of such expedients as choosing leaves from the tips of twigs, moistening the food, and so on; and within two or three days these, too, had succumbed.

Our failure with this brood has been a great disappointment to us, as we consider a third brood of this species to be an unusual event. We should be pleased to hear from anyone who has ever managed to rear a third brood from any of the hawks.

Joy O. I. Spoczynska (751), P. Maggs (244).

PIERIS NAPI LINN. (Green-Veined White) IN THE INNER AND OUTER HEBRIDES

Our investigations into the distribution of the Green-Veined White in the Hebrides began on the Isle of Raasay in 1934, and led us successively to the exploration of the Isles of Mull, Skye, South Rona, Scalpay (Broadford), Longay, Fladday, Pabbay (Skye), Rhum, Eigg, Canna, Sanday, Muck, Eilean nan Each (off Muck), Soay, Coll, Tiree, and Gunna. In all of these islands, *P. napi* was reasonably common, whilst on the Heiskeir Reef, around the lighthouse, it occurred sparingly. On the other hand, before our researches began, the insect was supposed to be lacking completely in the Outer Isles, although several of the major members of that group had been explored for lepidoptera by various competent workers.

In 1936, however, one of our party, working in the Outer Isles for the first time, took a single specimen of *napi* on the Isle of Barra, in the southern portion of that chain. Even this capture was regarded at first as casual—a view dispelled in 1938 when we took the species commonly at Eoligarry, in the north of the island.

A little while later, in the same year, the butterfly was observed ovipositing upon the Common Scurvy Grass in the Isle of Eriskay. Almost simultaneously, it was seen flying near Stoneybridge, Isle of South Uist, along the shores of Loch Ollay, as well as in the lower portions of the beautiful wooded ravine of the Allt Volagir, near Arinambane.

Next, in 1944, it was discovered at Nunton, near Loch na Liana Moire, Isle of Benbecula. For a long time, this Loch na Liana Moire station was considered to mark the northern limit of the species. Nevertheless, in 1948, it was found in an alder wood in the southern part of the grounds of the Lews Castle, Stornoway, Isle of Lewis. This discovery, of course, yielded an enormous leap northward in its known distribution, but left a remarkable distributional gap involving the Isles of North Uist and Harris, as well as the islets in the Sound of Harris. Almost at once, however, further searches proved that the insect was present on the Isle of Ensay in the Sound, and in various habitats near Northton, Scarasta, Horgabost and Luskentyre, all four situated in South Harris. Besides these colonies, a very remarkable one was met with in 1952 on the Shiant Islands, an isolated group of rocky islets lying off the south-east of Lewis. South Harris stations, additional to those listed above, were discovered near Horsaclett, Seilebost and Loch Drinesheader in 1955. In the same year, likewise, *Pieris napi* was encountered in a North Harris locality along the dune margins at Husinish.

Since then, in 1956, three more stations have been listed in diverse areas, the first at Leverburgh in the extreme south of Harris, another at Soval Lodge in Mid-Lewis, and a third at Garrabost on the Eye Peninsula, Stornoway. Again, in 1957, the insect was seen at Laxdale, Isle of Lewis, flying in considerable numbers along the roadside gutters leading to the Sands of Cong.

Finally, we have taken it in other localities north of Stornoway, along the Coll River and at Back. The last-named station, which constitutes the most northerly point the species reaches in Lewis, was detected in 1959; the other was located earlier when we were studying the vegetation of the brackish pools lying near the Coll River just before it reaches the sea.

For the most part, the chosen habitats of *Pieris napi* in the islands are found in marshes on the moorlands and machair, around shallow lochs and lochans, in damp hollows and runnels near the sea and in marshy clearings in the Stornoway woodlands. In such localities, the favoured larval foodplants are *Nasturtium officinale*, *N. microphyllum*, *Cardamine pratensis*, *C. hirsuta*, *C. flexuosa* and various species of *Cochlearia*, more especially *C. officinalis*.

In the Hebrides, both Inner and Outer, the species is not really rare, and occurs in two broods. Our earliest date for catching it on the wing is April 14th, upon which date it was taken in 1946 on the Isle of Rhum, just before a violent snowstorm. Our latest captures in any season, made chiefly on the Isles of Coll and Canna in 1936, cover the last fortnight in September.

The forms flying in the islands in both broods differ but little in general appearance from those met with on the Scottish mainland. Still, I have

captured dusky insects on the Isle of Benbecula, approaching in facies those occurring near Kinghorn, in Fifeshire. Similarly, on various occasions, I have seen banded and transitional forms in the marsh near Kinloch, Isle of Rhum, where the insects are very common. Broods reared from females taken in the latter station showed but minor departures in pattern from normal insects captured elsewhere.

J. W. Heslop Harrison (716).

NOTES ON THE BUTTERFLIES IN 1959

Colias croceus Fourcr. (Clouded Yellow). Four specimens were seen in the West Country between 26th August and 12th Sepember. The sightings were as follows:—One at Exmouth on the 26th; two at Rousdon, near Lyme Regis, Dorset, on the 28th August; and one form *helice* Hb. near Penzance, Cornwall, on 12th September. In addition, two were seen at Leatherhead, Surrey, on 27th September.

Vanessa cardui Linn. (Painted Lady). Very few were seen. One on 26th August at Exmouth. Three on 28th August at Rousdon, Lyme Regis. Four on Portland Bill, Dorset, on 30th August. One at South Molton, Devon, on 6th September.

Vanessa atalanta Linn. (Red Admiral). A few were seen nearly every day from 20th August to 13th September. On 20th and 21st August one was seen each day at Morne, Co. Kildare, Eire. On the other days numbers never reached double figures except on 12th September. On this day, between 2.45 p.m. and 5 p.m., ninety were seen on Prah Sands near Penzance. All but eight of them were flying from West to East, parallel with the beach. These eight were flying the other way. Two of the eighty-two left the beach and flew high out to sea.

Two other well-known entomologists told me that they were in Penzance that day and saw very large numbers there. I have since heard from friends, with whom I was staying in Helston and who were with me on Prah Sands, that large numbers were to be seen in that district (Helston) after the 12th.

These butterflies were flying singly and fast, all in the same direction, at intervals. There were never more than two or three in sight at once and none settled on any flowers as there were none actually down by the beach.

The earliest *V. atalanta* seen this year was on 5th July at Bellingham, London.

Polygonia c-album Linn. (Comma). Two at Helston on 12th September. One at Chelmsford, Essex, 19th July.

Lycaena phlaeas Linn. (Small Copper). These were very common around Helston about 8th September. I have nowhere seen so many at one time. There were as many as ten around one small patch of mixed flowers.

H. N. E. Alston (2609).

CRICKETS AT LARGE

The House Cricket, *Gryllulus domesticus* (Linn.), is a domesticated alien from a warmer climate than our own, and as such lives out of doors only in areas such as rubbish dumps which have other sources of heat than the sun. Burr (*British Grasshoppers and their Allies*, London, 1936) remarked that crickets do however venture out of doors in particularly warm seasons. In the second week of September 1959 I found three such specimens. The first spent the whole of one night sitting on the top of a lamp standard outside my home in London stridulating. It sounded as though the lamp had reverted to being an old gas lantern swinging and creaking in a non-existent wind. Two nights later the insect reappeared on a fence across the road, whence it was plainly audible inside my home with the windows shut. After chasing it around the gate-post several times I succeeded in trapping it. The other two examples were heard in St. Helens, Lancs. One was stridulating after dusk in a public garden, the other doing likewise in a deep crack between the pavement and garden wall of a house.

R. W. J. Uffen (1660).

COLLECTING HINTS—January

The Macro-lepidoptera

Moths on the wing this month include *Erannis defoliaria* Cl. (Mottled Umber), *Theria rupicapraria* Schiff. (Early Umber), and *Operophtera brumata* Linn. (Winter Moth). The females of these three species are wingless and can be found only by searching hedgerows, etc., after dark.

Aegeria andrenaeformis Lasp. (Orange-Tailed Clearwing) occurs in many counties of southern and midland England and is often quite common wherever its foodplant, the Wayfaring Tree, is plentiful. The old emergence holes are an easy way of detecting the presence of this moth in a certain area as they are easily seen. Twigs about $\frac{3}{4}$ in. across should be examined for a small hole covered by a thin cap which has usually shrunk slightly below the surface of the bark. Cut off the stem a few inches below the hole and about a foot above, the stem should then be placed inside a cage, embedded upright in a tray of damp, clean sand; apart from occasionally wetting the sand the cage should not be interfered with until the moths emerge in May or June. The hills around Purley and Coulsdon often abound with this species.

As this is an even year the galls containing larvae of *Aegeria flaviventris* Staud. (Sallow Clearwing) may be found in the thinner stems of sallow. The stems should be cut and preserved in a similar manner to the last species. A beetle (*Saperda populnea* Linn.) also forms galls on the sallow, but as these are bigger and in thicker stems they are usually not mistaken for those *A. flaviventris*. It occurs in many localities around London, the commons of Esher, Chobham, and Pirbright, to mention only three. For more explicit details on rearing clearwings, members should consult AES Leaflet No. 18.

B. F. Skinner.

The Smaller Moths

Generally speaking there are two methods of collecting root-feeding larvae. One method is to seize the stem of the required food-plant and give it a good tug. If the ground is fairly soft, the result usually is that part of the root will come up, having broken off at a point where the larva is, or has been feeding. Often the larva is in that portion of the root which comes up. In any case, the result gives a fair indication as to whether there are larvae present, and then one can use the second method, which is to dig up the roots with a suitable implement, the fern trowel mentioned in my December "Hints" being an ideal one.

One plant which is usually easy to pull up is Yarrow, *Achillea millefolium* L., and several species of *Dichrorampha* (=*Hemimene*) may be reared from it; the commonest one seems to be *D. plumbagana* Treits.

Other similar plants are Ox-Eye Daisy and Tansy (*Chrysanthemum* spp.) which support several species of this same genus.

An interesting Pyrale to look for during the winter months is *Homoeosoma sinuella* Fabr., the larva of which feeds in the crown of the roots of Ribwort Plantain, *Plantago lanceolata* L.

If the Holm Oak grows near you, have a look at its leaves for the blotches of *Lithocolletis messaniella* Zell.: the moth will emerge in late April or early May.

D. Ollevant.

The Coleoptera

For my collecting hints this year I propose to deal with a small group of beetles each month, choosing them at random from the British List, and giving notes on their habitats and distribution. To start with I have chosen the genus *Dromius* of the family Carabidae.

We have 12 species. The two commonest are *D. linearis* (Ol.) and *D. melanocephalus* Dej. which are found in litter of all kinds, amongst roots, in grass-tufts and under stones. Both are widespread but records are still wanted for a few English and most of the Welsh counties. *D. notatus* Steph. and *D. vectensis* Rye are chiefly coastal. The former is common where it does occur and is widely distributed but the latter is recorded only from the counties between Devon and Kent. Both should be looked for in litter or at the roots of plants, especially near the sea.

The next two species are rare Fenland beetles found in sedge and reed-beds

or in the litter from them. *D. longiceps* Dej. must be sought in the fens of Hunts., Cambs., Norfolk, Suffolk and Lincs., whilst *D. sigma* (Rossi) has been noted from Hants, Surrey, Middlesex, Kent, Hunts., Suffolk, Yorks., and Cumberland.

The remaining five species are found under the bark of various trees. *D. meridionalis* Dej. and *D. quadrimaculatus* (L.) are the commonest. They are widespread but records are still required from a few English and most Welsh counties. *D. quadrinotatus* (Panz.) is a little less common but has a similar distribution. *D. quadrisignatus* Dej. and *D. agilis* (Fab.) are decidedly less common, the former being found chiefly in the south and the latter in about half the counties of England and Wales although it probably occurs in most of them. Our last species is the rare *D. angustus* Brulle. It seems to be associated with pines. Joy says that it is found chiefly under burnt pine bark in early spring, but it can also be beaten from the branches. The records of this species are from Devon, Hants, Berks., Surrey, Cambs., Suffolk, and the Scottish Highlands.

My own records of the six commonest species indicate that they are to be found during all the months of the year and this is probably true of the other species also.

K. C. Side.

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SOME NOTES ON COLLECTING IN QUEENSLAND

There are three main entomological regions in Australia. The northern region comprises the tropical rain forests of the east coast from Brisbane to Cape York and across the tip of Australia to Darwin. This belt is fairly narrow, being at its widest no more than a hundred miles wide. It is bordered on the east by the ocean and on the west by the Great Dividing Range. The southern region takes in the south-east and south-west portions of Australia together with Tasmania. In this region are found temperate rain forests, alpine, and dry to semi-desert areas. Most of the indigenous butterflies are found in this region, an example being the members of the genus *Heteronympha* (Satyridae) which has its headquarters in Victoria. The third region is the desert, a vast area totalling about three-quarters of inland Australia and where few butterflies are to be found.

The best months of the year in which to collect in the northern region are those of the rainy season, from December to May. However, travelling from place to place can become difficult at this time because of the flooding of the enormous number of small and larger streams. Roads here are few and generally poor, due no doubt to the small number of people living in this region. However, there are over a hundred species that can be taken during the dry season from July to October. The islands of the Great Barrier Reef are always worth a visit because as well as their scenic beauty they harbour many species of butterflies.

In northern Queensland the only common flower is the Lantana, and if a patch of this can be found in a clearing in the jungle, then the collector is sure of a full bag. I spent many hours in such a spot a few miles west of Cairns at the foot of the Divide. The clearing was grassed and bordered on three sides by Lantana and jungle and on the other by a mountain stream. It proved to be a goldmine attracting many species of Nymphalids, Papilios and tropical Lycaenids. "Skippers" and "Browns" also were taken flying over the grass in the shady spots, whilst species of the genus *Terias* were taken in the grass in the sun. A highlight of my collecting here was the capture of *Papilio ulysses joessa* Butler (Ulysses Butterfly), the only representative of the Gloss Papilios to fly in Australia. A very battered female almost fell into my net as she flew in from over the stream, and after having dispatched her, I placed her with her wings outstretched on the Lantana. Several Ulysses had been seen soaring over the tree tops ninety to a hundred feet above us. It was not long before a male sensed her and he fell eighty or so feet almost vertically to inspect her. He was quickly caught and eventually nine perfect males were secured in this way. The distance and speed that these butterflies fell was quite astonishing and caught the interest of some visiting university students nearby. They became ardent spotters for me and one even tried his hand with the net and was very excited when he secured a beautiful male *Cethosia cydippe* Fabr. with a terrific barndoor swing.

Once to improve my position I climbed onto a fallen tree that lay among the Lantana. I was doing quite well on this elevated position when a male Cairns Birdwing arrived and began feeding at the Lantana. The Birdwings (Papilionidae) because of their great size cannot rest on the flowers, but sip the nectar while hovering. I waited for a while but he did not get within ten feet of my net. Finally, after waiting for about five minutes and anxious lest he depart, I edged further out along the branches of the tree. I arrived within reach of him, but as I swung the net the tree collapsed and dropped me into the Lantana which was about eight feet deep! It took me some time to get out of the tangle, scratched and perspiring—but with my Birdwing. The tree was quite rotten although it looked most solid.

The spiders of the jungle could cause some quickening of the pulse if they were suddenly noticed hanging a few inches from one's face. Some of them were particularly nasty looking individuals. Whether they were dangerous or not didn't matter to me—I gave them best every time.

The mangrove swamps produce many beautiful and interesting butterflies, but unfortunately they also harbour many hungry mosquitoes and several dangerous species of snakes. The infamous Taipan lurks here and I was never sorry to quit these depressing areas no matter how successful with the net I may have been.

I have visited this region twice, the first time in August 1955 and the second in May 1957. It is my hope to make another visit there next December-January. Cairns is over two thousand miles from Melbourne and takes seven days of hard driving to get there and as many to return. However, to me, the three weeks spent there is worth every minute and mile of the long trip.

GRAHAM R. FORBES (3010).

Maryborough, Victoria. 12/v/59.

JUNIOR NEWS SECTION

Correction. In the Junior News Section for November 1959 (*Bull. amat. Ent. Soc.*, **18**: 83) an unfortunate error arose in the report of a capture made this year by Ian Whapshott (2753*). The remarkable specimen he took was in fact a variety of the Comma butterfly, *Polygonia c-album* Linn. ab. *suffusa.* The remarks in the same paragraph refer to this same species, and not to the Small Copper (*Lycaena phlaeas* Linn.) as would appear.

Editorial. Quite often I am asked by Juniors what they can do in the way of entomology when they have collected specimens of all the butterflies in their own area, and when it is impossible to arrange to go far afield to sample pastures new. There are, of course, almost unlimited fields open to them, since insects of one kind or another are found almost anywhere. It is the "one kind or another" which proves the stumbling-block. I try to persuade people to turn their attentions to, say, beetles, or ants, insect behaviour, or the variety of insects in one small area. However, for many people, the fascination of butterfly-catching has no carry-over to other topics. More's the pity; but for such unfortunates I can recommend "variety-hunting."

If you consider any common species, you will find that examination of each and every specimen seen will produce a surprising range of variation of a minor nature, with here and there, the really unusual specimen or "aberration." Many people get great enjoyment from collecting these varieties. Some feel they need to claim that what they are doing has scientific importance; others (and I number myself among them) collect varieties because they like to be in the open, looking at butterflies and collecting the specimens they find attractive. There is much to be said for both points of view—and, of course, they are not mutually exclusive.

To illustrate my point I have sketched some specimens of the Small Copper (*Lycaena phlaeas* Linn.) taken by my son and myself over the past few years. (Some of these have previously been shown in AES Exhibitions.)

News from Members

R. Woodbridge (2295†) caught a Red Admiral (*Vanessa atalanta* Linn.) in his garden on 9th November. This is an unusually late date for it. He has kept the specimen alive and is going to see if it will survive an English winter —even in captivity.

P. Williams (2616*), who was with me at the time in Pembrokeshire, took

two extreme varieties of the Small Copper butterfly on the last afternoon of our visit: ab. *album*, with white ground colour, and an ab. *suffusa* which was almost uniformly black in colour.

Brian Sheen (2596*) has given me a very interesting account of a holiday in East Anglia, which I hope to include in next month's *Bulletin*.

Colin Whitehead (2408*) had a successful season in Scotland, where he took, among other species, the Scots Argus (*Erebia aethiops* Esp.). In the summer, in England he managed to get the Silver-Spotted Skipper butterfly (*Hesperia comma* Linn.)—a species which had previously eluded him. He also was among the many people who went to Loch Garten to see the Ospreys nesting.

T. S. Robertson (2417), *Youth Secretary.*

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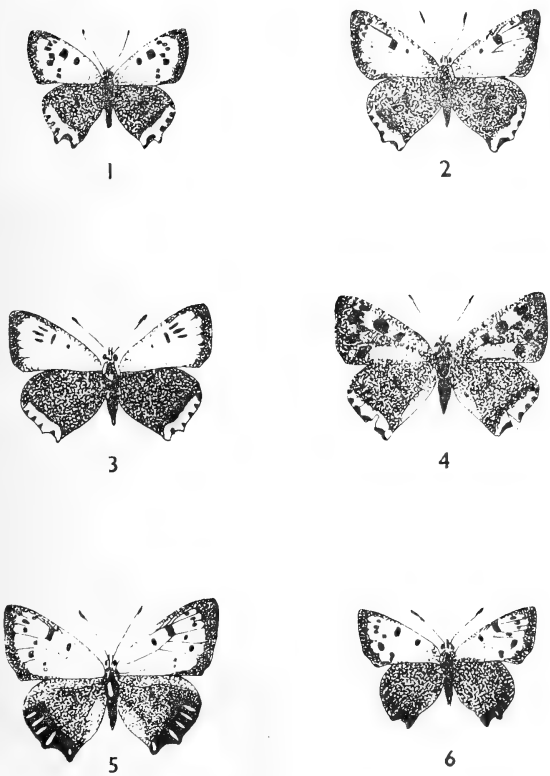

ABERRATIONS OF *LYCAENA PHLAEAS* LINN. (SMALL COPPER)
(approx. natural size)

1. ab. *minor* Harefield, Middx. 4-8-1955.
2. (not named) Queniborough, Leics. 25-8-1952.
3. (not named) Watford, Herts. 31-5-1958.
4. ab. *suffusa* Watford, Herts. 19-8-1958.
5. ab. *radiata* Chorleywood, Herts. 5-9-1959.
6. ab. *obsoleta* Dale, Pembs. 15-9-1959.

HALF-YEARLY REPORT OF THE WAINSCOT STUDY GROUP

This title is really a misnomer, since it is considerably more than half a year ago when I wrote the last of these reports; but, as the old saying goes, 'better late than never'. The main excuse, of course, is pressure of work, as heretofore. I will proceed now with news of our Group, and try to avoid a similar delay in future.

At the time of writing (October 1959) we have 52 members. Of the four new members who have joined the Group since our last report (*Bull. amat. Ent. Soc.*, **18**: 4), two are Juniors; this may represent 50% of the *new additions* to our membership list, but the proportion of Juniors to our whole membership is, by contrast, very different—eight Juniors out of 52 members is only 15%. We do feel that Junior membership could be improved, and we would welcome more boys taking an interest in Wainscots; there is great scope for finding out by observation some of the missing links in the life-histories of certain species, the early stages of which are as yet little known.

Our four new members, unfortunately, do not represent any counties additional to those we have already on our list; Surrey and Hampshire still continue to be the best represented

Once again we have been unable this year to organise any full-scale field meeting or expedition for the Group; neither were we, after all, able to arrange for a Group exhibit at this year's Exhibition as we had hoped. We trust, however, that both these lamentable omissions will be remedied in 1960.

We are still receiving records—many of them very interesting ones. We have now made a start on the segregation of these, but it will be some considerable time before we can commence the proposed Monograph of British Wainscots. In the meantime records (except *Leucania pallens* Linn. and *L. impura* Hb.) should continue to be sent to the Joint Conveners. Livestock of any of the 36 species is always welcome for breeding experiments and observation, but must be accompanied by full data.

In conclusion, we feel we must make a further appeal for members to join from Scotland, Ireland, Wales, Cornwall, Shropshire, Herefordshire, Northumberland, Co. Durham, the Isle of Man, Lincolnshire, Bedfordshire and Oxfordshire, as these are still not represented. Only then will our country-wide survey be anything like complete.

Joy O. I. Spoczynska (751), P. Maggs (244),
Joint Conveners, Wainscot Study Group.

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REVIEW

Key to the Names of British Butterflies and Moths. R. D. Macleod. Pp. 86 + vii. Pitman, London. 1959. Price 15/-.

This is the first book giving the meaning and origin of the scientific and common names of the British Lepidoptera since the Accentuated List of the British Lepidoptera was published in 1856. This book is recommended to all who are interested in the Lepidoptera and should do much towards the better understanding of the nomenclature. There is an excellent introduction, followed by the scientific names arranged alphabetically in their genera, separated into "Butterflies", "Macro-Moths" and "Micro-Moths". There is also a short selected list of common names, also arranged alphabetically under the three sections.

D. O.

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CORRIGENDA

We must apologise for the errors in Mr. Ollevant's monthly article on the Smaller Moths (*Bull. amat. Ent. Soc.*, **18**: 81) caused by a mislaid galley proof. The corrections are as follows:—

Page 81.
Line 6: *Adea* should read *Udea*.
Line 16: *ocnevostomella* should read *ocnerostomella*.
Line 20: *Coleophera* should read *Coleophora*.
Line 21: *Metznerva* should read *Metzneria*.
Line 22: *Isophroctis* should read *Isophrictis*.
Line 28: *cnicolana* should read *cnicicolana*.
Line 29: *Coleophea* should read *Coleophora*.

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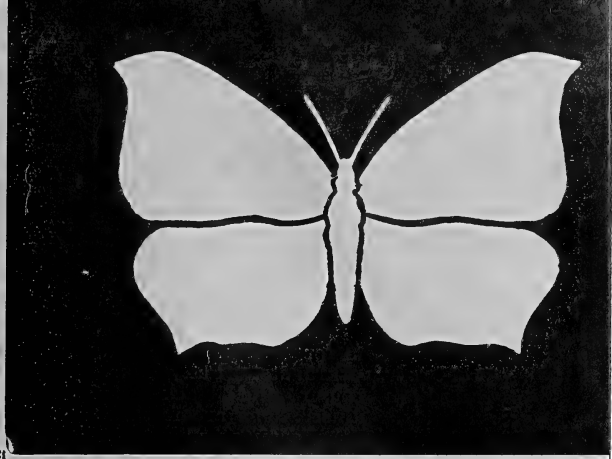

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A E S BULLETIN No. 230 FEBRUARY 1960

SECRETARY'S LETTER

In August 1935 this Society was founded by Mr. L. R. Tesch, it being known then as the "Entomological Exchange and Correspondence Club". To commemorate the Silver Jubilee in 1960, the Council plan to publish a special issue of the *Bulletin* in August, the month when the normal *Bulletin* is not published. It will be under the editorship of Mr. J. C. Hobbs, and contributions to it will be by invitation.

Mr. P. W. Cribb, in his letter to the *Bulletin* (Vol. 18, page 76), criticised Field Meetings. I have since been assured by him that his remarks do not apply to the London Natural History meetings to which the Society is invited. These are nearly always held within the LNHS area, which is all that is enclosed within a radius of twenty miles from St. Paul's Cathedral, and held with the idea of studying the ecology of this area.

D. Ollevant.

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LETTER FROM AVIEMORE, INVERNESS-SHIRE

I write this in late October, in many respects an excellent season, which is slowly drawing to a close. Summer set in early in May, followed closely by the visitors, nearly all of whom have enjoyed really perfect conditions here in Speyside. Among the many entomologists I have enjoyed having here, the sole complaint has been the earliness of the season in the early part of the year, causing some of them to miss their objective. My only complaint has been that business has been so good, that entomological studies have very largely been done through my guests' eyes. However, I live here and there is always next year. It is, nevertheless somewhat annoying, after placing one's trap at the disposal of various visitors, to learn that three new species were obtained during that time. Still the customer must come first!

I still feel that the early part of the year is the most interesting and at that time I have the field more or less to myself. It slightly overlaps the ski-ing season but that presents no great difficulties. *Brachionycha nubeculosa* Esp. is a very pleasant sight on the birch trunks at the end of March. I am informed that they are only found there just after emergence and my impression is that this is very probably correct. At least the quantity attracted to m.v. light far exceeds that found on birch trunks and I have yet to find a worn example on a trunk.

The commonest of the sallow visitors is *Orthosia gothica* Linn., with a great range of variation, including ab. *gothicina* in great variety. I was pleased to capture a fine var. *circumsignata* in my garden on 24th April. Having reared a large brood of pupae from one of the *gothicina* forms, I am hoping for a fine bred series of aberrations next year.

Endromis versicolora Linn. was quite scarce this year and all my pupae from 1958 are overwintering again. Perhaps they had advance information that our local birches were going to be "good for nothing" in 1959. At any rate birch foliage in Aviemore suffered badly from many causes, including a small beetle, some five common autumnal Geometridae and then a plague of aphides. Consequently all the leaves were full of holes, the aphides made certain that little sap got to them and later the prolonged drought was the last straw. A good coloured picture of birch foliage in a book would have been more appetising.

The first of my new species this year was *Odontosia carmelita* Esp., on 27th April. A cold spell then set in at night and I failed to find another until 7th May when it was too late, only worn examples being seen. The days were fine and sunny and our sole Hairstreak, *Callophrys rubi* Linn., was well distributed over the local moors. *Saturnia pavonia* Linn. also quartered the moors for females in some numbers.

On 14th May, as the season was an early one, I decided to make an attempt for *Anarta melanopa* Thunb., which necessitates a stiff climb to the top of the Monadhliaths nearby. I arranged to accompany Dr. de Worms who introduced

me to the classic method of ensnaring these skittish moths in their elevated haunts. At 2,000 feet upwards, where *melanopa* skips about like a grey shadow in the sunshine, the bearberry *Arctostaphylos uva-ursi*, does not blossom, so we, or rather I, carried a sack-full of blossom from a lower level. On arrival at the top, the blossoms were placed in small piles on the track, to attract the moths who, so far as I know, have never seen bearberry blossom. Several were later captured on this "bait" but in the meantime I had found it quite possible, with patience and some craft, to net a small series on the moor. It was quite fresh and possibly less active than usual due to the sun being somewhat obscured. In the same locality *Isturgia carbonaria* Clerk was in good condition, so I added to my small series already taken on a local moor which is only about 800 feet above sea level. It would appear that the emergence time of this species is retarded at higher altitudes. I had seen slightly worn ones a week earlier on the lower locality.

At about the same date *Pieris rapae* Linn. began to infest my garden, very craftily laying their single eggs in inconspicuous places on my cabbage plants. It was little consolation to me to be told that it was not usually so common.

Hadena conspersa Schiff. visited the environs of my trap several times in late May. I was later to be introduced to its breeding headquarters, a short section of railway bank where campion grows in profusion. Scores of larvae of *H. cucubali* Schiff., were feeding on the campion seeds, so a species which seemed scarce in Aviemore is now known to be common.

A visit to nearby Loch an Eilean, on 20th May, resulted in some early records of dragonflies. *Libellula quadrimaculata* Linn. was well out and a very recent emergence of both *Pyrrhosoma nymphula* Sulzer and *Enallagma cyathigerum* Charp. must have taken place. No mature specimens of these red and blue Damselflies were seen but literally hundreds of the immature flies were flitting about with wings glistening in the sunshine.

In Aviemore, needless to say, industrial melanism is unknown and *Biston betularia* Linn. is a white moth with black spots. On 25th May, to my surprise, an example of ab. *insularia* came to my trap. So far as is known, this is a first record for the district and I wonder if this is a forerunner of black moths with a few white spots in years to come. I must change to smokeless fuel at once.

On 26th May I visited Inverness-shire with Commander and Mrs. Harper for the purpose of seeing *Carterocephalus palaemon* Pall. The date, though early, proved to be just right. The males were a little worn and the females were only just out. Those of you who have been fortunate enough to gain experience of this butterfly, in the Northamptonshire woodlands, would be astonished at its Inverness-shire habitats. It frequents open downland but does seem to haunt the few scrubby bushes. Nearby woodlands produced none.

Late May saw the beginning of a constant flow of entomologists to my establishment. To several of these visitors I am indebted for local information that I might have taken many years to find out myself. Mr. Michaelis, while sweeping local birches for sawflies, in the sunshine, captured an *Aegeria culiciformis* Linn. There is only one previous record of this species in Aviemore. Mr. Noble discovered *Comacla senex* Hübn., near Boat of Garten, by m.v. light with his portable generator. In endeavouring to follow his example, I recorded one *Chloroclystis debiliata* Hübn. by m.v. light at the same locality three days later. There seems to be only one previous record for this from Scotland. I failed to find *Comacla senex* however. While Messrs Collin and Fonseca were here in late May and early June, several Diptera new to Britain were recorded in Aviemore.

In early June it was very pleasant to observe that *Euchloë cardamines* Linn. was still further increasing its numbers here. We have so few butterflies in Bedenoch that every one, however humble, is of value.

Some of my old friends of years ago in the south of England will remember the excitement aroused during our Glen Lyon trip by *Psodos coracina* Esp. I discovered it commonly on a 3,000 feet high plateau early in July 1955. On that occasion it was in good condition but the date was rather late, according to information supplied by other more knowledgeable persons. I had, consequently, some doubts about its correct emergence date. On 10th June, having the good fortune to get all the guests to take a packed lunch, or "piece" locally, I persuaded my wife to accompany me to the high tops. The local private road into the Monadhliaths can only be used on foot unless the key is borrowed to the gate. As we arrived by car at the gate, the gamekeeper and his assistant were about to drive up the hill in their estate van. I requested permission to drive through but he offered to give us a lift to a point about two thirds of the

way up. A recent cloud burst had damaged the road near the top so it was not negotiable until they had done some repairs. The day was promising, some sun but exceedingly windy. We tramped the last third into the teeth of the gale and I despaired of seeing any sign of *P. coracina*.

After a picnic lunch in a hollow, out of the wind, I decided to wander off towards Geal charn Mor, 2,702 feet, endeavouring to keep on the lee side of available humps in the ground. After having seen several *P. coracina* whipped away out of sight by the wind, I worked out a scheme for capturing a short series. I walked slowly across the wind, carrying my net on the end of a three feet long stick sticking straight in front of me and as close as possible to the ground. I found that by walking slowly, the moths were disturbed just about level with the net. The wind whipped them into the bag. The moth was quite plentiful and in excellent condition. It did not seem to occur below 2,500 feet and particularly favoured the mountain detritus areas, areas sparsely covered by crowberry and lichens with bare patches of detritus. The females do not fly, so far as my observation goes, they are quite small in size, compared with the males and very noticeably paler than the palest male. *P. coracina* is stated to be commoner in the odd years and, in order to get personal experience of this, I intend to investigate the species again in the same locality next year.

The earliness of the season, in some species, was clearly shown by the appearance of *Aricia agestis* ssp. *artaxerxes* Schiff., on 15th June. Positively its first appearance last year was 28th June, a rather late year at that time.

Vanessa atalanta Linn. appeared in the garden on 26th June and I hoped to find larvae later, on the local nettles but it was not fulfilled. Our *atalanta* seem all to be migrants, including those that still to-day delight our eyes in the village.

At the beginning of July, having a guest who was anxious to obtain larvae of *Endromis versicolora* Linn., I described the exact spot where I knew there was a batch of larvae. I had observed the ova early in June, but in the interim a bulldozer had been in operation, unknown to me. The bush had been knocked about and the larvae, which should still have been feeding in a little community, scattered. However, with considerable difficulty, he managed to find about a dozen. I joined him in the latter part of his search and later we successfully searched for *Coenonympha tullia* Müll. After leaving him, to return to my more mundane duties, I decided I might as well have an Aviemore *tullia* but failed to find one!

I was very pleased to find *Itama brunneata* Thunb. in some numbers in a very restricted area of old Caledonian pine forest near Glenmore, hard by our new ski road. Several females were taken and all laid eggs which apparently do not hatch until the following Spring. I hope to obtain more information on this subject next year, if and when my ova hatch.

On the 9th July I found an early example of *Sympetrum striolatum* ssp. *nigrifemur* Selys, a local dragonfly which later proved to be fairly abundant. Mr. Gardner, who stayed with me in early August, informed me that this is a good species, which should be known as *Sympetrum nigrescens* Lucas. He was pleased to get a good series and was good enough to present me with a couple of males perfectly killed to preserve the red colouring. Incidentally, I observed this dragonfly again on 1st October in company with *Sympetrum scoticum* Donovan. For all I know, it is flying there still, in this endless summer.

Late in July I tried to repeat the success of 1958 in obtaining the local moorland *Apamea assimilis* Doubl., but I was a few days too soon. Other residents here achieved some success in the last week of July. I am reminded of the fact that it rained and rained and rained during the evening of 23rd July in Badenoch. I visited Commander Harper in Newtonmore with the intention of trying Dalwhinnie for *A. assimilis* but, needless to say, I got no further than his house. At this date, too, *Erebia aethiops* Esp. started to appear locally. It seems very widespread but not very variable in Aviemore.

Late July and early August is the peak time in Badenoch for lepidoptera, but I suppose our 50 odd different species in a night must seem poor to the Southerners, or Southrons as they are termed here. Still, our 50 does include *Diarsia dahlii* Hübn., *Triphaena sobrina* Guen., *Enargia paleacea* Esp., *Parastichtis suspecta* Hübn., and *Plusia bractea* Fabr. If you are determined and lucky, *Ammogrotis lucernea* Linn. can be obtained. I know where it is, I know when it is, but I am blowed if I know how it is captured. It flies in the afternoon sunshine, at great speed over the cruel scree slopes. It ought to visit sugar and m.v. light at night but our Badenoch race just will not play the game.

At Feshiebridge, a few miles from here, are a number of well-established ash trees where, Commander Harper and I hoped, *Atethmia centrago* Haw. might occur. We took our generator there on 20th August and, shortly after lighting up, an obvious "sallow" arrived. I spotted it flying round the sheet but had no net, so Commander Harper had the honour of making the capture. It was *Tiliacea citrago* Linn., another addition to our local list. Shortly after, I also captured one but we saw no sign of *A. centrago*.

September brought some of the usual migrants but no rarities: *Agrotis ipsilon* Rott., *Lycophotia porphyrea* Schiff., and of course *Plusia gamma* Linn. The latter actually offspring of an earlier immigration. *Allophyes oxyacanthae* Linn. appeared on the 12th, *Colotois pennaria* Linn. on the 15th, and *Erannis aurantiaria* Esp. on 3rd October. Thus the activities of lepidoptera in Badenoch dwindle away in the face of coming winter. At least the calendar shows the approach of winter and hibernation. The stags are roaring in the hills, the migrant birds have flown away and only man still believes in summer. Guests still come and go, revelling in the glorious colours of the Highlands in autumn.

I shall not be entering into hibernation this winter, the ski bindings in the porch are beginning to whisper of coming snow and slalom courses in Corrie Cass. The ice axe is beginning to shiver at the thoughts of plunging into hard packed ice on Cairngorm. Aviemore will have a short spell of Highland peace before the scene will be livened up with the ski-ers bright colours.

PHIL LE MASURIER (978).

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COLLECTING HINTS—February

THE MACRO-LEPIDOPTERA

Many species of larvae are to be obtained this month by searching woods and downs at night with the aid of a torch or paraffin lantern. All low-growing plants and shrubs should be carefully scrutinised, even if they bear no signs of foliage. Although the majority of larvae found this way will be commoners such as *Trinhaena comes* Hübn. (Lesser Yellow-underwing), *Lampra fimbriata* Schreb. (Broad-bordered Yellow-underwing), *Polia nebulosa* Hufn. (Grey Arches), *Diarsia brunnea* Schiff. (Purple Clay), and *Amathes xanthographa* Schiff. (Square-spot Rustic), there is always a good chance of finding several of the localised species, *Amathes ditrapezium* Borkh. (Triple-spotted Clay), *A. stigmatica* Hübn. (Square-spotted Clay), *Anaplectoides prasina* Schiff. (Green-arches), and *Pachetra sagittigera* Hufn. (Feathered Ear). The last mentioned moth has been obtained by this method by searching various grasses growing on the downs between Boxhill and Reigate.

If the weather is mild, many of the hibernators will be on the wing, these include *Eupsilia transversa* Hufn. (Satellite), *Lithophane socia* Hufn. (Pale Pinion), and *Conistra vaccinii* L. (Common Chestnut). Other moths include *Biston strataria* Hufn. (Oak Brindled-beauty), *Erannis leucophaearia* Schiff. (Spring Umber), *Phigalia pilosaria* Schiff. (Pale Brindled-beauty), and *Apocheima hispidaria* Schiff. (Small Brindled-beauty). The females of all but the first species are wingless.

B. SKINNER.

THE SMALLER MOTHS

If there is a mild spell towards the end of this month, or in March, the Tortricid, *Tortricodes tortricella* Hübn., may be found flying during the day in woods where there are Oak trees. This moth is generally very common where it occurs, but to the beginner it does not look like a "Bell-Moth" at all.

Ragwort (*Senecio jacobaea*) is a plant worth examining for larvae. In the stems are *Euxanthis aeneana* Hübn., and *Phalonia atricapitana* Steph., and in the roots—*Eucosma costipunctana* Haw. These seem to have only been recorded from *S. jacobaea* and not from Oxford Ragwort (*S. squalidus*). There are eleven species of *Senecio*, apart from rarer introductions, to be found in this country. I suggest that more work could be done on these.

A foodplant that I don't think I have mentioned yet is moss. Quite a few species feed on them, but little work, as far as I know, has been done on finding out what species of lepidoptera feed on what species of moss. An excellent book on the identification of the mosses—and the Liverworts—is *British Mosses and Liverworts* by E. V. Watson. Published in 1955 by Cambridge University Press at 45/-. Any members interested in doing serious work on these lines should get in touch with me as I can get them identified.

The general idea is to pull the moss off tree trunks, stones, etc., and look

for signs of the larvae, silken threads, frass, tunnellings, etc., will give the game away. Some 24 species are to be found: and if you include the Micropterygidae in your collection, there is *Micropterix aruncella* Scop., which is believed to feed on Liverworts, and *M. calthella* has been recorded from mosses, and may feed on Liverworts.

D. Ollevant.

The Coleoptera

The genus *Tachinus*, which belongs to the family Staphylinidae, has 13 British species which may be found at all seasons of the year. Most of them can be found in dung but during the winter they are more usually to be taken in heaps of vegetable refuse, the bottoms of haystacks, in grass-tufts and in moss. Several of them are attracted to putrid fungi and some have been taken in carrion. The genus can be divided into four groups according to their frequency and distribution.

The first group consists of five common and widespread species:—*T. marginellus* (Fab.), *T. subterraneus* (L.), *T. signatus* (Grav.), *T. humeralis* Grav., and *T. laticollis* Grav.

The second group contains three rare species:—*T. elongatus* Gyll., *T. rufipennis* Gyll., and *T. lignorum* (L.). These should all be looked for in the habitats mentioned above. Any of them is a good find and should be recorded as the known localities, although widespread, are few and far between.

The third group consists of three species which are not uncommon in Scotland and Northern England. These are *T. corticinus* Grav., *T. pallipes* Grav., and *T. proximus* Kraatz.

Finally there are two rare species which are southern in distribution, namely *T. scapularis* Steph. and *T. bipustulatus* (Fab.). The latter species seems to have rather different habits from the others as it has been found under loose bark and also feeding on the sap exuding from trees infested with the larvae of the goat moth. Any occurrences of these last two should be published as insufficient is known about their habits and distribution.

K. C. Side.

NOTES ON *MACROGLOSSUM STELLATARUM* LINN. (Hummingbird Hawk)

For the first time in twenty-seven years I have seen the Hummingbird Hawk moth in Warwick. It has appeared in my garden in the centre of the town on five occasions between the middle of September and 13th October, the date of its last appearance, each time visiting late petunia flowers. A specimen was caught on the north side of the town at the end of September and another reported from Wellesbourne, seven miles south of Warwick, on 11th October. It would be of interest to know if this moth has been reported elsewhere in the Midlands.

G. C. Grant (2451).

BUTTERFLIES AT WET MUD

With reference to the account (*Bull. amat. Ent. Soc.*, **18**: 79) of Small Whites (*Pieris rapae* Linn.) congregating on patches of wet mud, I noted two similar congregations on damp sand in the bed of the River Plym, in South Devon, on 21st July 1959.

In this case these gatherings were of mixed Small Whites and Green-Veined Whites (*P. napi* Linn.), eight in one group closely packed together, fewer and less dense in the other.

This sand pit, exposed by the drought, is a popular picnic spot at week-ends and was untidy with the usual litter, so no doubt there was some attraction other than mere dampness. The day was warm and cloudless.

I remember finding a similar congregation of Green-Veined Whites only, a few years ago. These were gathered on wet mud on the River Meavy, a tributary of the Plym, a single group, closely packed and consisting of about ten insects. The weather was similar and a number of people were picnicking nearby.

R. G. Haynes (1545).

JUNIOR NEWS SECTION

Editorial

This month I include news of 1959 collecting, received from several Junior Members. Perhaps this will bring a breath of summer days to the many entomologists who, like myself, attempt a partial hibernation, and leave winter collecting to our hardier brethren!

News from Members

Colin Whitehead (2408*) has the good fortune to be able to spend some time each year collecting in Scotland, and some also in the South of England.

At Aviemore he found the Scotch Argus (*Erebia aethiops* Esp.) abundant—much more so than the Meadow Brown (*Maniola iurtina* L.). On Loch Shiel he found many species of butterfly, including again the Scotch Argus and the Meadow Brown (var. *splendida*). There were also Whites (*Pieris* spp.), the Dark Green Fritillary (*Argynnis aglaia* L.), the Grayling (*Eumenis semele* L.), Speckled Wood (*Pararge aegeria* L.), Small Heath (*Coenonympha pamphilus* L.), Small Copper (*Lycaena phlaeas* L.). Common Blue (*Polyommatus icarus* Rott.), and Small Tortoiseshell (*Aglais urticae* L.). This may not seem an impressive list when compared with similar lists from the South of England, but for a Scottish locality it is excellent—especially when one realises that in most of these species the Scottish forms are somewhat different from our English ones.

Colin spent some time on the moths and obtained, among others, the Gold Spangle (*Plusia bractea* Schiff.), the Northern Eggar (*Lasiocampa quercus* var. *callunae*), and some good micros. Later, back in Edinburgh, he went to Aberlady Bay (a well-known natural history locality) with a friend, Jim Archer, who got a larva of the Small Elephant Hawkmoth (*Deilephila porcellus* L.). This record I found most interesting as I know the locality well, and had heard of *porcellus* being taken there, and on one occasion in 1949 found a newly-emerged specimen of the Elephant Hawkmoth (*Deilephila elpenor* L.) there. Colin wrote to me earlier this year, asking for advice on taking the Silver Spotted Skipper (*Hesperia comma* L.)—a butterfly he was anxious to obtain. This summer he got one in Surrey, trapping it in a killing-bottle—quite a feat since this species is extremely wary and most difficult to catch, even with a net!

Brian Sheen (2596*) is an all-rounder as a naturalist, and on a three-week camping holiday in East Anglia, despite exceptionally heavy rain, he seems to have had an enjoyable time, and considerably advanced his knowledge of insects, plants and birds.

He saw the larva of the Swallowtail Butterfly (*Papilio machaon* L.) at Wicken Fen, in Cambridgeshire, and later the butterfly itself in the wild state in Norfolk. Among the plants he saw was the Common Bladderwort—an aquatic plant which traps and feeds on small water animals. He also saw the Blue Marsh Vetchling and the Flowering Rush. Although the latter is not uncommon, it is a most striking plant.

Roger Hunt (2745*) has had several good finds this season, and writes as follows:—

"My most exciting moment was towards the end of July, when my father and I were driving along by the sea at Sidmouth, when suddenly he drew my attention to a large butterfly which was flying swiftly up the beach towards the road. As it passed by, right in front of the car, I could see without doubt that it was a Swallowtail butterfly (*Papilio machaon* Linn.). But before I could do anything it had gone out of sight over some roof tops.

At the beginning of August I was fortunate enough to have some Spurge Hawk-moth (*Celerio euphorbiae* L.) larvae given me, which had hatched only a day or two previously from ova laid by moths caught in Spain and mated in Sidmouth. By 24th August they had all successfully pupated, and on 1st October the first moth emerged, only to be followed the next day by an equally fine specimen. I now have four in the pupal stage, which will, no doubt, remain there until the Spring.

Among the moths which have been particularly common this year are the Jersey Tiger (*Euplagia quadripunctaria* Poda) and the Humming-bird Hawk-Moth (*Macroglossum stellatarum* Linn.). I first noticed the latter species feeding on honeysuckle in our garden on 1st October, since when they have been visiting the plant regularly every day."

There was, I believe, a fair immigration of the Hummingbird Hawkmoth in 1959. In addition to those I recorded in the November and December Bulletins (*Bull. amat. Ent. Soc.*, **18**: 84, 91) I saw a specimen at Durlston Castle, near Swanage, Dorset, on 4th August, flying round a plant of valerian. In conversation with Mr. F. C. Brown (2414) later in London, I learned that he had seen one at precisely the same spot a week or two before my observation. It's a small world!

T. S. Robertson (2417), *Youth Secretary.*

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THE IDENTIFICATION OF INSECTS

A great deal of recording is done by people who make "spot" determinations in the field, or without reference to literature or experts. This is all very well with quite distinct species but the vast majority of species need more careful consideration. The literature is full of errors due to this slipshod method and a vast amount of work is always in progress putting such matters right. To complicate matters, very few books are complete and the species which are not noted make correct identification of critical species a job for the expert specialist in each Order, or even family. No record of such species can be regarded as correct unless thus dealt with. A "near enough" identification is useless from any angle and from the scientific approach quite unacceptable.

To identify larvae, it is necessary to have them alive, or quite freshly dead as decomposition is usually rapid and when, in addition, parasites have emerged the skin is usually quite unidentifiable with any certainty.

With the above in mind, I have noted R. W. J. Uffen's request for parasites (*Wants and Exchange List* No. 46). He asks for remains of "supposed" hosts! He further states, "These hosts can usually be identified if feeding places and corpses are sent." The latter remark referring to Pyrales and Tineina.

My considered opinion, after many years study of larvae, is that any records from such material are worthless and the whole of any person's records who uses such material could well be suspect.

Perhaps Mr. Uffen could explain this matter more clearly, as I cannot believe a young man of his undoubted ability would work and publish records from "guess-work". I fail to see, at the moment, how it is possible to be *sure* of larval identity if the material is dead, had parasites emerge and been in the post for a day or two.

H. E. Hammond (423).

Mr. Uffen's reply follows:—

My appeal for Tachinid fly parasites of lepidopterous larvae in our *Wants and Exchange* lists this year has called forth scepticism from Mr. H. E. Hammond as to the validity of the data which may result. I should like to explain the objects of the appeal and reassure Mr. Hammond at the same time.

There are a number of groups of Lepidoptera for which scarcely any Tachinid parasites are recorded in this country. The biology of some families of Lepidoptera suggests that many groups of these flies cannot gain access to their caterpillars, but in all cases the Lepidoptera concerned are probably little reared from wild larvae by amateurs. Families of which I am thinking particularly are Satyridae (brown butterflies), Sesiidae (clearwings), Hepialidae (swifts), Crambidae (grass moths), together with the assemblage of microlepidoptera traditionally known as Tineina. I should particularly like to hear from members who have reared species of the families enumerated from wild larvae, and of course to receive parasites which anyone may encounter. I believe that it would not be long before such correspondence gave me a lead on the probable hosts of a few very common Tachinids of whose life cycles we know little at present.

The time seems ripe to clear up some of the problems remaining since the late Dr. van Emden completed his key to Tachinidae in the *Handbooks for the Identification of British Insects.* More biological data is needed for several groups of common species which were not clearly separable before. Mr. Hammond's concern is for the inverse case of groups of closely similar hosts.

I do not aim to meticulously catalogue and publish a vast flow of assorted records. That has all been done before. I hope to sift the data which comes in, searching for clues on quite specific problems to fill in some of the remaining gaps. I want to encourage people to send me all the details they can because this gives me the best chance of satisfying myself how far the important asser-

tions can be validated. It is often possible to get a lead from the common factors of a number of individually unreliable records. In 1959 not many parasites reached me, so there was little sifting to be done.

Mr. Hammond has, of course, a fund of expert knowledge on the subject of larval identification, but his methods are probably those of greatest value to the field worker. As he remarks, these methods are of little assistance in giving accurate names to shrivelled corpses. For a very long time research workers have been making attempts to develop methods of identification, using only the persistent, cuticular parts of larvae, and in the last few years some good monographs of European species of various families have been produced on this basis. The position is still very unsatisfactory, particularly in relation to the macrolepidoptera, but is rapidly improving. Parasitized larvae usually need making into microscopical mounts for this purpose, and small microlepidoptera may need up to 400× magnification for the separation of closely related species. The method is therefore tedious to apply to a random assortment of host larvae, and any information which assists in by-passing the difficulties is of great help, provided that it can be corroborated.

Microlepidoptera feed in such a diversity of specialized ways that the feeding pattern, foodplant and time of year are sufficient in very many cases to eliminate all the species in the faunas bar one or two. Little further information is required to establish which species best fits the facts. I agree that this does not necessarily mean that one can identify the species! If people were more critical over deciding whether their observations really *did* fit any of the book descriptions, it would be more generally realized that the books are in their turn often uncritical and, as Mr. Hammond suggests, actually overlook species as a result.

Two years ago I found larvae of a species of *Coleophora* whose cases did not agree with those of the only species for which the biology quoted in the reference books was appropriate. This is a common species, yet it has not before been recognized in Britain. There are many specimens to be found in private collections, including that of the author of a well-known work in which the traditional composite description is repeated. The description could no more fit his larvae than mine, but he ignored this because the emerging moths are superficially very similar. It sometimes pays to be a doubting Thomas.

That larval taxonomy can be difficult is also demonstrated by the above group of *Coleophora*. There is another species recently evolved from, and very like the one previously referred to, which probably also occurs in Britain. In fact I have a larva, given to me dead, which is almost certainly of this splinter species, but I am still looking for reliable characters on which to separate these two insects. This is one of the problems which I am hoping to elucidate through my other request in our *Wants and Exchanges* lists, that for material of *Coleophora*.

I hope that members may find something of interest in this discussion of the difficulties which Mr. Hammond has defined so clearly, and will be convinced that their information is appreciated.

R. W. J. Uffen (1660).

NOTES ON *OURAPTERYX SAMBUCARIA* LINN. (Swallow-tailed Moth)

On 26th May last I caught a female Swallow-tailed Moth. During the following week she laid two hundred and five ova, all of which duly hatched. The larvae were divided into four groups and placed in two-pound jam-jars and fed on ivy. Three groups were released at weekly intervals on to ivy in the garden, twenty being retained and fed indoors; those fed up rapidly and by 28th August had all pupated, whilst those feeding out of doors were less than half grown.

On returning from holiday on 19th September I found two, one each male and female, had emerged, the male was dead but the female fresh; on the 20th and 23rd two more pairs emerged, no pairing took place. Those feeding outside were attacked by wasps and the numbers reaching hibernation were, I am afraid, very few, but this can be proved in the spring; none of the remaining pupae have shown any sign of emergence.

Mr. Trevor Trought (1373), of Tysoe, tells me that an imago appeared at his front door light in the middle of September. From this it would seem that a small second generation has appeared this autumn. Have other members noticed this?

G. C. Grant (2451).

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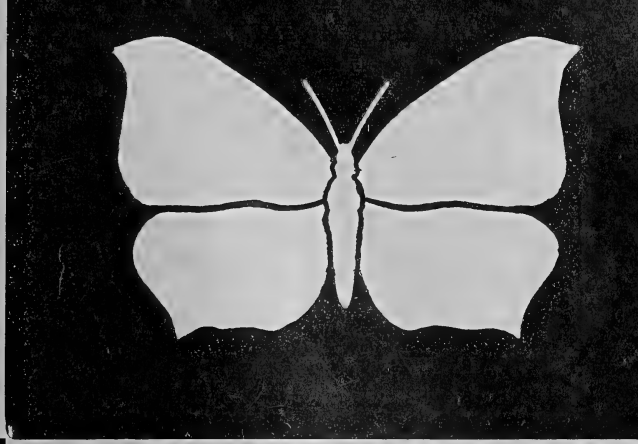

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by B. R. STALLWOOD

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A E S BULLETIN

No. 231

MARCH 1960

SECRETARY'S LETTER

March is, of course, the month for the Annual General Meeting, and with this *Bulletin* there will be included the programme. Members in the London area are urged to attend, as this is one of the few occasions when members of the Council are able to meet members and gain some idea of their opinions.

The South-Eastern Union of Scientific Societies hold their annual Congress at Ipswich from 22nd to 25th April. Programmes and application forms may be obtained from J. Eric Marson, County Education Offices, Rope Walk, Ipswich. One of the attractions is a lecture on the Sunday by S. Beaufoy on "Some East Anglian Butterflies".

D. Ollevant.

ON THE SPIDERS AND BEETLES IN ANTS' NESTS

In several books on spiders I had seen that certain species live in ants' nests. Donisthorpe records four species as being always found with ants, and says of one of them, *Thyreosthenius biovatus* (O.P.-C.)—"Anyone who cares to spread a few handfuls of the nest materials of a *Formica rufa* Linn. hillock on to a sheet, or paper, will be sure to find it . . . . I have personally found both sexes of *T. biovatus* in every *rufa* nest I have examined, from the Highlands to the South Coast of England, and in every month of the year".

Miss C. A. McDermott (2488) told me that Wood Ants (*F. rufa*) were very common in Mereworth Woods in Kent, so we arranged an expedition there for one afternoon in September 1959, I to collect the spiders, she the beetles for a coleopterist friend. Being of a cautious disposition, I brought along rubber gloves, a spade, and a zinc box with $\frac{1}{4}$" holes drilled in the bottom. The theory was that I should put the nest material in the box and sift it on to my beating tray; spiders and beetles should fall through the holes, but the ants, being larger, should remain in the box. It worked quite well, though some ants came through. Experience proved, however, that most of the precautions were unnecessary—at least in September. In subsequent collecting, I merely dug out the nest material with a trowel and put it straight on to my beating tray.

During the afternoon we worked material from two nests. Beetles were the commonest guests, and Miss McDermott took about a hundred (all Staphilinidae) with her pooter. I took some ten spiders, but all except four were immature and indeterminable. Of the four, three were female *T. biovatus*, and one was a male *Tapinocyba praecox* (O.P.-C.). The latter species I have not seen recorded as a guest of ants but its presence does not seem accidental, for on the following day I took two more males from nests of *F. rufa* at Oxshott in Surrey. I was very well satisfied with the results of the expedition, but had proved less fortunate than Mr. Donisthorpe as I had taken no male *T. biovatus*. In fact, I subsequently took ten females before I took one male after examining about eight nests.

There proved to be no surprises among the beetles, which were all well known guests of *F. rufa*. Species taken were:—

Othius myrmecophilus Kies. (3 specimens)
Atheta nitidula Kr. (3 or 4 specimens)
Thiasophila angulata Er. (common)
Notothecta flavipes Gr. (fairly common)
Dinarda märkeli Kies. (1 specimen)
Oxypoda formiceticola Märk. (very common)
O. haemorrhoa Sahl. (common)

Reference

Donisthorpe, H. St. J. K. 1927. *The Guests of British Ants.*

N. Hammond (2937).

A FEW OBSERVATIONS ON BUTTERFLIES IN GLAMORGAN DURING 1959

On 28th February, a sunny day, whilst pigeon-shooting in the grounds of Fonmon Castle, near Rhoose Airport, I saw the first male *Gonepteryx rhamni* Linn. (Brimstone) of the season. A second one was seen on the next day at the old village of Bonvilstone, but no more were seen during the rest of the season.

Whilst on a fox-shoot in Llanwoono Forest, St. Gwynno, nine miles north of Ynysybwl, on 9th May, I saw a remarkable sight in a rather wide ride. This ride was covered with tufts of coarse grass and from these tufts fluttered numerous *Callophrys rubi* Linn. (Green Hairstreak), and in a few moments all had disappeared into the bright green branches of the young fir saplings.

The excellent weather of spring and summer continued well into autumn, and produced numerous imagines of the commoner 'whites'—*Pieris brassicae* Linn. (Large White), *P. rapae* Linn. (Small White), and *P. napi* Linn. (Green-veined White). *Aglais urticae* Linn. (Small Tortoiseshell) and the males of *Euchloë cardamines* Linn. (Orange-tip) were also very common, but I only saw one female of the latter.

On 23rd May, whilst walking along the shore near my home at Cadoxton, I saw within half an hour eight Large Whites flying up the Bristol Channel in a north-easterly direction; and on 14th August, whilst fishing two miles off shore I saw seven rather worn *Vanessa atalanta* Linn. (Red Admiral), which were also flying in the same north-easterly direction. Each butterfly seemed to hesitate and draw near to the boat before flying on in the same direction. The last Red Admiral was seen on 31st October.

The following observations are of interest owing to the scarcity of these species in this county in the last few years:—Single specimens were seen of *Argynnis aglaja* Linn. (Dark Green Fritillary) on 9th August at the tiny village of Rhiwsaeson; *Argynnis paphia* Linn. (Silver-washed Fritillary) on 19th September at Llantrisant; *Polygonia c-album* Linn. (Comma) on 4th October at Sully; and in addition *Nymphalis io* Linn. (Peacock) on 24th August; and *Vanessa cardui* Linn. (Painted Lady) on 26th September—both at Barry.

During the season, I saw altogether thirteen male *Colias croceus* Fourcr. (Clouded Yellow), all of which appeared to be in perfect condition. The first was seen on 7th September, and the last on 15th October.

The commoner species other than those mentioned above were all very plentiful in this county this year.

N. M. Watts.

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CATALEPSY IN BUTTERFLIES

I found most interesting Peter Taylor's article on this phenomenon in the Brimstone butterfly and its possible association with the diapause. (See *Bull. amat. Ent. Soc.*, **18**: 68). I have observed that the ability to 'lie doggo' is present in several species. Both the Peacock (*Nymphalis io* Linn.) and the Small Tortoiseshell (*Aglais urticae* Linn.) are capable of acting in the same way as the Brimstone, and I have also observed it in the two migrants, the Red Admiral (*Vanessa atalanta* Linn.) and the Painted Lady (*V. cardui* Linn.). It appears to occur when there is a sudden decrease in light, and they will act in this way when netted. It is much more noticeable in small fritillaries, particularly in the cases of *Melitaea cinxia* Linn. and *M. athalia* Rott., which will almost always 'play possum' when netted in the normal black net. I have been fooled on many occasions by this apparent 'death' and have seen the inert butterfly spring to life as soon as the net is opened. The Marsh Fritillary, *Euphydryas aurinia* Rott., will also act in the same way, and I have noticed that this species seldom flies when the sun disappears. Both *M. athalia* and *M. cinxia* will fly when the sun is shrouded but are sluggish in their flight. As the phenomenon occurs in both hibernating and non-hibernating species (that is, hibernating as imagines), I am of the opinion that the cause is an immediate reaction to the sudden loss of light, or a reaction brought about by the shock of capture, or a combination of the two. It certainly has a protective result, for the butterfly can fool the would-be captor. Probably readers have also observed a similar tendency amongst some moths, e.g., the Red Swordgrass, *Xylena vetusta* Hübn., which will not make any attempt to move when handled during the day-time.

P. W. Cribb (2270).

THE NATURALIST IN ITALY

This is by way of being a review of books which cannot be bought, written in a language most people cannot understand, about a country not everybody visits.

But I do beg you not to be discouraged by such an introduction. These are three companion volumes published by the Italian Touring Club, and they deserve attention for more than one reason. There is contained in them a splendid diversity of information about the natural history of Italy, and they have been produced by an organisation which, while primarily concerned with the commercial development of tourism in Italy—its organisation and propaganda—has provided for the benefit of its members, and I believe there are some 500,000 of them, works of scientific value and aesthetic delight. When the Director-General of the Italian Touring Club, Signor Giuseppe Vota, sent me these three handsome books, I was at once overwhelmed by his kindness and staggered at the magnitude of the undertaking by a body that is not primarily concerned with biological matters.

Various other feelings ran through me. I regretted not being a member of the Italian Touring Club, regretted the books were not for sale in England, regretted they had not been translated into English and distributed by an imaginative and far-seeing commercial publishing house, and I wondered if a comparable organisation in Britain will think to enshrine our natural resources in volumes as encyclopaedic as these. I could not but reflect that much as naturalists may detest some aspects of modern tourism that reduce privacy and solitude, make ugly things that had been beautiful, and destroy natural associations of land, plant and animal, yet here was an aspect of its workings at once responsible and adult, aesthetic and scientific.

The Italian Touring Club, now 66 years old, has for long pursued a policy of presenting Italy to Italians and foreigners by means of regional guides of great quality and interest, but this series surpasses them in extent and detail. These three works, the first of a vast series dealing with all aspects of Italian life under the general title **Conosci l'Italia** are *L'Italia Fisica* (1957), *La Flora* (1958) and *La Fauna* (1959), for which the highest Italian authorities in all fields have contributed.

If I say the books are lavishly produced, I shall be misunderstood. There is nothing wasteful about them; each large volume is clearly printed, with many helpful text illustrations and maps and charts; monochrome and colour photographs are so grouped and distributed as to aid the layman's understanding of ecological relationships.

L'Italia Fisica deals with the natural and political regions of Italy, its varied climates (nine climatic regions are recognised), the geological formation of the country, an analysis of the rock formations including volcanoes, seas, lakes, glaciers, islands, to remind one afresh of Italy's profusion of sub-regions in its peninsula.

La Flora deals with the complexities of the many plant associations, forest climaxes, relationship between climates and vegetal coverings, palaeogeography, the special morphological modifications which characterise the eu-Mediterranean plants, and there is even room for discussion on various botanical theories. By means of diagrams, processes of degradation from forest land to the famous *maquis* (I should say *macchia* in Italian), or *garrigue*, that hot, stony aromatic waste so typical of the Mediterranean scene, are traced. In the pages of photographs, types of vegetation are shown together, so that perhaps a dozen illustrations portray plants typical of mountain pasture, or river mouth, or coastal rock.

The most recent volume is *La Fauna.* It is skilfully divided into ecological chapters, such as the fauna of the alpine regions (both terrestrial and aquatic), caves, coastline, sea, and creatures associated with man. There are chapters on palaeozoology and geography and preservation of the fauna of Italy.

For the entomologist, the information is, of course, highly compressed, yet there are references to the more neglected orders such as Collembola, Thysanura and Isoptera; all this is of value even to an entomologist when he is dealing with an unfamiliar fauna, especially where notes on species distribution and habitat have been included. Distribution in the Mediterranean zone takes on an added importance in consequence of the foundering and folding and transgressing of sea and land which have taken place since Palaeozoic times

to give interesting residual habitats and relict species. Not only are relict species found in mountainous country but also in isolated islands in the Tyrrhenian Sea, showing distinctly how the ancient Tertiary Tyrrhenis eroded and sank and left marooned genera of Coleoptera or Urodels in widely scattered caves or islets.

Reference, even if only brief, to cavernicolous species is particularly welcome at a time when bio-spelaeology, the Cinderella of British natural history, has taken energetic steps to catch up with surface entomology, and match the work already long since undertaken in Europe in mapping the living fossil fauna of our limestone caves.

With these books and their excellent illustrations we are reminded (if we have forgotten) or informed (if we did not already know) of the diversity of climate, scenery, flora, fauna and history that make up Italy whose physical structure poses endless micro-climates and attendant ecological problems. Italy has for centuries been a place to which the English traveller has gone in the Englishman's unquenchably romantic spirit of searching for the source of his civilisation, and seeking the warmth of the Mediterranean that has always expanded his creative imagination.

Open my heart and you will see
Graved inside of it, "Italy",

wrote Robert Browning.

Since the time of John Ray, naturalists have also sought out Italy, ostensibly for different objectives, but with similar motives at heart, and the impulse is now in modern guise. Those who are contemplating a holiday in Italy with an entomological interest to direct them might very well gain some general help as to which parts to visit so as to get the most out of their entomology (or any other branch of natural history for that matter) by writing to the Italian Touring Club beforehand.

Conosci l'Italia.

Published by Touring Club Italiano, Corso Italia 10, Milano, Italia.

Volume **I**: *L'Italia Fisica.* 320 pp., 1 coloured map, 182 photographs in black and white, 29 in colour, 131 text figures. 1957.

Volume **II**: *La Flora.* 272 pp., 1 coloured chart, 199 photographs in black and white, 260 in colour, 195 text figures. 1958.

Volume **III**: *La Fauna.* 272 pp., 237 photographs in black and white, 252 in colour, 361 text figures. 1959.

A. N. Brangham (18).

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AN ENTOMOLOGIST ON THE NORFOLK BROADS

Last year I decided to spend a fortnight's collecting holiday on the Norfolk Broads, and accordingly four of us set out on 29th August for St. Olavese, a remote hamlet on the River Waveney, where holiday bungalows built on a farm (?) can be hired during the season (and, presumably, at other times also). Just in case any other fellow-sufferer (I use this term advisedly, and you will see why in a minute) would like to do likewise this year, I had better point out at this stage that the bungalows have to be booked at least six months ahead in order to get in at all; ours was booked in February! For those who appreciate lack of public transport and have a good stout pair of walking legs, this is the ideal spot. Buses and trains are about as common as the Camberwell Beauty in these parts. And even if you have a car, it is impossible to get a car within miles of some of the more desirable collecting-grounds. Several of the Broads are landlocked all round by vast expanses of marsh, as we soon found out.

Our first collecting expedition, which was attended by singular lack of success, was to Breydon Water—haunt of cormorants and other birds of the salt mud-flats, but, apparently, no moths. One can get a car only as far as Burgh Castle; thereafter, one must cross miles of marshy waste and then more miles along the windy bank, waist-high in sedges. Progress is, of course, not very rapid under such conditions. By the time one has walked twelve miles with not a specimen to show for it, one is more inclined to carry on and walk into Great Yarmouth than to retrace one's footsteps; and that is precisely what we did. Buses back to Burgh Castle from Yarmouth are few and far between, but we eventually got one.

The next day, quite undaunted by our experience, we decided to explore Fritton Decoy. This was much nearer our 'base', and we walked it easily in just over an hour. Once again, we found no moths in the woods which surround the lake, so, as it was a very hot, sunny day, we turned our attention to butterflies in the ornamental gardens.

The majority of the butterflies seen or taken in the gardens were Nymphalidae; but the most striking specimen we took that day was not one of this group, but a very fine aberration of *Pieris rapae* Linn. (Small White) in which practically the whole of the forewings were heavily powdered with black scales. In fact, the specimen looked as though it had come out of the coal-hole.

We cannot find this aberration figured in any of the standard textbooks; even Frohawk does not mention it in his *Varieties of British Butterflies*. My son, who took this specimen, is just as anxious as I am to ascertain its identity; but so far all our enquiries have drawn a blank.

On this same day, in the gardens at Fritton Decoy, we also took three specimens of *Lycaena phlaeas* Linn. (Small Copper) ab. *semi-suffusa*, and also two forms of this species in which the usual copper colouring of the forewings was replaced by a much paler tint. In fact, it was our experience during this fortnight's collecting on the Broads that *phlaeas* appeared to be more given to variation there, than in other districts in which we have collected. I took four or five specimens in the Waveney marshes in which the black dots on the forewings were more or less square and practically confluent, while my son took two specimens of ab. *semi-suffusa* on our last day.

Other daytime expeditions we made included Herringfleet Woods, Hickling Broad, and Rockland. Unfortunately, we were unable to get to Barton Broad.

Herringfleet Woods are private property and not accessible to the public, but we managed to obtain permission from the head gamekeeper, to collect there at any time of day or night, having been kindly recommended by the head keeper at Fritton Decoy. We took him at his word, and went beating by day, sugaring and using the Tilley lamp and sheet by night. All these efforts met with very poor results; day-time collecting in the woods found us with a satchel full of empty boxes, and we ended up bird-watching! As for night work in these woods, all we got for our pains were one *Hadena genistae* Borkh. (Light Brocade) at sugar, and *Pelurga comitata* L. (Dark Spinach) to the light-sheet.

Hickling Broad was, entomologically speaking, another disappointment. We hired a young fellow to row us out into the reed-beds on the far side of the Broad in a small flat-bottomed boat with an outboard motor attached; the motor stuck in the reeds several times, and we had to row! We searched the reed-beds in the hope of finding pupae of *Papilio machaon* Linn. (Swallow-tail) and various wainscots; but all we found was the sun-bleached skeleton of a coypu rat near the water's edge.

Hickling is the place *par excellence* for bird-lovers. On the day when we sped out over the water in the little boat, there must have been not fewer than two hundred swans on the Broad. We also observed many other species of birds, some of which we had never seen before, including the Tufted Pochard, a most handsome species. On this day we also had the pleasure of meeting in person the celebrated bird artist of Hickling, Mr. Roland Green, at his studio which lies, almost completely hidden by reed-beds, right on the edge of the Broad.

Rockland is practically inaccessible. One can get as far as the village of Rockland St. Mary by car; but from there onwards to the Broad the road, if one can call it such, is not only marked 'Unfit for Motors' but is hardly traversible on foot. Entomologically, we had no more success here than on our previous trips.

'Dusking' and light-working were carried out energetically every night on the marshes which stretched down beyond our bungalow to the Waveney. The river was only a few hundred yards from our door, the intervening terrain being overgrown with sedges and reeds. This territory produced some moths, though nothing spectacular. *Amathes xanthographa* Schiff. (Square-spot Rustic) was a veritable plague. One would have thought such a locality would produce some good wainscots, but we got nothing more exciting in this group than *Arenostola phragmitidis* and you don't have to go to the Norfolk Broads for that!

There was a powerful electric light in the car park of the 'farm', which yielded a few noctuids and geometers, including a fine *Deuteronomos fuscantaria* Haw. (Dusky Thorn), which was the first time I have ever taken this species.

By and large, I consider the results of our fourteen days' intensive collecting on the Broads to have been very disappointing. I expected better results. Most of the species we took were common ones, the majority of which we could quite easily have taken elsewhere. I am informed by a naturalist who lives in the Broads area that this year has been a very disappointing season for lepidopterists in the Norfolk area generally.

However, the 8th September proved to be a day which will not easily be forgotten. At 10 p.m. on that day the 20-year-old son of the house brought me a *Catocala nupta* L. (Red Underwing) in a pint beer-glass. He had found it on the stairs in the farmhouse—the second *nupta* I had ever seen alive in twenty-four years! By incredible coincidence, the first and only other one I have ever seen alive was also taken on the 8th September by my father in 1935—exactly twenty-four years before, to the very day.

RHOPALOCERA: *Pieris brassicae* L. (Large White); *P. rapae* L. (Small White); *P. napi* L. (Green-veined White); *Aglais urticae* L. (Small Tortoiseshell); *P. c-album* L. (Comma); *Nymphalis io* L. (Peacock); *Vanessa atalanta* L. (Red Admiral); *Dira megera* L. (Wall); *Maniola jurtina* L. (Meadow Brown); *M. tithonus* L. (Small Meadow Brown); *Coenonympha pamphilus* L. (Small Heath); *Lycaena phlaeas* L. (Small Copper).

HETEROCERA: *Hepialus fusconebulosis* Deg. (Map-winged Swift); *Euproctis chrysorrhea* L. (Gold-Tail); *Phalera bucephala* L. (Buff-Tip); *Clostera pigra* Hufn. (Small Chocolate-Tip).

Leucania pallens L. (Common Wainscot); *Arenostola phragmitidis* Hb. (Fen Wainscot); *Hydraecia micacea* Esp. (Rosy Rustic); *Phalaena typica* L. (Gothic); *Triphaena pronuba* L. (Large Yellow Underwing); *Agrotis vestigialis* Hufn. (Archer's Dart); *Agrotis clavis* Hufn. (Heart and Club); *Euxoa obelisca* Schiff. (Square-spot Dart); *Amathes xanthographa* Schiff. (Square-spot Rustic); *Amathes stigmatica* Hb. (Square-spotted Clay); *Amathes c-nigrum* L. (Setaceous Hebrew Character); *Ochropleura plecta* L. (Flame Shoulder); *Diataraxia oleracea* L. (Bright-Line Brown-Eye); *Hadena suasa* Schiff. (Dog's-tooth); *Hadena genistae* Borkh. (Light Brocade); *Phlogophora meticulosa* L. (Angle Shades); *Plusia chrysitis* L. (Burnished Brass); *Plusia gamma* L. (Silver Y); *Catocala nupta* L. (Red Underwing); *Tholera popularis* Fab. (Feathered Gothic); *Hada dentina* Schiff. (Shears).

Scopula imitaria Hb. (Small Blood-Vein); *Deuteronomos fuscantaria* Haw. (Dusky Thorn); *Sterrha virgularia* Hübn. (Small Dusty Wave); *Dysstroma truncata* Hufn. (Common Marbled Carpet); *Opisthograptis luteolata* L. (Brimstone); *Pelurga comitata* L. (Dark Spinach).

N.B.—*E. chrysorrhea* and *P. bucephala* were found in the larval stage only. The two specimens of *D. truncata* which we obtained, were both near-melanics.

JOY O. I. SPOCZYNSKA (751).

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COLLECTING HINTS—March

The Macrolepidoptera

Towards the end of the month the main attraction for many species of Lepidoptera will be the sallow bloom. Quite a few of the imagines caught this way are hibernated insects and very poor specimens. However, females should be kept for egg laying. Some of the less common moths taken each year at sallow include *Jodia croceago* Schiff. (Orange Upperwing), *Dasycampa rubiginea* Schiff. (Dotted Chestnut), and *Gypsitea leucographa* Schiff. (White Marked).

Searching small birch trees at night will produce larvae of *Polia tincta* Brahm (Silvery Arches). Although small, they are more easily detected now than later on when the birches are in leaf. Care must be taken when boxing as the larvae drop to the ground at the least provocation. Mild nights are not always the best, as many will have crawled up out of reach. When this occurs, the best technique is to try to induce the larva to fall into an open net or beating-tray held underneath. This is not always as easy as it may seem, especially when the desideratum is situated in the centre of a bushy birch tree. It is probable that the collector will come across the larvae of more common species, such as *Lampra fimbriata* von Schreber (Broad-bordered Yellow Underwing) and *Polia nebulosa* Hufn. (Grey Arches), also the imagines of *Achlya flavicornis* Linn. (Yellow-horned Lutestring).

Searching tree trunks and fences can prove to be a most interesting and

educational way of collecting in a month when very little day work can be done. A few of the species found this way are *Xylocampa areola* Esp. (Early Grey), *Graptolitha ornitopus* Hufn. (Grey Shoulder-knot), *Apocheima hispidaria* Fabr. (Small Brindled-beauty), and *Biston strataria* Hufn. (Oak Brindled-beauty).

A mercury vapour light will attract a good assortment of moths including all those mentioned above.

B. F. Skinner.

The Smaller Moths

Towards the end of the month *Diurnea fagella* Schiff. will be found on tree trunks, or come to light. It is, of course, always the male which comes to light, and which is generally seen during the day time. The female, which has abbreviated wings, can be found just after dusk crawling up tree trunks.

At the same time, some of the hibernating *Depressaria* species will come to light and may be seen on fences, etc. *D. applana* Fab. is the commonest one, and could be mistaken by a beginner for one of the clothes moths.

The hibernating larvae of *Pyrausta olivalis* Schiff. feed up in March, drawing together the young leaves of elder, and also *Microstege hyalinalis* Hübn. are feeding on *Centaurea nigra* L. (Hardhead), spinning short galleries from their hibernacula to the young leaves just coming out of the earth, becoming fully fed mid-May to early June.

D. Ollevant.

The Coleoptera

The genus *Lathridius* includes seven species in the British list, all of which can be looked for throughout the year. As the beetles feed on moulds, they should be sought in vegetable refuse of all kinds, in rotten wood, under the bark of dead trees, or in grass tufts where there is much dead matter.

The commonest species, *L. nodifer* Westwood was considered rare in the first half of last century, but it is now quite common and can be found in suitable habitats throughout the country. *L. bifasciatus* Reitter is a recent introduction. A native of South Australia, it was first recorded for this country by Mr. A. A. Allen, who found some specimens in Surrey in 1950. From then it has increased rapidly and is now as common in Kent as *L. nodifer*. It has spread to Sussex, Hants, Middlesex and Essex, and is no doubt already in neighbouring counties. The beginner who has no access to Mr. Allen's description (*Ent. mon. Mag.*, **87**: 114) would be puzzled by this species as it is not mentioned in any book which is more than ten years old. It resembles *L. nodifer* in size and shape, but is of a yellowish colour with variable black markings on the elytra.

L. lardarius (Degeer) is another widespread species but is less common, especially in the north, and *L. angusticollis* Gyllenhal is even less common and apparently absent from Scotland and Ireland. *L. constrictus* Gyllenhal is very local and I can find no records from any locality north of Derby or Lincs. Although it has been found in moss and dead leaves, it is usually found under bark, and it particularly favours bark which has been burnt. Felled logs and standing trees which have been charred are always worth investigating as several rare beetles seem to be attracted to them.

L. norvegicus Strand has been taken once in Epping Forest by Mr. H. W. Forster and there is an account of the discovery and a description of the species in *Ent. mon. Mag.*, **88**: 282. From this meagre information available its habits appear to be like those of *L. constrictus*.

The last species, *L. bergrothi* Reitter, is found chiefly in granaries and cellars. Records of it are few.

K. C. Side.

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SECOND BROOD OF *OURAPTERYX SAMBUCARIA* LINN.

I was interested to see the note from G. C. Grant (*antea*, p. 16) on the partial second generation of the Swallow-Tailed Moth which appeared during the autumn of last year. I had ova of this species on 30th June, a few larvae pupated about 14th September, and I had some half-a-dozen moths emerge from 7th to 9th October. There are a few larvae of this brood over-wintering, which I think is normal.

H. Last (117).

JUNIOR NEWS SECTION

Editorial

In April 1959 (see *Bull. amat. Ent. Soc.*, **18**: 34) I asked Junior Members to send me records of first appearance of certain common butterflies. Quite a number of people responded, and their records were summarised in the August/October issue (*ibid.* 34). I wish to make a similar analysis in 1960, so if you could record and send me the particulars, I should be most grateful. The species I am most interested in are: Speckled Wood (*Pararge aegeria* Linn.), Small Tortoiseshell (*Aglais urticae* Linn.), Peacock (*Nymphalis io* Linn), Comma (*Polygonia c-album* Linn.), Holly Blue (*Celastrina argiolus* Linn.), Large White (*Pieris brassicae* Linn.), Small White (*P. rapae* Linn.), Orange Tip (*Euchloë cardamines* Linn.) and Brimstone (*Gonepteryx rhamni* Linn.)

News from Members

C. D. Gadd (3033) writes as follows: "I have noted with interest your articles in the *Bulletin* concerning the Small Copper (*Lycaena phlaeas* Linn.). I thought you might be interested in these two captures:

ab. *obsoleta*—8th June 1958, Wyre Forest, Bewdley.
ab. *suffusa*—31st July 1959. Rifle Range, Bewdley.

I have seen no references to the blue-spotted variety—*caeruleopunctata*—which occurs very commonly around Bewdley. Is this common everywhere?"

In fact, I find a high proportion—perhaps 25%-30%—of specimens of all broods have some blue spotting. However, some particularly well-marked specimens with large bright blue spots are to be found, although I consider these to be rather infrequent. Although it is common, I consider this form most interesting as it emphasises the link between the Coppers and the Blues. The Blues in their turn sometimes show orange or copper-coloured markings on their uppersides in a somewhat similar position. Moreover, there is a form *bellus* of the Purple Hairstreak (*Thecla quercus* Linn.) which has orange or coppery patches on the upper sides of the forewings. The Hairstreaks are, of course, also in the family Lycaenidae.

From Chapel-en-le-Frith, D. A. Torge (3974*) wrote in January:

"Having tried all summer to catch a Hummingbird Hawk (*Macroglossa stellatarum* Linn.)—and as usual never saw one—I was very surprised when a perfect specimen of a male of this species started flying about the room I was in. It was so docile I had no trouble in catching it. The date of the capture was 3rd December 1959, just north of Bradford (Yorks), at about 7.30 p.m."

M. C. Birch (3048*) writes from Wirral, Cheshire:

"During the Christmas holidays I had the good fortune to be allowed to go for a week to the Liverpool School of Tropical Medicine. In one department the disease Filariasis was being investigated. A Malayan, in charge of operations, was trying to discover whether the filarial worm (*Wuchereria malayi* and *W. bancrofti*) could be carried by *Aëdes aegypti* as well as the *Mansonioides* mosquito.

"Next door to him very different work was being done. A stream at Hawarden, near Chester, was being studied, and the animal population, especially insects, was being analysed. But the best time for me was when they let me examine the store boxes of insects. With an expensive microscope, I could identify many British and tropical beetles. Most of the tropical insects had been obtained from the cargoes of ships docking at Liverpool.

"To finish with, on the last day I captured five good specimens of *Tribolium confusum* (a small beetle) which had come in with grass used in the mosquito rearing".

Well, thank you for that glimpse of a world of entomology which is unfamiliar to most Juniors!

T. S. Robertson (2417), *Youth Secretary.*

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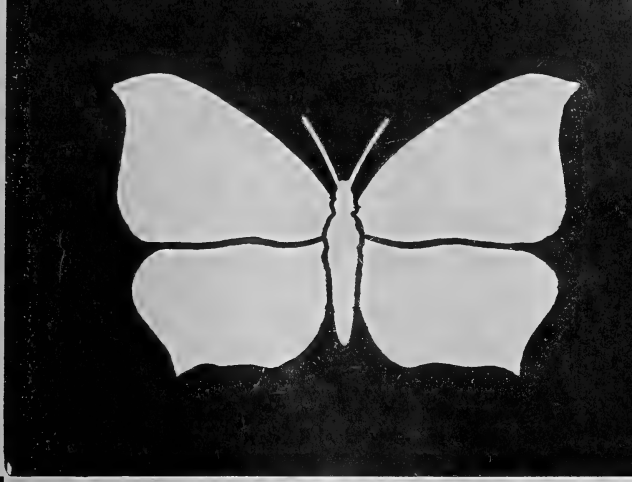

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by B. R. STALLWOOD

AES NOTICE
WHERE TO WRITE

Membership applications, offers of help to: D. OLLEVANT, *3 Salcombe Drive, Morden, Surrey.*

Advertisers to: R. D. HILLIARD, *54 Gyles Park, Stanmore, Middlesex.*

Changes of address and non-arrival of Bulletins *to:* B. L. J. BYERLEY, *3 Courtfield Crescent, Harrow-on-the-Hill, Middlesex.*

Offers to lead Field Meetings, exhibit etc., to: F. C. BROWN, *6 Osmond Gdns., Wallington, Surrey.*

Manuscripts, drawings and books for review to: B. R. STALLWOOD, *17 Claremont Avenue, Sunbury-on-Thames, Middlesex.*

Subscriptions (12/- per annum, 9/- for Juniors) to: K. H. BOBE, *50 Winn Road, Lee, London, S.E.12.*

Youth matters to: T. S. ROBERTSON, *38 Repton Way, Croxley Green, Herts.*

A E S

BULLETIN

No. 232

APRIL 1960

SECRETARY'S LETTER

I would very much welcome any offers of help from members who have some spare time and feel that they would like to help the Society. Please give some indication of the type of work preferred and roughly the amount of spare time available. For some of the administrative work, residence in the London area is essential, but not for all of it. It would be very nice if we could build up a reserve of helpers, so that when someone is forced to resign suddenly we could quickly fill the vacancy. At the time of writing this letter, we have two urgent vacancies, and the members of the Council are all busy searching for people to fill those vacancies. I know that there are other members of the Council who would be only too pleased to have a well-earned rest if they knew that there was someone to take their place.

A programme of the Scottish Field Studies Association has been received. The centres are the Garth Field Centre and at the Isle of Raasay. There is an Insect Natural History course from 23rd to 30th July at Garth F.C. Programmes and other information may be obtained from S.F.S.A., c/o Department of Botany, The University, Glasgow, W.2.

D. Ollevant.

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A SPECIAL SILVER JUBILEE PUBLICATION

When our Society was first set up it was intended that one of its principal objects should be to fill the noticeable gap which then existed in the entomological literature, for publications designed to meet the needs of the beginner and the amateur. Our original ambition to act as a publishing society has been slowed up by many unforeseen outside causes. Not the least of these are the effects of the war and the subsequent inflation; not only have postage and stationery costs risen sharply, but printing costs have risen quite disproportionately. To continue on the lines of our early plans would have inevitably involved a very heavy increase in membership fees, but this would have defeated the other principal objective of the Society—to provide a means for interchange of views, ideas, experience, etc., at a nominal cost within the reach of all members, including our important juniors. The effect of these conflicting demands led us to concentrate our main efforts on the *Bulletin* in order to continue to improve its quality. The result of this diversion of effort has been that the Society has had to forego fresh publication ventures. To a certain extent, the need for new publications of the kind we had in mind has been met, during recent years, by a welcomed increase of reliable entomological works issued by publishing houses which are suitable for amateurs. Nonetheless, there are still many fields in which the Society could help, quite apart from extending our most useful series of pamphlets. Unfortunately, as existing funds stand, the Council does not feel that it would be wise to venture into a new publication which would cut deeply into our reserves. As you will have noted in our February *Bulletin*, we intend to produce a special issue of the *Bulletin* for August, but that is not enough for such an anniversary. Even though production problems make it too late now to get together a special Journal for this Jubilee year, we ought at least to try and get a venture under way. Special occasions call for special efforts, and I am, therefore, seeking your assistance. Much depends upon the response as to what we can do, but a small donation from each of us would help to put under way such a project—so would you think the matter over and send

THE IDENTIFICATION OF INSECTS

My note (*antea*, p. 15) was not intended to voice criticism of Mr. Uffen, but to do so regarding his advertisement for parasitized material. My objection still holds good, as I feel the advertisement is very badly worded and most misleading regarding his wants and methods, and I have no doubt he will wish to amend it in view of his own remarks in his courteous reply to my note.

His remark regarding my method being of most value to the field worker is quite correct—so far as larval identification is concerned. At the same time it is, at present, the only system which gives a more or less completely correct identification; that is, the controlled breeding of larvae from accurately determined parents. At the present stage of knowledge, I do not think any other system can be more accurate and, indeed, I feel no other system can possibly be so complete and yet so simple. There are, in any system, exceptions to the rule, but it is unnecessary to go into them here.

Mr. Uffen's system of microscopical preparations of cuticular remains is well known but is yet, comparatively, in its infancy. The work he is doing in this direction is most interesting and very worthy of the full support of all AES members and will, eventually, almost certainly become the standard method of identification of the more critical species of lepidopterous larvae but until *complete* collections of accurately determined mounts, resulting in *complete* keys, have been formed, it will be of little use to anyone outside the laboratory. This, of course, naturally means he must have material to work on and that is where the amateur field worker can collaborate effectively with the professional laboratory worker.

As regards our mutual comments on incomplete books and the fact that species are missed by the authors who, in nearly all "popular" books are decidedly uncritical, I would add that many books written by supposedly critical authors are also very unreliable. Any book which gives keys to species must be *complete* to be of any use to those using it. I had occasion some years ago to name a small collection of Coleoptera. The book I used was as described above, i.e.—with keys—but (and it is a big "but") it omitted the rare and lesser seen species. I worked out the species by it, except for a few I could only get down to genera. Later, I found, on checking with Fowler and Joy that I had 15 errors of naming. The omission of only a few species is completely fatal to accuracy. Moral—see the literature you use *is* complete.

Thank you, Mr. Uffen, I have enjoyed this discussion. As a final "dig" I still don't like that "supposed host". It reads two ways. Please alter it!

H. E. Hammond (423).

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HIBERNATION OF THE RED ADMIRAL (*VANESSA ATALANTA* LINN.)

Reading the note concerning R. Woodbridge's attempt to overwinter the imago of this species (*Bull. amat. Ent. Soc.*, **19**: 6), prompts me to write of my experience of its natural hibernation.

On 23rd October 1959, a specimen was seen walking around on the curtains and ceiling of my bedroom, as if it were looking for a suitable spot in which to spend the winter. This was, in fact, the case, as it had settled down later on in the day, when it was next observed.

About a week later, it was joined in the room by a Small Tortoiseshell (*Aglais urticae* Linn.). The characteristics of hibernation of these two species afford an interesting comparison. While *A. urticae* remained motionless, *V. atalanta* frequently moved its position and generally appeared to have a shallow hibernation (not really surprising, as this is a species of which the great majority do not hibernate).

On 1st January (a mild day) it became active and fluttered round the room. It settled down again, however, and to-day (27th January) it is still alive. If it successfully lives throughout the latter part of the winter and escapes in the spring, I will write and record the fact.

(Note.—I have not examined the specimen very closely, lest I disturb it, but it appears to be a male, which is not in the same line with the theories of those who hold that it is the females, only, which hibernate.)

COLLECTING HINTS — April

The Macro-lepidoptera

Beat pine trees this month for larvae of *Thera variata* Schiff. (Pine Carpet) and *Ellopia prosapiaria* Linn. (Barred Red). Both are easy to rear in captivity if supplied regularly with fresh food. I always get the best results by sleeving the larvae on a branch of pine inserted in a flower-pot filled with damp sand. When fully grown, I transfer them to a tin or box half filled with sandy soil, covered with a thin layer of dead pine needles. Both species should start emerging about the beginning of June.

Fungus on logs should be examined for larvae of *Parascotia fuliginaria* Linn. (Waved Black). This moth is now quite common in many localities in Surrey, and probably occurs in many others throughout Southern England. Logs bearing the larvae must be continually sprayed with rain- or distilled water to prevent the fungus drying up. Heavily chlorinated tap water should be avoided.

Collect and examine the catkins of Black Poplar for young larvae of *Agrotis ypsilon* Rott. (Dark Swordgrass), *Agrochola circellaris* Hufn. (Brick), and *Cirrhia ocellaris* Borkh. (Pale-lemon Sallow). Although very local, the latter is often common where it occurs.

Many moths will be attracted to light this month; these include: *Odontosia carmelita* Esp. (Scarce Prominent), *Drymonia ruficornis* Hufn. (Lunar Marbled-brown), and *Panolis flammea* Hübn. (Pine Beauty).

B. F. Skinner.

The Smaller Moths

Blotches on the leaves of the *Helianthemum* species (Rock-rose) should indicate the presence of the pinkish larva of *Mompha miscella* Schiff. The Rock-roses grow on chalk and limestone, and I have found that on the North Downs the plants are easiest to find when growing on ant-hills. The larva will transfer itself from one leaf to another when it needs to.

April is a good month to collect the larvae of the rather neglected family of moths, the Psychidae. Probably the commonest and easiest to find is the case of the larva of *Fumaria casta* Pall. The larva feeds on grasses and about this time of the year it is usually found on tree-trunks or fences. The case is made up of longitudinally placed fragments of grass, spraying outwards at the rear. If a similar case is found with the grass fragments constricted at the rear, then it is probably that of *Epichnopteryx pulla* Esp. Several species are to be found feeding on lichens growing on tree trunks. The trunk has to be searched carefully, for they are hard to see at first. A pair of forceps is useful for removing them from the trunk.

A paper on this family by L. T. Ford was published in the *Proceedings and Transactions of the South London Entomological and Natural History Society* for 1945-46, and there is a coloured plate by S. N. A. Jacobs.

D. Ollevant.

The Coleoptera

The subfamily Rhynchitinae contains a number of interesting weevils. 19 species according to Kloet and Hincks' *Check List of British Insects.* All of these can be obtained by beating, provided that one beats the right plant at the right time in the right locality. The following notes may help the collector to decide where to go beating for his specimens. May and June are the best months but some of these weevils can be obtained in April and July. There are not many records outside these months.

Rhinomacer attelaboides Fab. This is very local on *Pinus sylvestris* chiefly in Scotland and the north of England. There are several records from as far south as Kent and Hants, which are possibly connected with the extensive planting of conifer forests in parts of England.

Lasiorhynchites cavifrons (Gyll.) and *L. ophthalmicus* Steph. are both local and southern in distribution. They are found chiefly on hazel and oak, but the latter has also been beaten from birch and aspen.

There are eight species of the genus *Caenorhinus.* *C. nanus* (Payk.) is common, especially in the south and is almost always on birch. *C. germanicus* (Herbst) is the commonest member of the genus, and frequents oak and birch throughout the country, while *C. aeneovirens* (Marsh.) is equally widespread but

less common and occurs on oak and hazel. *C. interpunctatus* (Steph.) is a southern species which occurs on various young trees. I can find very few records of *C. longiceps* Thoms. Joy, in his Handbook of British Beetles, states that it is local in England and Scotland, but does not mention the host plant. *C. tomentosus* (Gyll.), which differs from all the above in living on willows, is widespread but commoner in the south. There are two more species, both of which live on trees of the family Rosaceae. *C. pauxillus* (Germar) is rare although widespread and has been obtained from medlar, blackthorn and pear, and there are also records from oak and hazel, but these may be accidental occurrences. *C. aequatus* (L.) is very common in the south and can be obtained in large numbers by beating hawthorn when it is in blossom.

The remainder of the subfamily will be dealt with next month.

K. C. Side.

A THIRD BROOD IN HAWK MOTHS

Joy O. I. Spoczynska (751) and P. Maggs (244) ask (*Bull. amat. Ent. Soc.*, **19**: 1) if anyone has ever managed to rear a third brood from any of the hawks. I cannot answer the question precisely, but it may not be entirely irrelevant to cite the observations of Dr. Jean Loritz in the south of France. In the ecologically favourable district surrounding Nice, in the Alpes-Maritimes, the Spurge Hawk, *Celerio* (=*Deilephila*) *euphorbiae* Linn. normally produces two annual broods but a few years ago Loritz observed three generations of this species in nature. Comparatively high minimum temperature must have played a prominent part in this phenomenon which took place at a low altitude in the hot basin of Nice, for in the hills above Nice there is only one generation a year.

Any theoretical advantage of an additional brood to species survival was largely discounted by the fact that the third generation was visibly enfeebled at the larval stage, many caterpillars being diminutive and grossly underweight. The mortality rate was high. As far as I know, this is the only occasion on which a third generation of the Spurge Hawk moth has been recorded on the French Riviera.

Quite apart from the exceptional third generation, this moth appears to present an interesting biological problem with its normal two generations on the Riviera. Some summer caterpillars pass rapidly in about three weeks to the imago state, while others hibernate to become perfect insects the following year. Yet the environmental circumstances are identical for all these caterpillars. There is nothing to distinguish them morphologically. Nor are the moths distinguishable. Behaviour, however, is differentiated. Pupae destined to quick metamorphosis do not bury themselves in the ground as do the others; they merely attach themselves by a silken thread to the leaves of the host plant, one of the many *Euphorbia* of the Riviera. These pupae are mobile and, when touched, the abdominal segments are agitated at once. Larvae destined for slow metamorphosis dig deeply into the ground and pupate there. Their pupal casing is thicker and less plastic. The loss of body weight in the hibernating form is so much less that the eye can see the difference between them in a few days and pick out the smaller pupae which will hatch during the same autumn.

Provided the temperature remains high enough, July caterpillars supply 90% of the rapid developers, whereas those emerging in August or September produce a predominance of individuals which will hibernate until the following spring, even when the latter are subjected to high temperatures equivalent to the summer heat of the Alpes-Maritimes.

Temperature seems to have no influence on the development of the larvae destined to hibernate, but it does have a direct effect on the speed with which non-hibernating pupae become adult. The higher the temperature the faster the development.

Reference to the Spurge Hawk reminds me of a short series of experiments performed by Loritz in which he amputated the horn at the tip of the abdomen of a number of caterpillars of this species. Two males and two females of the resulting adults were mated, as well as a female from the same amputated group with a normal male. Offspring from these pairings produced the following results:—

Caterpillars without the slightest trace of horns—8·5%
Stumps of greater or lesser length—75%-78%
Horns of more or less normal length—12%-15%

Loritz interprets these results as indicating that acquired characteristics can be inherited provided that they are acquired at a very early stage of development when the organism is at its highest state of plasticity and cytoplasmic receptivity.

On this provocative assertion, suffice it to say that my impression is that there are more naturalists in France than here who support some kind of neo-Lamarckian thesis to account for adaptive characteristics.

A. N. Brangham (18).

JUNIOR NEWS SECTION

Drawing Insects and Apparatus for the Bulletin

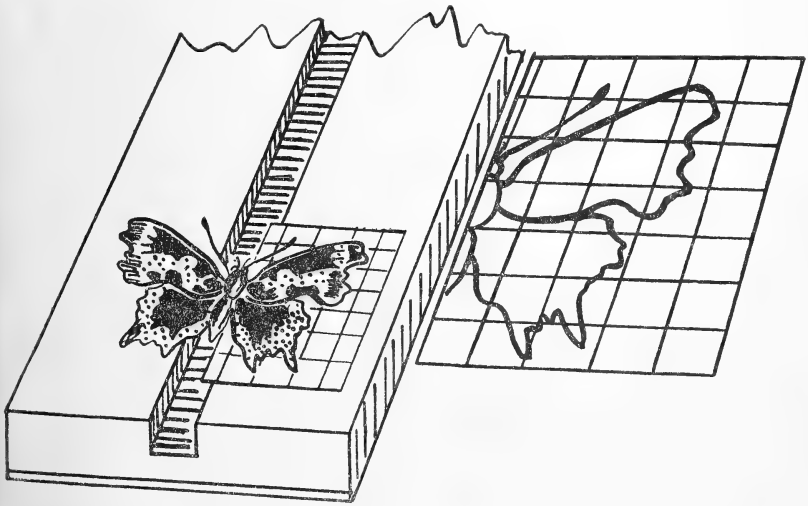
This month, I should like to give some hints to those Juniors who, having made some interesting capture, or having designed useful aids to collecting, wish to record their efforts for the amusement or assistance of others.

In the process of printing their drawings, the size will be reduced, and the originals should be made twice the length and breadth of the final illustration. Each line will have to be drawn twice as thick (or even more) than the desired thickness, each spot of shading, also doubled in diameter. To ensure even thickness of the lines, I use a Uno pen—which can be obtained from most stationers. Nibs (with reservoirs for ink) of various thicknesses can be obtained, and with each size lettering stencils to match are available. Standardgraph is another make of pen, of somewhat similar design. I find the smallest size of Uno pen—No. 0—is too small to give really good reproduction when the drawings are reduced.

In drawing insects, one difficulty is to get the two sides correct and the same (though remember that many specimens do prove to be lop-sided when examined carefully). I recommend drawing a scaled-up diagram of one side. This can then be traced, and the tracing paper reversed for drawing-in the other side.

Drawings are best done on white paper or Bristol Board, but remember that graphs and scale drawings can be done direct on faint-blue-lined graph paper. The faint blue lines will not be recorded in the photographic process of the printing technique, so will not appear on the printed page. An example of this appears in *Bull. amat. Ent. Soc.*, **18**: 13.

T. S. Robertson (2417), *Youth Secretary.*



Scaling-up to Twice Natural Size

Polygonia c-album ab. *suffusa* taken by Ian Whapshott. *Bull. amat. Ent. Soc.*, **19**: 6

COUNTY RECORDS

In all aspects of natural history there appears to be an increasing interest in county records, that is collecting records of the occurrence of a species of a particular order in the county. These are of value in determining the range of distribution of the species. It is now becoming clear that many species of plants and animals are more widely distributed than was thought at one time. A good example is Daubenton's bat (*Myotis daubentoni* Kuhl). It is now known to be widely distributed over the British Isles, whereas in the nineteenth century it was considered to be rare. This was mainly due to it being confused with other species and, consequently, not recorded. You may be saying what has all this got to do with entomology: well, the same kind of situation has arisen with the fleas (Siphonaptera) of Essex. Up to a short while ago, out of the 56 species and sub-species of fleas on the British list only 19 had been recorded as occurring in Essex. This number has now been increased to 26; the author having collected two of them, one of which had been in his possession (unidentified) for over six years.

At the beginning of March last year, I joined a party who were going to explore the deneholes at Grays in Essex. These are chambers cut into the chalk, which in this particular area is at a depth of about 80 feet below the surface. Entrance to the chambers is gained by descending a narrow shaft, about six feet in diameter, which is cut in the overlying rocks—mainly Thanet sand. The origin and purpose of these caves has never been satisfactorily explained, but at the present time they are assumed to be pre-Roman and man-made. If this is so, then they are certainly a magnificent feat of engineering, as the shaft is vertical and hardly varies in diameter throughout the whole 80 feet.

During our investigations several bats were seen, and it was decided to catch two of these in order to determine what species they were. They were not identified until after we had returned home, when to our surprise and good fortune it was found that two different species had beeen collected, namely, Daubenton's bat and Natterer's bat (*Myotis natteri* Kuhl). I had heard recently of a person who was interested in the fleas occurring in Essex, and hence decided to see if any could be found on the bats. Some were duly collected and identified as *Ischnopsyllus simplex simplex* Rothschild, one female being obtained from Daubenton's bat and two females from Natterer's bat. Imagine our pleasure when being told that this species had never been recorded before in the county of Essex. With this in mind, I searched through some miscellaneous specimens which had been collected over the past few years and came across a flea which I had removed from a Pipistrelle bat (*Pipistrellus pipistrellus* Schreber) in 1953. This was duly identified as *Ischnopsyllus octactenus* Kolenati, and this, too, had never been recorded before in the county of Essex.

My idea in publishing this short note is to try and encourage other members, whose interests may lie in other entomological fields, to collect any fleas or other ectoparasites if the opportunity arises. These parasites can be found by examining specimens of mammals and birds (the nest should be examined also). Information on collecting and preserving fleas as well as identification is given in the Royal Entomological Society of London's *Handbooks for the Identification of British Insects*, Vol. 1, part 16—Siphonaptera, by F. G. A. M. Smit.

I shall be very grateful to receive either records or actual specimens of fleas, which have been collected in Essex, and they will be identified and acknowledged in due course.

My thanks are due to Mr. R. S. George for both the identification of the fleas and for information on the records of fleas in Essex.

D. I. Chapman (1648).

CORRIGENDA

The reference to the recorded capture of *Chloroclystis debiliata* Hübn. in "Letter from Aviemore" (*antea*, p. 10, line 48) should have been deleted, the insect having been wrongly identified.

On the same page (line 34) "Inverness-shire" should read "Western Inverness-shire."

We apologise to Mr. le Masurier for these errors.

REVIEWS

A Simple Key to Adults of British Grasshoppers and Crickets. W. B. Broughton. Pp. 10. Special Leaflet, No. 14, published by the School Nature Study Union. Obtainable from Mr. A. C. Funnell, 23 Crystal Palace Road, East Dulwich, London, S.E.22. Price 1s. 6d. post free.

The grasshoppers and their allies are unexpectedly difficult to identify, and the keys hitherto available in this country has suffered from certain practical defects so far as the newcomer to the group is concerned. For example, if one is using the key in Malcolm Burr's excellent book, *British Grasshoppers and their Allies*, one comes to a genus keyed solely on the female character (most discouraging to the student!), while the R.E.S. key is marred, from the beginners point of view, by its assumption that users are already familiar with the basic terms peculiar to this order of insects.

However, the new key by W. B. Broughton should make the job of identification considerably easier. Its great merit is that it takes nothing for granted: thus it contains clear diagrams illustrating the fundamental terms used in the study of Orthoptera, and—a most useful feature—a series of drawings showing the essential differences in appearance between mature and immature grasshoppers, and between grasshoppers and other superficially similar insects.

The particular virtue of the key itself (though of course it adds greatly to its length) is that species which vary a lot in appearance are included in more than one place. For instance, *Myrmeleotettix* is to be found in the section of grasshoppers with unclubbed antennae as well as in the "clubbed" section—a sensible reflection of the fact that in the females of this species the clubs can often be very indistinct.

One can think of minor improvements in this key—thus the obvious distinction between short-horned grasshoppers (Acridoidea) and the rest is surely the *length* of the antennae, irrespective of the numbers of joints—but I can certainly recommend it to those wishing to take up the study of Orthoptera.

R. M. P.

Identification Sheets. Insects and other Land Arthropods. J. Eric Marson, F.Z.S., F.R.E.S., F.R.M.S. Pp. 11. Price 1s.

Water Animal Identification Sheets. J. Eric Marson, F.Z.S., F.R.E.S., F.R.M.S. Pp. 11. Price 1s. 6d. Published by the School Nature Study Union, and obtainable post free from A. C. Funnell, 23 Crystal Palace Road, East Dulwich, London, S.E.22.

These sheets were designed to assist school children to identify their captures. As must be obvious by their price, they have their limitations.

The Water Animal sheets have a brief Bibliography, and the keys have little sketches to help. Generally speaking, most water animals, including the larvae of some, can be identified to Genera level. An instance here of the limitations is that the aquatic larvae of the lepidoptera are grouped under *Nymphula*, which leaves out *Acentropus niveus* Oliv. and *Cataclysta lemnata* Linn. The molluscs seem to have most of the attention.

The Insects and other Land Arthropods sheets seem to be chiefly a guide to the identification of the adult Coleoptera down to Genera level. The smaller insects are probably considered too difficult and are ignored. The Arthropods, other than the Coleoptera, are only identified down to Orders, or at the best, Super-families.

These two leaflets have proved of use to school teachers and their pupils, and there is no reason why the beginner who is interested in general entomology should not also find them of use.

D. O.

●

SECOND BROOD OF THE LAPPET (*GASTROPACHA QUERCIFOLIA* LINN.) IN 1959

In May 1959 I found five nearly fully-grown larvae of the Lappet feeding on small plants of one of the sallows. One of the larvae was on a somewhat larger bush coated with a pale grey lichen, and it was interesting to note the

The last larva spun up on 30th May, and the resulting moths hatched between 21st and 25th June. The average wing-span was ♂ $2\frac{3}{8}$″, ♀ 3″, and the specimens were of normal coloration.

From fertile eggs of this brood, laid commencing 21st June, larvae began hatching on 15th July. They were transferred to corked 2″ × $\frac{1}{2}$″ glass tubes and supplied with the juiciest sallow available. Later arrivals had to make do with cardboard pill-boxes and second quality sallow. Those in tubes grew proportionately much faster than their pill-box relatives, and were transferred to gauze-covered jam-jars two or three weeks before the others.

All of the tube-fed larvae and a few of the others became rather small full-grown caterpillars and duly pupated between 20th August and 15th September. These hatched between 9th September and 10th October, producing dark adults (v. *hoegei*?), wing-span ♂ $1\frac{1}{2}$″-$1\frac{7}{8}$″, ♀ $2\frac{1}{4}$″-$2\frac{3}{8}$″. Eggs resulting from this second brood hatched from 17th October onwards.

In all, 42 larvae fed up and attained the adult state in 1959, while 27 are hibernating at 1″. Larvae from the October eggs are hibernating at $\frac{1}{2}$″.

As the time for Lappet-hunting is again approaching, I thought that someone successfully breeding them this year might try to rear a second brood, in which case it could be ascertained whether my luck last year was due to the extraordinary summer or to other causes.

M. Speight (3044).

LETTER TO THE EDITOR

Dear Sir,

Living as we do in these days of so many great scientific achievements, it seems to me to be a pity that we collectors have benefitted so little up to now.

It is true, of course, that we have the m.v. lamp, and the more fortunate amongst us even have our own means of mechanised transport to our favourite collecting grounds, but all too often we arrive too tired and worn out to enjoy the thrill of the chase.

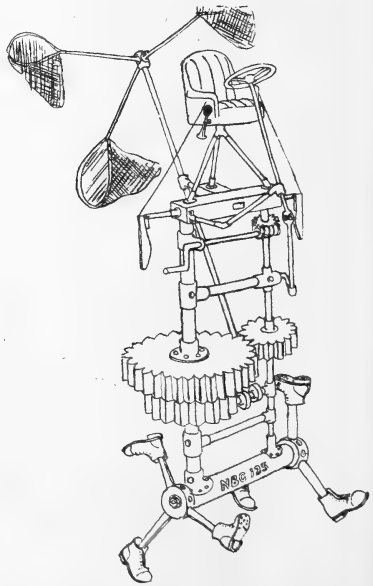
All this has now been changed with the arrival of the Harper Patented Butterfly-Catcher, the greatest advance in the annals of entomology since the clap-net was discarded.

I am, therefore, very pleased to send you a drawing of this remarkable machine, which we hope to put through its paces in the very early part of April somewhere in the South of England.

A careful study of the drawing will suggest many useful adaptations of the basic model. To give only one example, the nets could be detached and a pair of flailing arms substituted —thus making a highly efficient Treacle-Dauber. Indeed, there is no end to the interesting possibilities which present themselves to anyone with an ingenious turn of mind. The inventor of this contraption, I may add, already has a highly secret moth trap, working on the radar principle, to his credit and has yet other things up his sleeve.

In conclusion, I hope that you are sufficiently interested in this remarkable invention to be able to publish it for the enlightenment of your readers.

I am, yours faithfully,
A Moth-Catcher.



The Harper Patented Butterfly-Catcher

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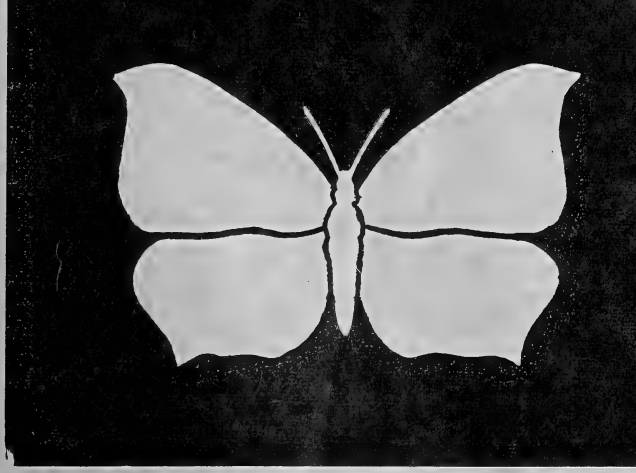

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by W. N. LAWFIELD

AES NOTICE
WHERE TO WRITE

Membership applications, offers of help to: D. OLLEVANT, *3 Salcombe Drive, Morden, Surrey.*

Advertisers to: R. D. HILLIARD, *54 Gyles Park, Stanmore, Middlesex.*

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Subscriptions (12/- per annum, 9/- for Juniors) to: K. H. BOBE, *50 Winn Road, Lee, London, S.E.12.*

Youth matters to: T. S. ROBERTSON, *38 Repton Way, Croxley Green, Herts.*

AES BULLETIN

No. 233

MAY 1960

SECRETARY'S LETTER

With this issue, the *Bulletin* has a new editor, and I am very pleased to be able to introduce Mr. W. N. Lawfield to members. Although a comparatively recent member of this Society, Mr. Lawfield has been interested in insects for many years, and has professional experience of editing. I am quite sure that under his guidance the *Bulletin* will continue to improve.

Contributions to the *Bulletin* may be sent either to me, or directly to Mr. W. N. Lawfield, 17 Quarry Rise, Cheam, Surrey.

Mr. B. R. Stallwood has edited the *Bulletin* for just over six years, and the Council wish to take this opportunity of expressing their thanks to him for his services to the Society.

The School Nature Study Union will be holding their Biennial Exhibition at the College of St. Mark and St John, in King's Road, Chelsea, London, on Saturday, 21st May. The AES will be represented, so if you would like to come we should be pleased to see you. If any members would like to help the Society by exhibiting live insects—preferably ones which are easy to breed in the class-room—it would be very much appreciated. Further information may be obtained from me.

D. Ollevant.

DIPTERA-BREEDING, 1959

Note 1. *Flies reared from compost*

On the evening of Sunday, 7th June 1959, I observed many dipterous larvae slowly issuing from between the loose bricks that edge our compost heap on to some sand that had been banked up against it for want of a more suitable site. A sample of this sand was collected and the whole placed in a 2 lb. jam-jar on the window-sill of my room, to attract the maximum amount of sunlight.

All these larvae proved to be *Microchrysa polita* L. (Stratiomyidae), and in all 9 males and 8 females emerged between 18th and 27th June. They appeared to emerge at all times of the day, which contrasts with the regular time of 1.30 p.m. when my Trypetids emerged (see Note 2).

The dates of emergence were as follows:—

June 18—2 males; one female
,, 19—1 male; 1 female
,, 20—1 male; 2 females
,, 21—2 males; 2 females
,, 22—1 male; 2 females
,, 23—1 male
,, 27—1 male

In addition to these flies, several others were reared whose puparia were t found in the sand at all:—

June 11—1 ♂ *Pegohylemyia fugax* Mg. (Muscidae)
,, 12—1 Scatopsid, unfortunately lost
,, 23—1 ♀ *Delia cilicrura* Rond. (Muscidae)
,, 25—1 ♂ *D. cilicrura*, emerged about 7.35 a.m.
,, 27—1 ♂ *D. cilicrura*

The *P. fugax* Mg. undoubtedly passed the larval stage in flowerheads which vere later thrown on to the compost heap to rot, but where the *D. cilicrura*, the o-called Bean-fly, came from is a mystery, as the only beans in the garden vere at that time 25 yards away and showing approximately a foot above soil evel. It is possible, though unlikely, that they had hibernated in the pupal tage from the previous year's beans, also thrown to rot on the compost heap; ut as I have no literature on the subject I can only put this forward as a ness

In addition, in the original sand, was found one cyclorrhaphous puparium, dark brown, perfectly cylindrical, 12 mm. long, which failed to emerge.

NOTE 2. *Urophora cardui* L. (Trypetidae)

On 9th August 1958 a number of galled thistle stems were collected at Inglestone Common, near Wickwar, S. Glouc., for the purpose of breeding *Urophora cardui* L. and its parasites. In fact, nothing more than a series of *cardui* resulted, but the time of emergence and ratio of the sexes was interesting to note, although the small numbers reared do not allow any definite conclusions to be drawn.

In all, 20 specimens were reared, 13 males and 7 females, and all proved to be *Urophora cardui* L. The few specimens that I was able to observe emerging, or with wings undeveloped, all did so at about 1.30 p.m., and most of them emerged at the end of May and the beginning of June. This is almost a month earlier than I had observed the species in the field the previous year, when individuals and pairs *in cop* were observed together with *Xyphosia miliaria* Schrk., behaving similarly, on thistles on 3rd July 1958, at the same locality, Inglestone Common.

The flies emerged as follows:—

May 17—2 males; 1 female c. 1.30 p.m.
,, 18—1 male; 1 female
,, 22—1 male
,, 30—1 female c. 1.30 p.m.
,, 31—5 males c. 1.30 p.m.
June 2—2 males
,, 3—1 male; 2 females
,, 5—1 female
,, 9—1 male
,, 20—1 female

It is interesting to note that the *cardui* found in 1958 referred to above were only observed during the early afternoon of the day concerned, flying and copulating on the thistles, so this might indicate an afternoon emergence and flight period.

ADRIAN C. PONT (2812).

•

COSYMBIA PUPPILLARIA HÜBN. IN N.W. LONDON

On 12th October 1959 I took a fine ♀ *Cosymbia puppillaria* in mint condition in my mercury vapour trap in N.W. London, and I am now trying to persuade her to lay a batch of ova, as it should prove most interesting to rear. According to Dr. C. de Worms, between October 1946, when it was discovered, and 1956 only fifteen were recorded. It has occurred in limited numbers since, although I believe this is the first specimen taken in the London area. Other records of note during the last 14 months are:—

Aug. 10, 1958—*Heliothis armigera* Hübn.
July 8, 1959—*Euphyia cuculata* Hufn.
Oct. 5, 1959—*Macroglossa stellatarum* Linn.

I also took eight *Eupithecia intricata* Zett., a species which I was not expecting to find.

During September I obtained a number of young larvae of *Laphygma exigua* Hübn. from eggs laid by a female in the Isle of Wight, from the Secretary of the South London Entomological and Natural History Society, Mr. B. Goater. The young larvae were all pale green with a yellow lateral line, but by the final stadium 15% were of the brown form, whilst others were pale olive green.

They were given dock, and fed up rapidly until they were some 1½" long. Despite the large size of the larvae, the imagines, which emerged after ten days, were all normal size.

It is vital when breeding *L. exigua* to keep the atmosphere very dry, and to give them very dry peat for pupation, although South (*Moths of the British Isles*) says to the contrary. This is not surprising when it is considered that *L. exigua* often inhabits desert areas.

A. A. MEEUS (2683*)

OBSERVATIONS ON *ARCTIA CAJA* LINN.

For two seasons I have been observing the moth *Arctia caja* Linn. All my specimens were wild and not bred in captivity.

The first season I collected ten larvae from my district and fed them with certain wild plants. Two died from the virus disease mentioned by J. Knight (*Bull. amat. Ent. Soc.*, **16**: 184). Two were parasitized by *Ophion* (as later noted). The remaining six pupated; three emerged later, one having deformed wings, the other two were perfect in every detail (released). The two remaining had a fungal growth.

Second season: six larvae collected. Results: one with virus; three parasitized; two imagines released. In both seasons normal conditions for England prevailed.

From this small survey it appears that the parasites have the say.

37½% Imagines
31¼% Parasitized
18¾% Virus
12½% Fungal growth

Has any member made a survey on the percentage of larvae attacked. No doubt this varies each year. Unfortunately, my interests lie with Coleoptera, otherwise I would have made a more detailed study.

I did observe, however, that a parasitized larva has a distinct habit. When about to pupate it runs hither and thither as though being chased or not knowing where to pupate. Perhaps other members have noted this peculiar habit.

C. JANES (1635).

●

A SIMPLE REMEDY

I wonder how many rearers of the Saturniidae have intended to set a cocoon-spinning species on emergence only to find that the moth has rubbed about 50% of its thoracic hairs off in the process of squeezing out of its cocoon. I, for one, was until recently always troubled by this. All my specimens were minus their thoracic hairs, thereby showing unsightly patches of chitin. Possibly the reason for this was insufficient spraying to soften the silk strands. However, I have now overcome this problem by adopting the following procedure.

About one week or ten days before expected emergence, I carefully slice open the top of the cocoon, using a sharp razor blade and a pair of sharply pointed scissors. I do not slice the top off completely, but leave the "lid" attached to the rest of the cocoon at one point. This may all sound rather crude, and you may say it can only lead to damage of the pupa. All I can say in reply to this is that I have never damaged any pupae. I then pin or hang up the cocoons in the emergence cage, attaching them by their "lids". My argument for this method is that a cocoon is for protection only and surely in our breeding cages pupae have as much protection as a cocoon can offer?

M. J. FRIEND (2786*).

●

BRACHIONYCHA NUBECULOSA ESP. AT AVIEMORE

The Rannoch Sprawler

In Mr. P. Le Masurier's interesting letter from Aviemore (*antea*, p. 9) he makes observations on the behaviour of *Brachionycha nubeculosa* Esp. While I agree that his remarks are true as a general rule, there is always the exception. I was fortunate to be in Aviemore in the wonderful spring of 1936, when "everything" was out during the first few days of April and *nubeculosa* in plenty, and with the one exception, always on the south side of the trunks. Late one afternoon, I came across no less than five *nubeculosa* grouped within an area of under two square feet, four males to one female, and on the N.W. side of the trunk, two of the males were very distinctly worn. Whether this group was the result of an overnight assembling, or, being late afternoon, was a case of anticipating males collecting round a virgin female, I cannot say, probably the former. Incidentally, my experience with light was just the opposite to Mr. Le Masurier. I saw only one on the sheet, but those were the days of the petrol lamp.

P. J. BURTON (1199).

JUNIOR NEWS SECTION

Editorial

With the collecting season just getting under way, no doubt all of you will have put all your equipment in order and are thoroughly organised for this season's work—or are you? It is not too late to make amends, clean up setting boards, order pins, paper, etc., and get your nets, bottles and boxes in good order!

At the risk of being a bore, may I ask again for records of "first this year" of the common butterflies? The species I am particularly interested in are listed in the March Junior News Section.

News from Members

R. Merrifield (2295†) has shown me some of his captures and records which he has made with his home-made moth trap. The recording was done at Harrow, Middlesex, and it is hoped to summarise them in our next issue.

Wesley Caswell (3133*) has written to me twice from hospital. He caught four Hummingbird Hawkmoths in the hospital at Stanmore, Middlesex, last August or September. He has had a long spell in hospital, but expects to be able to go to Devon for his summer holidays, in June. Best of luck! Wesley.

This month I have received a letter from Hisashi Kuwabara in Japan, who wishes to join the A.E.S. His age is 17 years, and he wants a pen friend with interests similar to his own—butterflies, animals, adventure and pen pals. His address is: 7422 Tsujido, Fujisawa City, Kanagawa, Japan.

Graham Taylor (3090*) has successfully over-wintered the Fox Moth larva —something I have yet to achieve. Here is part of his letter:

"The larva was found wandering in Barmouth, North Wales, on 18th August 1959. It fed on plum leaves there, and when brought home continued with them until 21st October, when it was placed on moss in a tin, which was hung in a muslin bag (facing north) in the back garden. It was sprayed with water twice weekly and it hibernated during severe frosts. On 4th January it was brought indoors and hung near hot water pipes, and sprayed with warm water daily. Towards the end of January a cocoon was noticed right next to the hot pipes. This was inspected daily, and to-day (24th February) it was noticed that the Fox Moth had emerged but had obviously done so several hours earlier, because it was very energetic and had torn and rubbed some scales off its wings."

This method of treating the Fox Moth was described by Mr. L. G. F. Waddington (169) (see *Bull. amat. Ent. Soc.*, **17**: 33).

T. S. Robertson (2417), Youth Secretary.

●

COLLECTING HINTS—May

The Macrolepidoptera

Pachetra saggitigera Hufn. (Feathered Ear) will be on the wing towards the end of this month. Although taken in Surrey, the headquarters of this moth is undoubtedly the downs of Kent. Here the chalk quarries provide suitable collecting areas for two main reasons. The first is that the floor of the quarry allows a flat site on which to operate portable mercury-vapour equipment; secondly, the numerous posts which border the steeper sides are ideal for sugaring. Other moths occupying the same area are *Agrotis cinerea* Hübn. (Light Feathered Rustic), *Arctia villica* L. (Cream-spot Tiger), *Hadena conspersa* Schiff. (Marbled Coronet), and *Siona lineata* Scop. (Black-veined). The latter normally flies only in the sunshine, although in dull weather it can be disturbed by beating the undergrowth.

Beating oak, sallow, etc., will yield many species of larvae. These include *Thecla quercus* L. (Purple Hairstreak), *Pseudoips bicolorana* Fuessl. (Scarce Silverlines), *Poecilocampa populi* L. (December Moth), and *Comibaena pustulata* Hufn. (Blocked Emerald).

During the last half of May, beat for larvae of *Strymon pruni* L. (Black Hairstreak) in its localised haunts. The easiest way to obtain them is to place the beating tray on the ground and bend the taller sloes over the tray, with the aid of a hooked pole, and then tap the top branches. This does not mean that the lower branches should be ignored, especially if larvae of *Thecla betulae* L. (Brown Hair-streak) are also required.

B. F. Skinner.

The Smaller Moths

Keep a lookout for the imagines of some of the species of the Eriocraniidae and Micropterygidae during this month. These little moths fly about in the sunshine and can often be found on the leaves and flower-heads. *Micropteryx thunbergella* F. can be found resting on the leaves of sycamore in the mornings. Some of the other species seem to favour the flowers, and especially those of the buttercups and dandelions. Much of the life histories of these moths is yet to be discovered although some are quite common. A paper, together with a coloured plate was published in the *Proc. S. Lond. ent. nat. Hist. Soc.* for 1957.

Elachista rufocinerea Haw. will be found flying in numbers over grass; its larva mines the leaves of Yorkshire Fog. The narrow wings of this moth are ochreous, and if a similar moth is found with very much whiter wings, this is almost sure to be *E. argentella* Clerck, which is usually a little later in emergence.

Blossom of broom and gorse should be examined for holes, which may indicate the presence of larvae of *Gelechia mulinella* Zell. feeding in the flowers.

Larvae of *Walshia rhamniella* Zell. may be found in the spun shoots of Buckthorn.

Examine the black fungus growing on dead stems or logs for the larva of *Myelois neophanes* Durr.

D. Ollevant.

The Coleoptera

Three genera of the sub-family Rhynchitinae were left over from last month's notes. *Rhynchites caeruleus* (Degeer) is found not uncommonly on pear, apple and hawthorn in England only. Beating these trees in May or June, especially in the south, should produce this weevil. I have a specimen taken hibernating under bark in winter. *R. cupreus* (L.) is much more local. It feeds on apple, blackthorn and mountain ash. The last of these trees should be beaten in July when the berries are ripe.

There are two other species of *Rhynchites* which have been recorded in Kent well over a century ago, and as they have never been rediscovered in such a well-worked county, it is to be presumed that they are now extinct. They do occur on the continent, so there is always a chance that one or other of them may turn up again at any time. The two species are *R. auratus* (Scop.) and *R. bacchus* (L.). Both are large, conspicuous weevils, the former being greenish or golden coppery with crimson sides, and the latter crimson or purple coppery. They could not possibly be overlooked. Both live on blackthorn and various fruit trees.

We have two very local species in the genus *Byctiscus*. During the summer months in the south of England *B. populi* (L.) can be found on young aspens. *B. betulae* (L.) extends further north but is more frequent in the south of its range. It has been taken on poplar, hazel and birch.

Finally, there are two species of *Deporaus*, both of which are widespread and common. They are *D. mannerheimi* Hummel and *D. betulae* (L.). They can be swept or beaten from young birches in spring and summer. In some localities the latter insect is present in very large numbers. Its presence is indicated by the rolled-up leaves in which the eggs are laid and the larvae feed.

K. C. Side.

●

SUGARING NOTES

As one who has sugared many a tree in my day—not to mention gate-posts, fences, palings, telegraph poles (of which more anon), lamp-posts, barn doors, and what not—I thought that perhaps some of my observations might possibly prove useful to other enthusiasts. This is not going to be a long catalogue of species I have taken at sugar, in this locality or in that, but some practical notes on how I have done the job—which is much more likely to be of some use, especially to those who have yet to sample the thrill of what is, to my mind, the most exciting method of collecting.

First, as to the materials used. I always use Fowler's ordinary black treacle and brown moist sugar in equal quantities, boiled together with stale stout—the staler the better—in the proportion of about one part stout to four of the treacle and sugar mixture.

When making up sugaring mixture I usually buy the beer at least six or eight weeks beforehand and leave it standing in a cool place with the cap

off until required for use. The actual boiling process should not be too prolonged —two or three minutes is quite sufficient. Leave the mixture to cool, and then pour into empty 1 lb. golden syrup tins ready for use. The 1 lb. size is a convenient one for one night's operations, after which the empty tin can be disposed of after use (leave no litter: bury it) thus obviating carrying home a sticky mess.

Do *not* add rum or amyl acetate to the mixture when making it up. Carry a small phial with you to the scene of operations, and add on the spot as required, preferably every few trees or so, and not all at once before you start. It is much more potent used in this way. Either rum or amyl acetate is satisfactory; each has its devotees. I have tried both, and find nothing to choose between them.

The longer you can have the made-up mixture standing before using it the better. As a rule, I make up several tins in the winter ready for the following season. On one occasion I had a couple of tins made up, which I put on the top of a high cupboard and forgot. Five years later, I suddenly remembered them—and boy, were the results good! In fact, it is a good idea to make up tins and keep them for use two or three years later, or even longer.

Now, as to the *modus operandi*. A very important point is to start your round early enough. The last tree should be sugared well before dusk. The first hour is, as a rule, the most productive. I have stayed out sugaring till various times, including right into the small hours, and in practically every case I have always found the first hour the best for results.

Regarding the side of the tree to be sugared, the north side is generally best, with due allowance being made for the direction of the prevailing wind. Common-sense is the guide here.

The vast majority of entomologists sugar only a small patch of the tree at a convenient height from the ground. My most successful method has been to make the patch longer than is advocated in most of the books—almost, in fact, to the foot of the tree. Firstly, when many insects are clustered together around a small patch, some that may be required are almost certain to escape while you are taking others; while at a long streak of the bait the moths are more scattered, and by commencing with your lantern and boxes at the *bottom* of the tree, almost every individual that is required may be secured without disturbing the others. *Never* commence boxing the insects from the top downwards, or startled moths will be liable to fall, and in their downward tumble disturb others below, which will panic and fly off in a good many cases.

Secondly, on a windy night I have invariably found the majority of moths on the lowest part of the bait, the higher part being practically deserted; also, many Noctuae and some of the Geometrae fly close to the ground, and so stand a much better chance of scenting the decoy.

A few earwigs, slugs, etc., will be bound to enjoy the feast. Large spiders also seem to have a partiality for the bait. But if you just ignore them, as I do, and do not let them worry you, you will find you are not unduly troubled by them. I once had a visitor in the form of a rather perky-looking hedgehog, but I don't think he came for the sugar—he, more likely, came for the fat slugs which happened to be more abundant than usual!

As to what weather conditions are ideal for sugaring, it is difficult to say. I have usually found dark, damp evenings the best; but there have been notable exceptions. Moonlight nights are seldom good, but a breeze, even a fairly stiff and cool one, has usually not made a lot of difference. I once had a really good night's sport on a windy night, which could certainly not have been called warm by any stretch of the imagination. The first dry night after several days' continuous rain is usually prolific. The least successful nights seem to be those during a long-continued dry spell, such as last summer, which I found the worst summer in my experience for sugaring.

As for where to sugar, the open rides of woods are best, also the outer borders of woods, especially those near streams. I have found deciduous woods definitely better—far better—than coniferous. I remember once reading that someone or other always found smaller trees better than big ones; but I have always found the reverse to be the case. So the best thing is to sugar *all* the trees, both large and small, then you cannot go wrong! As to the best species of trees to bait, I have usually found oaks the most productive and chestnuts the least; but I do not consider this a very important point as I invariably sugar every tree on a specified round, and it so happened that the woods I sugared in were largely oak woods, and chestnut was very much

a minority group.

Continual changing of the sugaring-round is not, in my view, very beneficial, but rather the reverse. The first night or two on a new round are not as a general rule productive, the results improving with use. If the same trees are kept constantly sugared, it does not take much liquid to freshen them up, whereas newly-painted ones soak up the mixture in a most uneconomical fashion.

Many insects have a partiality for the old sugar, including several very desirable species, which will repeatedly ignore freshly-sugared trees and make a bee-line for old patches which have not been renewed. I have very frequently found good moths on an old, almost indistinguishable sugar-patch when starting out on my round, long before I had even started to wield the brush.

A very curious thing, to my mind, is that a certain wood which is one of my favourite daytime collecting grounds, always yielding an abundance and variety of species, is one of the least productive as regards sugaring. I cannot understand why this should be so. Where do all the moths go at night in that area? Yet another place where I have sugared a few times with varying degrees of success, is always poor as a daytime collecting spot!

Earlier on I mentioned telegraph poles. I thought I would end these notes with an account of what happened to me once when I sugared a series of telegraph poles in a vain search for the elusive Red Underwing (*Catocala nupta* Linn.). My brother, who is not an entomologist, went with me just for fun. I sugared all the poles along one side of the road, which is in open country about two miles out of town (Northamptonshire). Contrary to my usual habit, I commenced well after dark, and after laying on the bait and shoving the empty tin under the bottom of a hedge, we walked another few hundred yards or so into the next village, where we bought some fish and chips and sat and ate them on a mossy bank at the side of a lane turning into a farm, and then went round the corner to the Fox Inn for a most welcome beer. One or two of the locals were, we noticed, looking at us rather curiously, but we put this down to our somewhat unorthodox attire and the bulging haversacks we carried on our backs, not to mention the butterfly-net (my net does not fold up).

It was nearly closing time, and very soon afterwards John and I were inspecting the sugared telegraph-poles.. No Red Underwings turned up, but we did get a few moths, including one or two new species I had not had before. We were intent on boxing a specimen when we suddenly heard the screech of brakes, and there on the road beside us was a gleaming black squad car, and then a voice boomed through the darkness: "What do you think you two are doing?"

We managed to satisfy the officers that we were harmlessly engaged in boxing moths off telegraph poles, which we had previously smeared with beer and treacle. They insisted on seeing some of the spoils, and we very nearly lost a magnificent *Eurois occulta* Linn., which was rather frisky. The officers informed us that a village rustic who had seen "two characters acting suspiciously round telegraph poles" had telephone them with details of the locality, and thereafter had hied him to the Fox Inn, where he added to the flavour of his story by supplying additional items from his imagination for the benefit of his fellow-taverners. By the time we got to the Fox, we were tramps trespassing on G.P.O. property, we had a gun, a poaching-net for game, a jar of quicklime, and poor Johnny was no longer a bearded young schoolmaster escorting his sister along a lonely country road, but a "furrin agent, who probably had all the atom secrets in his capacious pockets, which I had presumably handed to him after coercion! The police even knew the precise time at which we had sat to eat our fish and chips, and where!

The two police officers and John and I had a good hearty laugh, and they offered to run us home in their car, but we explained that we had not finished our round yet, and with a final exchange of joking pleasantries they shot off in the Humber down the road. We made one or two further rounds of the poles, taking a few noctuids but not the coveted *Catocala nupta*, and then walked home, where we arrived about one o'clock, to find father waiting up for us with hot coffee and anxious to know what we had caught. There was further laughter as we told him of our encounter with the law.

It was my father who had the last word. "You may not have caught the Large Copper", he laughed, "but now, at least, you can say that a Large Copper has caught *you*"!

Joy O. I. Spoczynska (751).

A SIMPLE RECORDING DIARY

I always read with interest the Junior News section of the *Bulletin*, and heartily endorse Mr. Robertson's advice on keeping an entomological diary.

For some considerable time I have recorded my observations in a six-year diary, in which the day, month and year are on the same page. The time of appearance of any insect recorded can, therefore, be easily compared without the necessity of searching through a number of separate notebooks.

By recording a few common species each year it becomes a simple matter to calculate the time of appearance of most species of butterflies. A "forward" or "backward" season soon becomes apparent as entries are made, and by comparing these dates with the average time of appearance given in any good textbook, an expedition for a local species can be planned.

An ordinary stiff-covered exercise book is opened to the second page and ruled as diagram. This is then repeated throughout the book. The left-hand narrow column carries the date and is headed by the month. Each main column is headed by the year. My own diary commences on March 1 and ends on October 31, as its function is to only record butterflies. Notes of unusually early or late appearances are entered on spare pages at the beginning and end of the book. Two books will, of course, be required to cover a complete "set" of years (January to December). Recordings are brief and abbreviated.

First observations are *underlined* and state of abundance or otherwise can be entered as: A, abundant; C, common; S, scarce, etc. No further entries are made of any particular species once it is "fully out". With double- and triple-brooded insects, each brood is recorded, and it is essential to note condition of species observed, as, in the case of *Pararge aegeria* Linn. (Speckled Wood), well worn specimens have been seen in company with freshly emerged early summer specimens.

By the use of my diary last year I was able to forecast the early appearance of *Argynnis cydippe* Linn. (High Brown Fritillary) in Wyre Forest, Worcs., on 21st June. I planned my trip for that day, and secured a short series.

It may be as well to mention here that some butterflies appear to be practically unaffected by "early" and "late" seasons, whilst others are very erratic in emerging, but these will become apparent as the diary becomes filled.

W. J. Tisbury (2717).

MAY	1956	1957	1958
26	HANTS: GOSPORT *P. brassicae* C	HANTS: ALVERSTOKE *C. rubi* S *P. napi* C	SURREY: WOKING *G. rhamni* S
27	HANTS: GOSPORT *D. megera* C *C. pamphilus* S *A. urticae* C *P. napi* C *A. cardamines* S *G. rhamni* S		
28			HANTS: TICHFIELD *C. pamphilus* C *A. euphrosyne* C *A. selene* C *V. atalanta* (M) *V. cardui* (M) *E. tages* A *P. malvae* A

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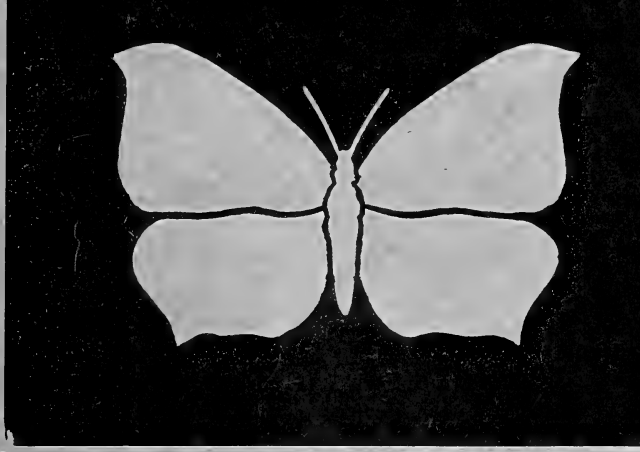

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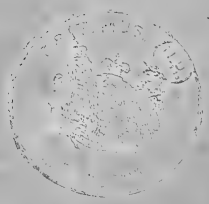

EDITED by W. N. LAWFIELD

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AES BULLETIN

No. 234

JUNE 1960

SECRETARY'S LETTER

This Society has received a circular letter from the B.B.C. Natural History Unit, which is producing a new monthly series of sound programmes in Network Three under the title of "Nature News". The first one of the series will have been broadcast by the time this letter appears in print, but members who have a suitable item should write to Mr. John Hillaby, 85 Cholmley Gardens, London, N.W.6. What is wanted are brief topical items of general interest, and the examples given in the letter are:—

1. Report of a rarity (precise locality will not be broadcast).
2. Description of a field survey involving a technique of which other naturalists might like to hear.
3. Description of results which might tie up with (or contradict) results obtained elsewhere.
4. Appeals for information from other naturalists on a specific topic.

Remember that the item must be brief, and if possible, try to mention the AES.

Here is an item from the Monthly Press Bulletin of the Council for Nature Intelligence Unit which may be of interest to members:—

"A new national society for amateurs interested in all aspects of natural history film-making was inaugurated at a meeting in London on Saturday, 2nd April. The society, which has arisen as a result of the training courses held by Mr. Stanley Jeeves, Films Officer of the Council for Nature, will be known as the Nature Cine Club and is expected to start with a membership of about 100. Professor H. R. Hewer, Dept. of Zoology, Imperial College, London, was elected chairman. Enquiries regarding membership (annual subscription, three guineas) should be addressed to the Secretary, Mr. J. W. Carr, Windy Corner, Vicarage Hill, South Benfleet, Essex.

The AES Council are pleased to announce that Mr. W. L. Coleridge (2194) has kindly consented to act as one of the Trustees of the Society.

D. Ollevant.

BUTTERFLIES AT MOISTURE

In 1958 I went on a journey across the semi-desert regions of southern and central Australia. It was late summer and extremely hot and dry with little or no water about except as very brackish pools in some salt lakes and issuing from scattered springs and cattle bores.

It was noted that at flowers of certain small bushes numbers of butterflies, very similar in general appearance to the British Small Blue, were gathered. As soon as any water was spilt on the ground these butterflies would leave the flowers and congregate around the edge of the spot, eagerly thrusting their probosci into the sand.

In a journey of several hundred miles this procedure was observed at almost every stopping point, insects being attracted to any liquid containing a high percentage of water, including urine, which would seem to indicate that any passing animal could provide the butterflies with a drink during the long periods of total drought that are usual in such areas. It is interesting to know that *Pieris rapae* Linn. (Small White) and *Pieris napi* Linn. (Green-veined White) both adopt the method used by butterflies whose natural environment is extremely dry semi-desert for obtaining liquid when Britain is stricken by somewhat similar weather conditions.

P. Roper (3153).

COLLECTING HINTS—June

Throughout this month search and sweep the seed-heads of Cock's-foot and other grasses for the greenish-white larvae of *Eremobia ochroleuca* Esp. (Dusky Sallow). This species abounds in the chalky districts of Kent, Surrey, Sussex, and one or two other counties of England.

The full-fed larvae of *Brachionycha nubeculosa* Esp. (Rannoch Sprawler) are to be obtained by beating birch in their northern haunts from the middle of June onwards.

One of the most interesting times of the year to work Dungeness is during the first week of June. The following list should give a rough idea of the more interesting species that occur there at that time. All the species mentioned were caught at mercury vapour lamp by myself on 1st June last year. Sugar and Valerian flowers were also very productive. An indication of the density of each species is given in parentheses after each name. *Hadena albimacula* Borkh. (White-spot) (common); *H. conspersa* Schiff. (Marbled Coronet) (common); *H. nana* Hufn. (Light Shears) (common); *H. lepida* Esp. (Tawny Shears) (common); *H. genistae* Borkh. (Light Brocade) (common); *Agrotis cinerea* Hübn. (Light Feathered Rustic) (numerous, especially on Valerian flowers); *Spilosoma urticae* Esp. (Water Ermine) (one); *Deilephila porcellus* L. (Small Elephant Hawk) (several); *Arctia villica* L. (Cream-spot Tiger) (numerous). Larvae of *Lasiocampa trifolii* Schiff. (Grass Eggar) were found by close searching of grass and other low growing vegetation with the aid of a paraffin pressure lantern.

B. F. Skinner.

The Smaller Moths

During this month there are, of course, many species to be found either as larvae or on the wing; but here are a few suggestions.

The larvae of *Gracillaria auroguttella* Steph. conically roll the leaves of *Hypericum perforatum* L. (St John's Wort), and *H. pulchrum* L. (Elegant St John's Wort).

Look on the *Calluna* (Ling) for the silken tubes of the larvae of *Aristotelia ericinella* Dup. The larva of *Acrolepia granitella* Treits. makes inflated blotches in the lower leaves of *Inula dysenterica* L. (Common Fleabane).

Amongst the 'Plume' larvae are: *Platyptilia pallidactyla* Haw. in the stems of *Achillea* (Yarrow); *P. ochrodactyla* Schiff. in the stems of *Chrysanthemum vulgare* L. (Tansy); *Alucita galactodactyla* Hübn., which by now will probably be pupae, can be looked for on the underside of the 'eaten' leaves of *Arctium lappa* L. (Burdock) (the pupa is hairy and whitish in colour).

Peronea shepherdana Steph. larvae may be found in the spun shoots of *Filipendula ulmaria* L. (Maxim.) (Meadowsweet).

The larvae of many species of the genus *Depressaria* are now beginning to feed, for example: *D. arenella* L. in folded leaves of Knapweeds, Thistles, and Burdock; *D. propinquella* Treits. in a web beneath the leaves of Thistles; and the very local *D. putridella* Schiff. in spun leaves of *Peucedanum officinale* L. (Hog Fennel). This last-mentioned moth has, as far as I know, only been recorded from Kent and Essex so far.

For collecting with the net, grassy places are well worth visiting in the evenings for the Crambids. Many of the species are rather similar in appearance to each other, so care should be taken to look at a capture closely before discarding it as 'only another common one'. Particular interest should be taken in boggy places and on high ground.

D. Ollevant (1514).

The Coleoptera

The genus *Chrysolina* is a great favourite with most coleopterists for it includes some of our most beautiful beetles. There are sixteen British species. During the summer months they can be found on their food-plants or on near-by vegetation on to which they sometimes stray. Therefore, to capture any particular species it is first necessary to locate a colony of the plant on which it feeds. Several of the species are so conspicuous that they can be seen almost at once if they are present, especially when they cluster together as some of them often do. If no specimens are visible, sweeping can be resorted to. The species are local but widespread in Great Britain except where stated otherwise in the following notes.

Chrysolina hyperici (Forst.), *C. brunsvicensis* (Grav.) and *C. varians* (Schall.) feed on various species of *Hypericum* (St John's Wort).

C. haemoptera (L.) which occurs on sandy coasts and also on cliff-tops feeds on various species of *Plantago* (Plantain). It also spends much of its time resting under stones and other objects lying on ground in its habitat. The collector can take advantage of this habit and obtain specimens even on days when no beetles are to be seen on the food-plants. *Plantago* is also the food of *C. crassicornis* (Hellie.) ssp. *intermedia* (Franz). There are few records of this species and the distribution is rather uncertain.

C. banksi (Fab.) is associated with *Ballota nigra* (Black Horehound). The beetle occurs in most parts of England and south-west Scotland, but is most common in the south-western part of its range.

C. violacea (Mueller, O. F.) is extremely local and extends no further north than Yorkshire. It feeds on *Glechoma hederacea* L. (Ground Ivy), especially where this plant grows on the chalk. Box Hill in Surrey is a well-known locality. In April it can be seen there crawling sluggishly on the grass, but it must not be mistaken for the commoner *Timarcha goettingensis* (L.) which it somewhat resembles and which occurs in the same locality at the same season.

K. C. Side.

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MELANIC LARVAE AMONGST THE LEPIDOPTERA

Professor Heslop Harrison's notes on this subject (*antea*, p. 70) are worthy of considerable attention from members and to add to the list he is making will be a really worthwhile job.

Professor Heslop Harrison mentions the words "black" and "melanic" but it is as well to note that not all black insects are melanic any more than all white ones are albinos, for many species have larvae with black or near black forms as a constant factor, and in recording it, it is as well to be sure that errors are not made.

I am not at all sure I agree that melanism is a comparatively new effort on the part of evolution but would prefer to regard it as latent factor which occasionally turns up most unexpectedly and could possibly be regarded as a reversion to ancestral type, and this could, particularly, be applicable to the larval stage. A pointer here is that not all melanic larvae produce melanic imagines. Indeed, larval colour forms *in general* do not produce exceptional variation in adults.

Several species to-day are retaining the melanism as a constant factor and amongst some it is increasing fast; indeed, in some areas melanic forms have almost superseded the typical forms. This is particularly so where industrial atmospheric pollution is heavy.

Having handled most of the British lepidopterous larvae alive, preserved 680 species and over 50,000 specimens and bred hundreds of species, I am prepared to say that, apart from industrial melanism, true natural melanism in larvae is exceedingly rare and that it can occur anywhere quite independently of industrial areas. The effect, therefore, of atmospheric pollution in so altering various species, so far as colouration is concerned, can have far-reaching results, for once a species is established as predominantly melanic its spread to non-industrial areas can be rapid, as evidenced by *Biston betularia* Linn.

The above notes are deliberately written (with tongue firmly in cheek) for the express purpose of starting a first-rate discussion on this subject. (*Honi soit qui Mal y Pense*). Other points are:—

(1) How much of Britain can, to-day, be regarded as non-industrial, apart from the south-west, parts of Wales, some of the south coast and the Highlands, as pollution can be wind-borne across most of this small island?

(2) What effect is nuclear pollution having on insect populations?

For Professor Heslop Harrison's list I would like to record the following species. Dr. H. B. D. Kettlewell has already noted most of them.

Habrosyne derasa Linn. Buff Arches. Sutton Park, Warwickshire, 1953. H. T. King.

Lasiocampa quercus Linn. Oak Eggar. Producing var. *olivaceo-fasciata*, bred S. Gordon Smith.

Arctia caja Linn. Bred S. Gordon Smith from Hants female and producing the wonderful melanic forms recorded by him.

Saturnia pavonia Linn. Emperor. Aviemore, 1955. Sender not recorded.

Ceramica pisi Linn. Broom Brocade. Birmingham. A scarce but constant form where the stripes are jet black.

Agrotis exclamationis Linn. Heart and Dart. Pulborough, Sussex. G. E. L. Manley.

Mamestra brassicae Linn. Cabbage Dot. Birmingham. Constant but not common. One has blue ventral area, spiracular stripe and two blue patches on dorsal area. Brought me by H. T. King.

Hadena conspersa Schiff. Common Marbled Coronet. Poldhu Cove, Cornwall. G. E. L. Manley.

Sterrha aversata Linn. Riband Wave. Norfolk. Bred G. V. Day. One only.

Gonodontis bidentata Cl. Scalloped Hazel. Birmingham. I have also bred from pupae, found wild, two melanic moths, now in Col. W. Bowater collection, but never from collected larvae. Cannock Chase, Staffs., produces many melanic larvae on Pinus, a number of which are most beautifully mottled with green and red. The fine melanic aberration *bowateri* comes from this area.

Biston betularia Linn. Peppered. Kinver, Staffs. A jet black larva, 1953. H. T. King. This also occurs near Huddersfield, Yorks. A. Steel.

Erannis defolaria Cl. Sutton Park, Warwicks. Constant but not common. H. T. King, P. Brookes, and self.

In addition, a number of either species show tendencies towards melanism, but for the purpose of accuracy are omitted.

In conclusion, I would like to thank my many collaborators for help in securing these specimens.

H. E. Hammond (423).

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JUNIOR NEWS SECTION

Editorial

This month I can offer you some comments on the study of aquatic insects, the opportunity to ask for some Australian specimens, and some accounts of the activities of fellow Junior Members. I am still very anxious to receive more of these, as they are the backbone of this News Section.

This is an extract from a letter I have had from H. S. Thirkell, Esq., 27 Macquarie Street, Cowra, New South Wales, Australia:—

"In correspondence recently with Mr. E. W. Classey, I mentioned that I had a number of the commoner Australian butterflies in papers and that I would be happy to send some to collectors in Britain. He suggested that members of the Amateur Entomologists' Society might be interested and gave me your name and address.

"My main idea in making the offer was to encourage the junior collector. I have dim recollections of myself as a schoolboy collector and am pretty sure that I would have been thrilled to receive a few specimens from overseas. However, if any of your more senior members would be interested, do not exclude them!

I do not (at the moment) require any exchange. I find that the field of Australian lepidoptera is large enough without looking further afield."

Now, before you all rush off to buy Air Mail Letter forms, let me ask you to consider the following points:

Are you really interested in these butterflies or only in "something for nothing"?

Are you prepared to make sure that Mr. Thirkell does not get involved in expense which you cannot, or will not, re-pay?

Have you got the energy, skill, experience, apparatus and storage space to relax, set and keep these specimens which are, of course, enclosed in papers, un-set?

If after careful thought you think you can give the appropriate answer to these questions, I am sure your requests will be most welcome, but please don't swamp our friend with a host of thoughtless requests. Our thanks are due to Mr. E. W. Classey (41) for passing on this offer.

News from Members

In answer to my requests for records of butterflies, I have had a number of letters which I must hold back until these are complete.

JONATHAN DAVID (3137*) writes from Sutton, Surrey: "On 15th March 1960 I saw a Hummingbird Hawkmoth flying around our lilac bush—the time 5 p.m. This is quite an event around our district, and I wondered if it has been recorded in Sutton before".

The Hummingbird Hawk is, of course, an immigrant from the Continent, and would no doubt occur at Sutton as elsewhere in those years when there is a large immigration. It is, however, most unusual to get such an early record. The specimen, if correctly identified, might be itself a 1960 migrant, or possibly an individual which had successfully hibernated. It is a great pity that however certain we may be ourselves of our identification in the field, the experts will not believe us without the specimen to prove it. The bird skin collectors sum it up in the saying: "What's hit is history, what's missed is mystery".

And from JOHN COOPER (2343*): Last year was not particularly good for me entomologically owing to our moving in mid-summer to Crowthorne, Berks., from Southend. I did, however, rear 21 Privet Hawkmoths to maturity from some eggs found the previous year. From what I can see of my new surroundings they seem quite interesting. Even the numerous Speckled Woods here were practically unknown in South Essex. I noticed several slight but interesting variations of the Small Copper and observed most of the commoner butterflies. I was astounded at the number of moths attracted to car headlights in wooded lanes, though I recorded no rarities. The only insects I really missed from Southend were the Essex Skipper (so common on the sea walls) and the Heath Fritillary.

I found several wasps' nests, both German and Common, and also two Red-tailed Bumblebees' nests in a stream bank. This spring I hope to do some hunting around the numerous pine trees in the area for the Pine Hawkmoth. I hope also to rear some Pine Carpets. I am not a keen collector, but prefer rearing the insects themselves. I do, however, keep a small collection for reference.

Last week a friend and I recorded all the insects in a stretch of ditch and hedgerow near our school. Those of interest were:—
Queen Common Wasp—hibernating in moss.
Yellow Ant, Black Ant and Aphids, in association.
Empty moth pupae; and larvae of the Oak Eggar moth and Common Emerald moth.
Ground beetles, Water beetles and aquatic larvae.

I should suggest that if John gets out straight away in early June he might still be able to get the caterpillar of the Pine Beauty moth (*Panolis flammea* Schiff.). The larva can be beaten for, provided one can find sufficient lower branches of the pines accessible.

Studying Aquatic Insects

The Lepidopsterists are likely to be very fully occupied in June, but the general entomologists may find the following remarks helpful.

I do not know of any publication dealing in a simple fashion with the insects only, of aquatic habitats, but the following books contain useful chapters on insects:

"The Freshwater Life of the British Isles", by John Clegg. Published by F. Warne & Co.

"The Observer's Book of Pond Life", from the same author and publisher.

The best waters with which to start your studies are the still, sheltered shallow ponds and canals, choked with weeds and perhaps overgrown with duckweed. Here insects will be most abundant, but, of course, the danger of damage to the net greatest. A shallow bag of strong hessian on a really robust ring or frame firmly attached to a stout pole is essential. A few sweeps with such a net will usually provide enough material to keep us busy for hours. On reaching home the catch should be examined as soon as possible in a shallow container, to separate those creatures which might soon destroy the rest of your catch. I do not think it worth while to go to great lengths to identify all your captures in detail, but get to know the order and family of the more conspicuous ones. Place these then in separate vessels for further study of feeding habits and so on. The Great Diving Beetle (*Dytiscus*) can be kept in captivity for many months, and I have used as a staple diet for them the obnoxious large Bluebottles which enter the house. When killed, these can be dropped into the aquarium, and the beetles quickly learn to recognise when a meal is

imminent. The large and fierce larva of this beetle seems in my experience to require live food. They are not easy to rear to maturity, as when full grown they leave the water and pupate in the ground. Dragonfly nymphs have similar food requirements but, of course, have no pupal stage, and provided they have plenty of sticks or vegetation to ascend out of the water when mature they can be reared readily on small earthworms.

It is not always realised that the Water Boatman (*Notonecta*) and rather similar Water Bugs (*Corixa*) are winged insects, fully capable of flight. If a few of the adults of these are placed in a shallow dish in sunlight out of doors they may be seen to come to the surface, float for several minutes as though to dry out the wings, and then take off from the surface of the water. It was with some dismay that I discovered this when I first attempted to keep these bugs in captivity, because they were not allowed in the house. Remember that when handled the Water Boatman can give a very sharp bite and don't be lulled into a sense of security if this does not happen when you first, perhaps accidentally, pick one up by hand.

T. S. Robertson (2417), *Youth Secretary.*

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VARIATION IN LADYBIRDS

Two of the most variable of British insects are the ten- and two-spot ladybirds, *Adalia decempunctata* L. and *A. bipunctata* L. Both have a considerable range of variation from all red to almost completely black and yet the majority of individuals can be assigned to relatively few, well marked forms; over much of the country, perhaps, the three commonest forms of *A. bipunctata* are the typical (or two-spot) form, *6-pustulata* and *4-maculata.* Furthermore, it has been shown that some at any rate of these patterns are genetically controlled, or in other words that an individual will inherit its elytral pattern from its parents, though this does not necessarily mean that it will look like either of them.

The relative frequency of the varieties differs in different parts of the country, as several authors have noted. For example, the black forms are the more common in parts of Birmingham, Liverpool and Glasgow, while the opposite is true in much of Surrey, Oxford and Kent. This suggests at first sight that it may be a situation similar to Industrial Melanism in moths, on which Dr. Kettlewell has carried out extensive investigations. He showed that in areas affected by industrial pollution and smoke, the black forms of several species of moths are much more common than in unpolluted areas, comprising the majority of the population in such places. However, with the Ladybirds, there are a number of observations which are difficult to explain on this basis, and suggest that the black forms may get more common as one travels northwards.

In an attempt to find out why the varieties should be more common in some districts than others, I am collecting together records from all over the country. I feel sure that many people must have made some note of the commonness of the varieties in their neighbourhood, and I should very much like to hear from them.

Almost all reports so far published simply quote percentages, if they contain any figures at all. Though these in themselves are most interesting, it is extremely valuable to know the exact figures from which the percentages were calculated. One can then get a far better idea of how accurately a collection may represent the population from which it was taken. If the population in a given area is composed of equal numbers of red and black, but only four individuals can be found, the chances are quite high that these will be three red and one black. Having got such a small sample it would obviously be untrue to say that the population was composed of 75% reds. Even quite large samples can show errors of this sort.

Most of the accounts only distinguish between red and black—they give no idea of the frequency of the actual varieties. This is probably because there is a lot of confusion over the names of the different forms and one is bound to get an individual every so often that is exactly intermediate. However, it would be most interesting to know whether the blacker 'reds" are commoner where there is a higher frequency of "blacks" than otherwise, and vice versa. It is important, therefore, to record the actual varieties found in any locality

if their names are known, or otherwise drawings may be made of the commonest ones, designating them A, B, C, etc. A note can then be made, for example, that 26 type A and 14 type B were caught at such and such a place. This means that a continuous record can be kept, allowing comparisons to be made between localities and in different years. In addition, the pronotum shows considerable variation, each pattern usually being associated with a particular group of elytral patterns, and these should preferably be recorded at the same time.

It has been found that the frequency of the varieties may change in the course of the year, the black forms becoming more numerous throughout the summer while they die off more rapidly when hibernating. Only a few observations have been made on this point and more are badly needed.

A further complication is likely to arise from the occasional migrations in vast numbers that many species of ladybird undertake. C. B. Williams in his New Naturalist book, "Insect Migration", gives details of several such swarms. When these are very widespread they are bound to cause mixing up of the existing distributions. However, the fact that the varieties have not become uniformly distributed throughout the country is clear evidence that natural selection is operating, favouring one variety, or group of them, in one place while it favours another elsewhere.

If any members of the Society would be prepared to let me have details of the frequencies of varieties of either species in their usual collecting grounds, or, better still, could send me actual samples, I should be most grateful. The following information for each sample should be recorded, if possible: 1, the date of capture; 2, the exact locality; 3, whether from a normal summer population, a migrating swarm, or a hibernating mass; 4, brief details of where they were taken from (e.g. on garden shrubs; on hops; in a house); and, if the sample itself cannot be sent, 5, the varieties caught (whether named, described or figured); 6, the actual numbers of each. However, even rough estimates, especially for previous years, will be of the greatest interest.

The larger a sample is the more accurate will be the information obtainable, but on the other hand even quite close localities may differ slightly and samples from such places should be kept, and scored, separately. One can always add results together, one cannot divide them up.

By devoting a little extra time to the problem, it would provide a fascinating opportunity for collectors to study the variation in their own neighbourhood both throughout the season and between different localities. At the same time a considerable amount of data of great evolutionary significance would be amassed with relatively little effort by the individual.

If sufficient help is forthcoming, the combined results should go a long way towards solving several outstanding questions. My address for all communications is: Genetics Laboratory, Department of Zoology, University Museum, Oxford, and I shall be very pleased to answer any queries that may arise.

E. R. Creed (3157).

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COLLECTING DIPLURA

The Diplura can claim to be one of the most neglected orders of the Class Insecta, and probably for three reasons: their small size, few British species, and lack of literature on the subject. But they are a fascinating group, and one where there is an almost unlimited scope for the amateur. Very little is known of their habits, and only Condé appears to have studied their life-history.

Distribution. According to Delany there are eleven British species, but it seems probable, in view of the lack of knowledge of this Order, that there remain some to be discovered. He records the insects from only nine counties in this country (except for *C. staphylinus*, "common throughout the British Isles"), so it seems extremely likely that more work on the insects will reveal a much wider distribution. In fact, Delany's counties include Cornwall and Dorset on one hand and Northumberland on the other, so it seems unlikely that the insects would be missing from the majority of the counties in between, as present records suggest.

Taxonomy. I shall not dwell at length on this: the order consists of three families, and our British species all belong to the Campodeidae, genus *Campodea*. Identification is based on the position of various large bristles (macrosetae) on the thorax and abdomen.

Collecting. The insects live under stones, in rotting vegetation, in dead wood, etc. Most authors recommend picking them up with a brush dipped in spirit. I have found this method to be a poor and risky one; the Diplura are very delicate, and this can result in knocking off the macrosetae, thus rendering identification impossible.

I find that the best method is to collect them by means of an aspirator, either from their natural surroundings or by one of the well-known extraction methods (Berlese or Tollgren). They should then be released onto a microscope slide (one at a time, of course) and inveigled into a central position on it. Then Fauré's medium (gum chloral de Faur) is allowed to fall on them (let it drip from a brush). Place on a coverslip and the mount is complete. (Although Fauré's medium is a clearing agent, and should not, strictly speaking, be used for permanent mounts, I have found it to be perfectly good as long as the slides are not roughly handled; my own specimens are intact after years). The slide is now left to dry, preferably in a warm place. Care must be taken to use the minimum gum, otherwise the slide will take an interminable time to dry. The collection can be housed in a slide box.

None of the above-mentioned equipment is expensive.

Bibliography. The most important papers are by Silvestri, but as they are in Italian I have not listed them. General information should be sought in Bagnall (1918) and Imms (1957).

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THE WHITE ADMIRAL IN MIDDLESEX

In *Bull. amat. Ent. Soc.*, **16**: 15, Mr. H. E. Webb writes to report that he has seen *Limenitis camilla* Linn. near Bently Priory, referring to Mr. I. D. Loe who reported it from there. Mr. H. N. E. Alston also writes (*ibid.* 43) that in the 1930's he saw *camilla* at Stanmore Park and remarks that it is only a short step from Stanmore Park to Bently Priory.

In 1956 a friend and I went to Park Wood, Ruislip, where he said he had seen *L. camilla* and also heard of *Thecla quercus* L. being reported there. The day was hot and after about two hours diligent searching, we saw one ragged specimen. Later that year I saw four more specimens on different occasions.

During 1957 and 1958 I was unable to visit these woods, but last year I made two trips to Park Wood, seeing one specimen on the first visit and capturing one on the second. This specimen was rather ragged and refused to deposit eggs on a fair-sized honeysuckle before she died. About the middle of July I made a visit to Ducks Wood, which is the opposite side of Ruislip Reservoir from Park Wood. Here, to my delight, I saw about twenty White Admirals, although seemingly so many, they were very difficult to catch and after about two hours I had one male and one female and innumerable scratches from the brambles.

On returning home, I released the specimens in a large cage, about 3 ft. × 2 ft. × 2 ft., with plenty of honeysuckle and bramble flowers. The butterflies took little notice of the bramble flowers, but at the end of the day two eggs were seen on the leaves of the honeysuckle. At the end of the second day there were six eggs in all, and by this time both White Admirals had died. The eggs hatched in about a week, and the larvae started on the cut honeysuckle. At the end of the week three had died while still just over one millimetre long. Two of the three left, fed a little, but most of the time they sat torpid on the leaves, the third one ate quite fast and reached a size of about 3-4 millimetres. After about the fourth week, they all had died from no apparent cause.

I wonder if any members have been successful in rearing *L. camilla*? Honeysuckle, the food I used, was dug from the wood in which the butterflies were caught, so it could not be that cultivated honeysuckle disagreed with them. It may be that honeysuckle in water is detrimental to their health, as it is in the case of the Pine Hawk (*Hyloicus pinastri* Linn.) and other Lepidoptera.

J. C. Bobbit (2767).

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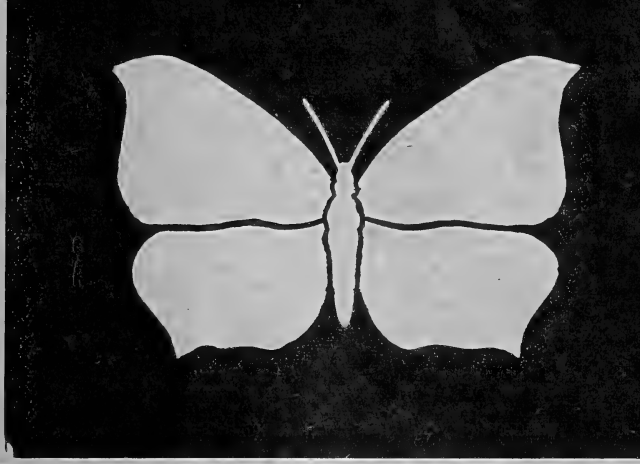

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by W. N. LAWFIELD

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AES BULLETIN

No. 235

JULY 1960

A MESSAGE FROM THE PRESIDENT

Earlier in the year, Mr. Hobbs appealed for donations to assist in the publication of the special Jubilee number of the *Bulletin*, which is to appear in August. This promises to be a most interesting publication and will contain articles by several of our Honorary Members. Your support, however small, will be particularly welcome as your Council has resolved to increase the monthly *Bulletin* to twelve pages as from September, so we shall have extra commitments this year.

R. W. J. Uffen, *President.*

SECRETARY'S LETTER

Members are probably aware that the present subscription does not cover the cost of the *Bulletin*, the difference being met by part of the profits resulting from the sales of publications. The drawback to this is that the size of the *Bulletin* cannot be increased, and it would be difficult to publish a handbook.

The Council has now decided that the time has come to give members a better service, and at the same time to remedy this situation. From September the *Bulletin* will be increased in size from eight to twelve pages, and also from this date the membership subscription will be increased to 15s. for full and affiliate members, and 10s. for junior members.

As present members will not pay this higher subscription until January 1st, they will get four of the larger *Bulletins* for their present subscription. New members joining on or after 1st September will pay the higher subscription, but as their subscription covers 1961, they get extra *Bulletins* for their money, anyhow.

So it will be seen that although the AES Council is asking for a higher subscription, they are offering members something extra for their money.

Obviously, the more money the Society has, the more it can offer its members and so donations are always very welcome. Prompt payment of subscription and contributions to the *Bulletin*, etc., also help considerably to help improve the service to members.

D. Ollevant.

COLLECTING HINTS—July

The Macrolepidoptera

Leptidea sinapis L. (Wood White) will start emerging during the third week of July. This second brood differs from the first by having less black colouring on the upper side. The butterflies are generally slightly smaller.

Acosmetia caliginosa Hübn. (Reddish Buff) will also be flying in its restricted haunts around Fareham and Lichfield. It favours grassy rides and clearings in woods where its foodplant saw-wort abounds. This plant grows up to two or three feet high and its flower somewhat resembles that of a small thistle. The moth may be caught as it flies at dusk or disturbed from the grass during the day-time. It is also attracted to light. Other localities are Shrubby Copse and Denny Lodge enclosure, in the New Forest, Isle of Wight, and Bloxworth, Dorset; although I believe it is now extinct from the latter county.

The larva of *Hemaris fuciformis* L. (Broad-bordered Bee Hawk) may be obtained by beating and searching honeysuckle. It does not seem to thrive very well on the cultivated variety; at least, that is what I experienced in my own cages. Larvae of *H. tityus* L. (Narrow-bordered Bee-Hawk) are often found in the same habitat as the last species, feeding on devil's-bit scabious.

B. F. Skinner.

The Smaller Moths

Many of the leaf-miners may be collected in July when they are nearly fully grown. A general introductory paper by S. Wakely on them was published in the *AES Bulletin, 15* (1956): 182 and 183. For example, there are the mines of *Lithocolletis geniculella* Rag. in the leaves of sycamore, and of *Leucoptera wailesella* Staint. in the leaves of *Genista tinctoria* L. (dyers' greenweed), also of *Epermenia daucella* Pey. in the leaves of *Daucus carota* (wild carrot).

Whilst looking at the last-named plant, examine the flower-heads for the larva of *Loxostege palealis* Schiff. This moth is usually found in South-Eastern maritime chalk areas, but has been found on the North Downs.

In late July and early August collect the flower spikes of *Lythrum salicaria* L. (purple loosestrife) for the larvae of *Acleris* (*Peronea*) *lorquiniana* Dup.; it is advisable to remove the pupae from the heads at the end of August.

Examine in July the fissured bark of oak trees for the tiny black and white moth, *Blastodacna stephensi* Staint.; it rests with its wings flat over its back.

Two species of Adelidae may be found flying around the flowers of scabious spp. on sunny days. They are *Nemophora cupriacella* Hübn. and *N. scabiosella* Scop. The former appears to prefer *Succisa pratensis* Moench. (devil's-bit scabious), and usually has to be swept from the flower-heads.

Collecting the flowers and seeds of *Malva sylvestris* L. (common mallow) may produce the larvae of *Platyedra vilella* Zell., but this is a very local insect. Care should be taken

D. Ollevant.

The Coleoptera

Chrysolina menthastri (Suff.) and *C. fastuosa* (Scop.) are both very local but sometimes occur in quite large numbers where conditions are favourable. The former feeds on various species of mints, especially *Mentha aquatica*, and the latter on the hemp-nettles *Galeopsis tetrahit* and *G. ladanum*. *Chrysolina graminis* (L.) which lives on *Tanacetum vulgare* (Tansy) is more southerly in its distribution, being found no further north than Yorkshire.

The only British species associated with umbelliferous plants is *C. oricalcia* (Mueller, O. F.), which has been recorded from *Aegopodium podagraria* (goutweed) and *Conium maculatum* (hemlock). All parts of the latter plant are extremely poisonous to Man, but like other poisonous plants it seems to support a healthy insect population.

C. sanguinolenta (L.) feeds on *Linaria* spp. (toadflax). *C. marginata* (L.) is rare and there seems to be some doubt about its food-plant. Early records from Scotland associated this beetle with both *Plantago maritima* (sea-plantain) and *Achillea millefolium* (yarrow) but more recently *Reseda lutea* (wild mignonette) has been suggested.

The two commonest species of the genus are *C. staphylaea* (L.) and *C. polita* (L.), both of which feed on a number of plants of the family Labiatae. They can also be found in the winter hibernating in moss, grass-tufts, heaps of cut vegetation and even under loose bark.

C. cerealis (L.) is perhaps the most beautiful of the genus. It is certainly the most local, being found only on Snowdon, where it feeds on wild thyme. It can be captured by turning over stones in the area where it occurs. Even when the beetles are present they are not easily seen, for they cling upside down to the lower surface of the stone and when disturbed they drop off, back downwards, and all that reveals their presence are the six little pads of their feet.

K. C. Side.

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MOTH TRAPPING WITHOUT M.V.

It is not everybody who can afford a mercury vapour moth trap, or who wishes to use one often enough to merit the expense. M.V. traps can, of course be home-made comparatively cheaply, but for a fraction of the cost an ordinary trap, using a tungsten bulb, can be made.

I have found that the best design for one of these is that using a deep, round receptacle, such as a cheese tub, at the top of which is fixed a large cone pointing inwards. A bulb is placed inside, supported at such a height that the whole of it protrudes through the cone. The aperture round the bulb should be large enough to leave a clearance of about 2″ between the cone and the bulb. The cone should be waterproof, and for this purpose I use "Marleyfilm". As a temporary measure, a hat box may be used with a cardboard cone, but if it rains in the night your trap will be a sorry sight in the morning and your fuse box will probably need attention also! Normally, a 100 watt. bulb is sufficiently powerful, but I have used a 200 watt. The snag with a 200 watt. bulb is that

it becomes so hot that rain will crack the glass and some sort of transparent umbrella has to be improvised. This, however, may be achieved quite efficiently by using 500-gauge polythene.

The great advantage of this sort of trap is that you can switch it on before going to bed at night and you need not look at it again until you get up in the morning. It is very necessary to fill the trap with crumpled paper, or better still *papier maché* egg trays so that the moths can hide from the light when dawn breaks. If this is done, few moths will escape.

I have used one of these traps on Salisbury Plain, at my home on the Dorset coast, and at Wilmington in Kent. In all these places it has proved very successful, though the best locality was Salisbury Plain. My maximum catch in one night is 650 specimens, of which 439 were the Heart and Dart moth (*Agrotis exclamationis*), and I have used the trap right through December and January with success. You can attract a host of different species including Hawks, Pugs, Geometers and Agrotids, though I have never yet caught a very rare species by this method.

You quickly learn to diagnose the right sort of night for moth trapping: a warm, humid one is best and ideally the moon should never be visible. Of course, the winter nights are cooler, but nevertheless there are nearly always some moths on the wing.

To empty the trap in the morning, it is a good idea to take it indoors and attend to it in front of a closed window. Escapees will always fly to the window and they can then be recaptured. Records of all captures should be made, and it is a good idea to make a note of the weather and temperature conditions each night. I find that this is the best possible way of learning to identify our British moths and of learning their scientific names. I do not collect them myself but by recording them in this manner I have been able to learn and discover for myself a lot about our moths which would otherwise have passed me by un-noticed. One very important thing to remember, if you are trapping again the following night, is that the moths from the previous night should be released not less than half a mile away, otherwise you are likely to catch them again! I have actually demonstrated this by marking the specimens and the number of those recaptured was quite high.

If you have not tried moth trapping, why not have a go this season? It can be great fun and you can learn a lot from it.

ROBERT C. GOODDEN (2614).

REARING *COLIAS CROCEUS* FOURCK. (CLOUDED YELLOW)

I have found that rearing the Clouded Yellow is quite easy in this country. Here, near my home in Berkshire, there are several fields of lucerne, and in the early summer of 1959 at least one female deposited ova in them. On September 6th I saw the first male flying over the fields, and by September 10th there were about two dozen of them. On that day I took home a newly emerged female, and, on the 12th, a male. These were kept in a muslin cage (about an eighteen inch cube) and placed in the sun. In the cage was a pot of cut lucerne, and a pot of white clover. A pairing took place on the 13th, the female commenced with four eggs on the 15th, and continued until the 24th, laying 75 eggs altogether, all on the white clover. She died on the 26th.

The eggs were taken indoors and placed in a small cage containing clover and lucerne. They were white when laid, yellow on the second day, pink on the third, and began to turn transparent at the top on the fifth day. By the following day the eggs were three-quarters transparent, and the larvae emerged on the seventh day.

The larvae ate the egg-shells and then took up a position on the upper sides of the lucerne leaves and remained close to the midrib.

I split up the larvae into batches as they hatched, and subjected them to different temperatures.

I tried red clover, pea vetch, white clover and lucerne as food-plants, but the larvae preferred the lucerne. They are wonderfully camouflaged on this plant in all their stages.

Some larvae were kept outdoors until November 15th, and despite severe frosts with the temperature down to 25° F., they had not died at the time of writing, being 44 days old.

The cages used consisted of a celluloid cylinder, 15 inches high by 7 inches diameter, muslin-topped, mounted on a tin-lid which was secured to the lamp-box. An inner muslin-topped cylinder, 6½ inches diameter by 5 inches high,

covered the water-jar for the food-plants and smaller jars of water for humidity, and also the holes in the tin base and lamp-box which allowed the heat from the lamp to circulate.

The lamp-box was made of wood and contained an electric lamp and a thermostat. A thermometer was fastened inside the cage.

Temperature at 70°F.

Larvae	23 days	40 ova	All emerged	4 deformed
Pupae	10 days			
Total	33 days			

(25 watt. lamp)

Temperature at 90°F.

Larvae	18 days	10 ova	All emerged
Pupae	8 days		
Total	26 days		

(40 watt. lamp)

Temperature at 105°F.

Larvae	17 days	6 ova	All emerged	1 deformed
Pupae	4 days			
Total	21 days			

(80 watt. lamp)

The time for the ova, which were not subjected to the higher temperatures, was 7 days in all cases.

All the imagines were the typical form, the outer marginal border of females being spotted, with the exception of one female with a plain border.

R. A. Jarman (2706).

●

REVIEW

Dragonflies. By Philip S. Corbet, Cynthia Longfield and N. W. Moore. *New Naturalist Series.* No. 41. Collins, 1960. Pp. 260; 53 colour plates by S. Beaufoy; 16 photos. in black and white; 200 maps and diagrams. Price 42/-.

The Odonata is one of the orders of insects somewhat neglected by the amateur entomologists which is surprising, for one would think that such a compact group of large and most easily identifiable insects would be as popular as the Lepidoptera among collectors and students of entomology. No doubt the difficulty of colour preservation has deterred some people from collecting specimens, but to-day this has been overcome to a certain extent, providing the collector does not mind taking a little extra trouble.

The book under review does much to encourage amateurs to take up the order, and it is pointed out that dragonflies and damselflies, unlike many insects, can be 'watched' as easily as birds with regard to behaviour, feeding habits, mating, etc., and are indeed the 'birdwatcher's insects'.

Like most of the series the emphasis of this book is on field study, rather than on morphology, and it deals with such aspects as larval and adult life, distribution, behaviour, dispersal, fossil history, relations with other animals and with man, etc.

The three authors contribute 'specialist' chapters, and that on 'Seasonal Regulation' by P. S. Corbet is of particular interest. Here the author divides the British dragonflies ecologically into 'spring' and 'summer' species, the former with a diapause in the final larval instar and synchronised emergence in spring, and the latter group without diapause in the final larval instar and with protracted emergence throughout the summer.

Each species is described by Miss Longfield in chapter 2, and photographed in colour and in natural surroundings by Mr. Beaufoy. As all species are shown at natural size it follows that the larger species are more photogenic, and many of these are indeed excellent. The reviewer, however, would have preferred to have seen enlargements of the smaller species.

The book concludes with four useful appendices on Venation, Methods for Preservation of Colours, Marking Techniques and most important, Mr. A. E. Gardner's Key to the Larvae.

Although expensive (double the price of No. 1 of the series), this work can be thoroughly recommended and would be particularly useful if used in conjunction with a standard textbook.

B. R. S.

CHRYSOCLISTA LINNEELLA CLERCK IN YORKSHIRE

On 3rd July 1958 I was unfortunate enough to be in Sheffield the day after the disastrous flood there, miserably watching the torrential rain. In the evening the rain ceased for a while, and I ventured across the road into the botanical garden.

In West London I had, as usual, been finding the brilliantly-coloured little Cosmopterygid moth *Chrysoclista linneella* Clerck commonly on the trunks of the lime trees. Examining the few limes in this garden, I was rewarded with one moth, which sat on my finger whilst I finished my walk and returned to my room. I had only the hollow handle of a traveller's toothbrush to put it in, small as it was, so it is now almost unrecognizable!

Now, according to Meyrick's *Revised Handbook of British Lepidoptera* (1928), *C. linneella* has been found in Kent, Middlesex, Berkshire, Northern Ireland, and in Gloucester and Cambridge. It is very local, but common where it occurs, which is mainly in towns. There is no note of its occurrence in the north of England, and I know of no other records for this part. The related *Blastodacna stephensi* Staint. has a somewhat similar recorded distribution, also with Yorkshire as the only northern county. *Linneella* feeds in the bark of limes, whilst *stephensi* affects oak in the same way.

I should like to find some explanation for the distribution of these insects, and to this end should be pleased to have records from any part of the country. The lime is a native tree only in the west country, whilst the distribution of the oak is to-day largely the result of planting. It is, therefore, of interest to know the situation of affected trees, their size, and whether the bark is fissured or smooth. Such evidence as I have so far suggests that young trees are not affected, in which case the species cannot be artificially spread.

Both species are about 5 mm. long at rest and have tufts of scales on the wings. *Linneela* is red, black and silver, and should be at once distinguishable from other similarly coloured species by its white-tipped antennae, which *never stop moving*, day or night. *Stephensi* is white with fuscous markings and black tufts. It could only be confused with the untufted Tineidae which breed in rotten boughs and in fungi.

Now is the time to look on the trunks of your local trees for these two engaging species.

R. W. J. UFFEN

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THE EFFECT OF THE 1959 SUMMER ON THE FIRST APPEARANCE DATES OF MOTHS IN A LIGHT TRAP

The summer of 1959 has been a real summer, the first one for many years, the first one probably, since 1947. Many people will remember it as the most amazing season they have ever witnessed. The sun shone all day nearly every day and many people have noticed that, in spite of the lack of rain, most plants have flowered early; that is, the season has been "forward". Many gardeners have been able to see that the season has been about a fortnight earlier than usual.

One method of measuring objectively the degree of "forwardness" of the season depends on the regular use of a mercury vapour light trap. This instrument takes a sample of the macro-lepidoptera in flight in the vicinity of the trap, and it is therefore scientifically reliable. I have been operating a mercury vapour trap in the same place since 1953, and, except in 1956, it has been working between sunset and sunrise every possible night from May to October, and I have kept a complete accurate record of all the larger moths captured. These records show that each species appear in the trap at about the same date each year. Anyone who has operated a light trap at all regularly will have observed this. After a few years' experience with a light trap, the operator can forecast the time of appearance in the trap of most of the common species of moths which frequent his particular area with an accuracy of ± 2 or 3 days. The first appearance of the moth in the field or garden does not always coincide with its first appearance in the trap. Some species are always seen feeding at flowers or at rest on walls or vegetation several days before they enter the trap, so it is important not to confuse the two dates. This year of 1959, however, I have noticed that almost all species of macrolepidoptera have been taken in the trap many days in advance of the expected date, and other trap operators have drawn my attention to the same thing in their trapping records. I have, therefore, worked out the average first appearance dates of most of the common species from the data obtained by my trap during the above mentioned six years, and have compared these with

the dates of first appearances in the trap in 1959. The result is quite conclusive, even though six years may be insufficient to give an absolutely reliable average figure, and it is quite obvious that the moths in this district have been on the wing on the average 14 days earlier than usual.

For example, one of the commonest species in this district and also one of the first to appear in the trap, *Xanthorhoë fluctuata* L., was captured on 23rd April this year, whereas it has always appeared in May in previous years. In the following table I have given those six first appearance dates and worked out the simple arithmetical average. To facilitate this very elementary statistical technique, the calendar date has been changed to the number of the day in the year, a figure which is often given conveniently in some desk diaries.

Table I. First Appearance Dates of *X. fluctuata*

Year	*Date*	*Day*
1953	May 24	144
1954	May 9	129
1955	May 8	128
1957	May 18	138
1958	May 5	125
1959	April 23	113
	(6)	777
		129 = May 9

This simple little calculation demonstrates clearly that *X. fluctuata* was in flight 16 days earlier than usual.

In the same way I have worked out the average first appearance dates of all the common species of macrolepidoptera, but in Table II I have given only the first twenty species in the British List.

Table II. First Appearance Dates of Twenty Common Species in 1959 and Averages for Six Years

	Average	*1959*	*Difference*
Laothöe populi L.	June 7	May 13	25 days
Deilephila elpenor L.	June 18	June 1	17 ,,
Cilix glaucata Scop.	June 2	May 9	24 ,,
Spilosoma lubricipeda L	May 22	May 11	11 ,,
S. lutea Hufn.	May 28	May 11	17 ,,
Arctia caja L.	July 5	June 18	17 ,,
Callimorpha jacobaeae L.	June 3	May 27	7 ,,
Apatele psi L.	June 14	May 13	32 ,,
A. rumicis L.	May 27	May 9	16 ,,
Cryphia perla Schiff.	July 1	June 15	16 ,,
Agrotis segetum Schiff.	June 12	June 3	9 ,,
A. exclamationis L.	June 6	May 29	8 ,,
Graphiphora augur Fab.	June 23	June 12	11 ,,
Amathes baja Schiff.	July 12	June 24	18 ,,
A. c-nigrum L.	June 25	June 2	23 ,,
A. xanthographa Schiff.	July 22	July 10	12 ,,
Diarsia festiva Schiff.	June 13	May 29	14 ,,
D. rubi Viewig.	June 1	May 18	14 ,,
Triphaena comes Hb.	July 26	July 9	15 ,,
T. pronuba L.	June 25	June 21	4 ,,
		20)	310 ,,

Average difference = 15·5 days

Table II shows that 20 species of moths were on the wing in this part of Derbyshire, on the average 15·5 days earlier in 1959 than might have been expected from the calculated average first appearance dates. Although this is only a fraction of the species which occur in this district, it is a fair sample and sufficient to show that the season of 1959 was at least a fortnight more "forward" than usual, thus confirming the rough guess of the gardener. All the common species have been early, both those which appear in May and those which appear in September so the hot summer of 1959 cannot have been responsible for the whole lot, although it must have affected most species.

I hope that other light trap operators in other parts of the country will find some pleasure in comparing their results with mine, and that they will publish them for the benefit of others. This is one of the ways in which the mercury vapour lamp can be of real value. It will enable us to take and compare random samples of populations of moths under varying conditions, with some degree of numerical exactitude.

J. H. Johnson (1040).

JUNIOR NEWS SECTION

Editorial

As last year, I have had an encouraging response to my request for records of Spring butterflies. The summary of these is as follows: —

Speckled Wood (*Pararge aegeria* Linn.).
12/4/60 Cudham, Kent. D.W.W.
18/4/60 Ruislip, Middlesex. R.W.
19/4/60 Launceston, Cornwall. B.S.
20/4/60 Bricketwood, Herts. T.S.R.
24/4/60 Watford, Herts. T.S.R.
5/5/60 Selly Oak, Birmingham. C.G.R.

Small Tortoiseshell (*Aglais urticae* Linn.).
28/2/60 Croydon, Surrey. J.A.D.
28/2/60 Croxley, Herts. T.S.R.
29/2/60 Mythomroyd, Yorks. M.J.E.
4/3/60 Edgbaston, Birmingham. C.G.R.
5/3/60 Orpington, Kent. D.W.W.
22/3/60 Chorleywood, Herts. R.W.
22/3/60 Ivinghoe, Bucks. T.S.R.
31/3/60 Launceston, Cornwall. B.S.
7/4/60 Ternhill, Shropshire. T.S.R.

Peacock (*Nymphalis io* Linn.).
28/2/60 Hillingdon, Middlesex. B.M.J.
3/4/60 Cudham, Kent. D.W.W.
7/4/60 Kings Heath, Birmingham. C.G.R.
18/4/60 Croxley, Herts. T.S.R.
18/4/60 Ruislip, Middlesex. R.W.
22/4/60 Ipswich, Suffolk. T.S.R.

Red Admiral (*Vanessa atalanta* Linn.).
7/4/60 Launceston, Cornwall. B.S.

Comma (*Polygonia c.-album* Linn.).
14/4/60 Cudham, Kent. D.W.W.
18/4/60 Ruislip, Middlesex. R.W.
18/4/60 Croxley, Herts. T.S.R.
20/4/60 Bricketwood, Herts. T.S.R.
21/4/60 Chorleywood, Herts. T.S.R.
22/4/60 Ipswich, Suffolk. T.S.R.

Holly Blue (*Celastrina argiolus* Linn.).
6/4/60 Hartington, Derbyshire. R.W.
3/4/60 Shoreham, Kent. D.W.W.
0/4/60 Bricketwood, Herts. T.S.R.
0/4/60 Ruislip, Middlesex. I.W.
2/4/60 Ipswich, Suffolk. T.S.R.
7/5/60 Great Alne, Warwickshire. C.G.R.

Small White (*Pieris rapae* Linn.).
7/4/60 Croxley, Herts. A.S.R.
8/4/60 Croxley, Herts. T.S.R.
9/4/60 Launceston, Cornwall. B.S.

Green-veined White (*Pieris napi* Linn.).
1/4/60 Ruislip, Middlesex. T.S.R.
4/4/60 Launceston, Cornwall. B.S.
8/5/60 Hardcastle Craggs, Yorks. M.J.E.

Orange Tip (*Euchloë cardamines* Linn.).
9/4/60 Launceston, Cornwall. B.S.
0/4/60 Watford, Herts. A.S.R.
7/5/60 Great Alne, Warwicks. C.G.R.
8/5/60 Harefield, Middlesex. T.S.R.

Brimstone (*Gonepteryx rhamni* Linn.).
28/2/60 Croydon, Surrey. J.A.D.
22/3/60 Chorleywood, Herts. R.W.
22/3/60 Ivinghoe, Bucks. T.S.R.
1/4/60 Orpington, Kent. D.W.W.
16/4/60 Launceston, Cornwall. B.S.
17/4/60 Great Alne, Warwicks. C.G.R.

As I wrote last year, one should not read too much into these dates, as they tend to reflect the activity of the observers as much as of butterflies—but no doubt the two are related anyway. Comparison with 1959 shows again a few specimens from hibernation in late February, but with the bulk of hibernated specimens a month or six weeks later. The Holly Blue has had a good season—after a run of rather poor ones; as has the Comma. With Mr. Trebilcock (2976) on a visit to Bricketwood, Herts., we saw both species in good numbers. By contrast, the Small White has been late and in moderate numbers here, while the Large White (*Pieris brassicae* Linn.) has not been seen at the time of writing (15/5/60)—and none of my correspondents mentions it.

The members who contributed—and my thanks are passed to them—are as follows:—D. W. Webb (3000*), R. Woodbridge (2295†), Brian Sheen (2596*), C. G. Rowland (2861*), J. A. Dawkes (3138*), M. J. Edhouse (3077*), B. Marshall-Johnson (2295†), I. Whapshott (2753*), and my son, A. S. Robertson.

T. S. Robertson (2417), *Youth Secretary.*

●

THE GOOD OLD DAYS?

I have always looked back on my schooldays as being the good old days, when all the fields, lanes and woods were swarming with butterflies. Well, I must admit last year was bad for collecting with a net, and I confess I took very little myself, but several gaps in the collection were filled by other means.

I have been wondering if we should all blame the weather, or if we should look to ourselves for some of the faults. A change of residence may find some of the old familiar butterflies lacking, which leads one to think that this particular species has declined; the gaps in the cabinet get less, which makes the remainder harder to fill. Looking back on my good old days, when I lived in the South East near the coast, I recall my collecting as follows:—

Firstly, I was free from 3.30 p.m. every Friday until Monday, The summer holidays consisted of five or six weeks, and half days were not uncommon. A two-mile walk daily, through the fields, brought me to school, and the same to get home. Now if there were only a few good days a month, the chances were that we had the benefit of them. To-day we are usually engaged in some other task during the few sunny hours we get. I seem to remember that I was very happy in the same old fields among the flies, fields of rough grass, perhaps, that held the usual things—*icarus*, *pamphilus*, *jurtina*, and *hyperanthus*, etc.

Once a year I used to take a bus ride about six miles away to have a fine day's collecting; perhaps coming home with two *camilla*, one or two *paphia* and, in a good season, perhaps return the proud possessor of *quercus*. Several woodlands nearby held masses of *selene* and *euphrosyne*, and probably still do. Each summer, I could usually take *atalanta* and *cardui* at the fine show of michaelmas daisies which the next-door neighbour produced.

One or two Humming-bird Hawks always came into the garden, also loads of large and small whites, but then this was a coastal area, and an area favourable to migrants. For all this fine collecting and good old days, my collection held little to back it up. Now living in a totally different part of the country, I miss the local woodlands being alive with *selene* and *euphrosyne*. I also miss the hordes of large and small whites. I miss the annual visit of the Humming-bird Hawks, but during the past few years I have taken by net or by beating, representatives of almost all of our true British butterflies. I have not taken *lineola*, *acteon* or *palaemon*, obviously because I have not gone to the localities where they are to be found.

Perhaps to-day we are not looking for *rapae* or *brassicae*; maybe these all pass unobserved. Perhaps nothing short of *daplidice* would arouse us. Perhaps also we do not notice *icarus* or *agestis* any more; nothing short of a fine *syngrapha*, or perhaps *semiargus* to-day can make our heart miss a beat, as mine did, when I took my first *croceus* in my schooldays.

Don't let us put too much blame on the weather; let us look on the bright side, glance over our recent captures, and count our blessings. I'm going to do just that.

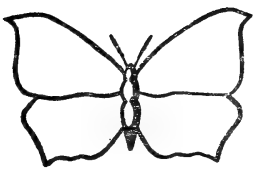
R. A. Jarman (2706).

The
BULLETIN
of the
AMATEUR ENTOMOLOGISTS'
SOCIETY

World List abbreviation: *Bull. amat. Ent. Soc.*

SILVER JUBILEE NUMBER

1935 - 1960



No. 236 *August 1960*

THE AMATEUR ENTOMOLOGISTS' SOCIETY

Founded August 1935

as the *Entomological Exchange and Correspondence Club*
(incorporating the *Entomological and Field Club*, 1938)

FOUNDER

L. R. Tesch (1)

HONORARY MEMBERS

Prof. F. Balfour-Browne (340)
B. A. Cooper (19)
E. E. Syms (406)
W. H. T. Tams (201)
L. R. Tesch (1)
Dr. C. B. Williams

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1939-40: } Office in suspense under Wartime Constitution;
1940-41: } ORGANISER:
1941-42: } B. A. Cooper (19)
1942-43: }
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1944-45: }
1945-46: E. E. Syms (406)
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1957-58: K. C. Side (2140)
1958-59: L. S. Whicher (1345)
1959-60: J. C. Hobbs (2339)
1960-61: R. W. J. Uffen (1660)

Of the first hundred members, the following are still in the Society:

1 L. R. Tesch
6 A. L. Capener
18 A. N. Brangham
19 B. A. Cooper
29 G. V. Day
36 D. Tozer
39 A. Pow
40 Eng. Capt. S. T. Stidston
41 E. W. Classey
60 Capt. T. Dannreuther
68 Dr. T. Norman
80 W. J. Millard
91 R. C. Dyson
94 J. E. Knight
96 B. G. Leonard
99 R. D. Hilliard

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

VOL. 19
No. 236
SILVER JUBILEE NUMBER

1935 - 1960

THE FIRST TWENTY-FIVE YEARS

By L. R. Tesch

Dear Fellow Members,

As the Founder of the Society, I have been greatly honoured by our President with the request that I should write an introductory article for the Silver Jubilee edition of the *Bulletin*, and this, together with a thinning of grey hairs and an increasing awareness of the burden of years, underlines for me the somewhat solemn fact that a quarter of a century has passed since first I sowed the seeds of the AES, little dreaming that one day it would have its roots deep in the soil of science and that its branches would spread across the world. Rather like the Phoenix of legend, the Society was born of the ashes of disaster. For years I had been breeding, or trying to breed, Lepidoptera, but my efforts were dogged by every conceivable kind of calamity, and for which the conventional text-books provided no remedy. I need not enumerate these, as I am sure every breeder will know some of them only too well, but I seemed to have the lot. It hardly appeared possible that I alone could have been singled out by a perverse entomological fate, and I imagined there must be others in like case.

Thus it was that a pathetic little advertisement appeared in the Press suggesting a "get-together" of fellow breeders and, somewhat to my surprise, it produced half a dozen replies. Letters followed, and in August 1935 the "Entomological Exchange and Correspondence Club" burst upon an entirely unconcerned world. Its total strength was six, and in the fullness of time six copies of *Bulletin*, No. 1, went forth, comprising an editorial, a few notes of local catches, some queries (these from the Founder!) and so forth.

A second advertisement on similar lines brought in more adherents. Enquiries among schools, leaflets to museums, etc., and various other methods, all helped to swell our numbers, and by September 1937 we had reached sixty. January 1939 saw 188 in the ranks, and by June of that year we mustered something like 300. The *Bulletins* gradually increased in size and scope, and for the first few months were painfully pulled off on a "jelly-pan", my wife and I being printer and publisher combined. I feel that it is worth putting on record that in order to save expense—as we thought (for the little matter of subscriptions had not as yet been touched upon!)—we attempted to produce our own jelly, using one of the Chivers breed. The result was the worst disaster to date and we quickly reverted to more conventional methods.

All was going well when, towards the end of 1937, unforeseen events in my business life made it impossible for me to devote anything like the time and labour previously given to the upbringing of the infant Club, and I saw with misgiving the likelihood of its perishing from malnutrition. At this moment, however, two of its original members, Mr. Cooper and Mr. Brangham, stepped into the breach, and I am only too pleased now to have this opportunity of saying that it is due to their early efforts, much more than to mine, that our Society has attained its present stature. It owes them a debt of gratitude which can never be adequately repaid, and I only hope that if they read these words they may feel to some extent compensated for all they did in those early days. They relieved me of the work of producing the monthly *Bulletins*, they recruited many new members, they re-organised the constitution of the Society and, in short, laid the real foundations on which others following them have built so well.

During the next eight or ten years the membership rose beyond anything I had visualised, and in 1951 we had reached the thousand mark, with members in such widely scattered lands as Australia, Hawaii, Japan, East Africa, Sudan, Cyprus, Papua, Rhodesia, Jordan, Uganda, the Argentine, and the U.S.A. To-day, more than three thousand names have appeared in our membership lists, and though many of these have fallen by the wayside, that is in itself abundant evidence of the interest still alive in the study of entomology and, I venture to say, of the service which our Society renders to it.

From a technical standpoint, 1939 saw the end of the typewritten *Bulletins*, and the now familiar printed booklets with the butterfly emblem came into being. Our handbooks and leaflets on individual branches of entomology were published, these totalling twenty-eight in May 1957, while specialist groups dealing with some of the lesser studied orders were being formed. The Annual Exhibition in London had become one of our focal points, and only lapsed somewhat during the war years. The Society had now become known in many quarters of the scientific world and had long settled down under its abbreviated title of the AES.

One other achievement must not be overlooked, to wit, the ambitious project of compiling a Directory of Natural History Societies, which was completed in 1948, thus linking together the many thousands of enthusiasts throughout the country.

Another development had taken place which, from my personal point of view, was of great importance, namely, the formation of a Junior Section, because, greatly as I revere those who have grown grey in the pursuit of natural history in general and entomology in particular, and have achieved honours and awards thereby, it was in its inception, and in my heart still is, the YOUNG ENTHUSIAST who should be the ultimate target of our Society's work. It is he who needs the assistance, the advice, the encouragement, and the invaluable experience which—and I say this advisedly after reading for many years the vast and varied literature we now handle—only the many helping hands which our Society holds out can give him.

Though circumstances have prevented me for many years from taking an active part in the Society's affairs, I none the less follow its fortunes with the keenest interest, and from the many contacts I have with young naturalists of many persuasions, a number of whom have joined the Society as Juniors, I am convinced that it is amply fulfilling that ideal of mine, and I am confident that as it moves on with ever growing prestige in the field of entomological science, its Council will not allow that supreme aim to be obscured.

It is true, and one must face this, that the present age is by no means as easy a one in which to recruit Juniors as was that in which the Society was born.

The nuclear and the jet age is here, young people's eyes are on the stars, the tempo of school life has vastly increased, competition in the outside world is incredibly keener, and all this tends to force into the background the more simple and leisurely activities of our own boyhood, with them the pursuit of the errant butterfly, the then exciting capture of a water beetle. And yet they are still with us, these young biologists, fewer in numbers perhaps, but none the less keen, and if our Society can give them what they want—and I know it can and does—it will have more than justified all the efforts of those who have brought it to its present eminence.

With this issue, then, we come to the end of the first chapter in our history, and one on which all concerned can look back with real satisfaction. It also marks the opening of a second, which I am sure will prove as valuable in its many branches to a future generation as its predecessor has been to our own, and I would close this brief account by saying a very sincere "Thank you" to all those, past and present, who have helped the Society over the rough initial roads and set it firmly on its path to the future.

To our younger members, especially, I would like to give this message: "No matter how deeply engrossed you may become in the serious business of life, always reserve a corner of your heart for the simple things of Nature. They are of greater worth than many doctors".

To you all, whatever may be your especial entomological interest, I would repeat my slogan of the early days:—

"Good luck, good health and good hunting!"

STUDYING THE COMMONER INSECTS

By C. B. Williams

There is undoubtedly a great thrill in finding a rare insect, and much of our knowledge of the distribution of species has come from records of such discoveries. Our understanding of the limits of movements of migrant insects has been greatly helped from the same source. One should, however, distinguish between the value of finding an insect in an unrecorded, or unsuspected, place, and catching a local insect in the place where it is already known to occur. The latter may be a new personal experience, but it does not necessarily add anything to the sum total of our knowledge of insect life.

But one cannot spend all one's life finding rarities. After over fifty years of entomology I have yet to see a live Camberwell Beauty in Britain! As an alternative there are, however, thousands of interesting biological problems that can be more easily undertaken, with new information more rapidly obtained, and with just as much thrill (if one looks at it the right way) by studying the commoner, and even the most abundant, insects. There is no species in the world about which there is nothing new to discover. Although every record of a Camberwell Beauty in this country has some value, one would not choose this butterfly for studying, say, the earliness and lateness of an insect in different years. If we wanted to find out something about resting habits, food preferences, or local variation, we would get on more quickly by choosing quite a common species, so that conclusions could be based on more evidence. Why not consider the claims of the "Cabbage White" or the "Heart and Dart" to provide your thrills? When Professor Oliver found a million or more Large Cabbage Whites stuck to "sundew" leaves on an island in the Norfolk Broads, he didn't say "Pooh—only Cabbage Whites—my series is already complete": he recorded it.

Take the interesting and important question of the dates of broods of different species in different years and in different localities. It is sometimes called "phenology". If you can, by regular field observations, or by trapping, record dates of a hundred or more individuals of a species in a year, then the first and last dates have some reliability, and hence some meaning. The results in one year can be compared with those of another, or two different localities can be compared in one year. One can say "in this year the species was so many days earlier than last"—and of course, if so, why? If the species is so rare that only two or three individuals are seen in a year, without any indication of whether these are early or late in the brood, comparisons of dates are valueless.

Take another fascinating probem: that of local variation of species; particularly if, instead of merely noting the presence or absence of variations, one tries to find out in what proportions they occur in different places, and in different years. The problem of distribution and spread of the black form, ab. *carbonaria*, of *Biston betularia* L. (Peppered Moth), would have made slow progress in this country if the species had been a great rarity.

There is one additional advantage in choosing a very common species, or even for that matter a "pest" (what about where the house fly goes in the winter?) and that is one need have no qualms about exterminating a rarity.

Some time ago I collected insects in a light trap in Hertfordshire for several years continuously, and one of the more abundant moths which came in the autumn was the Mottled Umber (*Erannis defoliaria* Cl.). In some years nearly a hundred with a very great range of variation were caught. These were, of course, males only—the females are practically wingless. *All* the specimens were roughly set and pinned and labelled, to form a record not only of the range of variation, but also of the proportions in which the different forms occurred. And as we have no reason to believe that forms with one wing pattern are more likely to be attracted to a light-trap than any other pattern, this large sample probably gives us a good indication of the proportion of forms in the local population.

The specimens are now stored at Oxford, and I hope that in ten or twenty years or so, someone will collect in the same area by the same method, and see what changes have occurred in the relative abundance of the varieties. In this way, following in the footsteps of Ford, Fisher and Kettlewell, one can help in the study of evolution. Nature is always changing.

Such a study need not be confined to the LEPIDOPTERA. Some years ago Mrs. Merritt Hawkes made collections of the common Two-spotted Ladybird (*Adalia bipunctata* (L.)) in different localities. This has two easily distinguished and contrasting varieties—a red form with two black spots on it, and a black form with two red spots.* She found great variation, from an excess of one form to an excess of the other, even in comparatively short distances. For example, collections were made in a garden in Birmingham over seven years, and 68-82%, out of several thousand, were the black form. But in similar large collections made in Staffordshire, an adjoining county, 78-89% were of the red form!

Other work in Germany by Timoféeff-Ressovsky has indicated a difference in the proportions of the two forms in collections made in the autumn, before hibernation, and in the spring, after hibernation. If this is confirmed, it suggests a different survival rate during the winter in the two colour forms. And if so, why? Endless possibilities for further work open up.

There is the problem of the resting habits of insects. I have been told that in the field the two Crimson Underwings (*Catocala promissa* Schiff. and *C. sponsa* L.) can be distinguished by the fact that one always rests on a tree trunk head up, and the other head down. (Perhaps someone can tell me which is which.) Why does not some enthusiastic field naturalist make a regular study of resting attitudes, keeping records of every insect that he sees at rest *under absolutely natural conditions*? The position of the moth, or other insect, could be recorded as a clock time: head up=12, head down=6 and so on, as is done with recording shots on a target. Then he should note the height above ground, the kind and size of tree, the compass bearing of the side of the tree where the insect was, the time of day (and so the position of the insect in relation to sunlight), whether in the open or protected by shade, the direction and strength of the wind, and so on. After a few hundred records have been collected, one could have endless fun trying to interpret the results, and asking more questions than have been answered. Remember that there is fun in fundamentals.

The resting position may be related to the colour and shape of markings on the tree trunk, or other settling point. The question of the angle of the wings, and possible folding round the body (e.g. the Golden-rod Brindle (*Lithomoia solidaginis* Hb.), leads on to the whole subject of protective resemblance and colouration, in which there is still room for more work. Remember however that, in studying specimens that you have found in the field, your evidence consists (like the murderers that have been brought to trial) only of the failures. The real successes in the art of concealment are those which remain behind when you return home.

The problem of wing position leads to another related one. There is a nursery poem which states that in cold weather the poor Robin "puts his head under his wing". I have asked many bird enthusiasts, scientific and amateur, "Which wing?" without any satisfactory reply. Does the robin, or any other bird of similar habits, use either wing indiscriminately, or is there some rule or regularity? And while on this subject, what about the birds which stand on one leg? Which leg?

To return to our own hobby. Insects have too many legs, but when folding their wings one over another, is there any law and order? In many groups the wings overlap one another when at rest: for example, the HETEROPTERA, some ORTHOPTERA and even some moths. Assuming that when there are four wings the lower ones are folded under the upper ones, and calling the right and left upper wings R and L, and the lower wings r and l, the arrangement from above down to the back of the abdomen could be

R L r l : L R l r : R L l r : L R r l

Is there any rule? As we asked in the case of the birds, can a single individual use different patterns at different times, or does one individual always use the same? Do all individuals of one species do the same? Do related species differ in pattern? I have only seen one short published note relating to this problem, about a sawfly. Some very simple experiments that we tried with a CAPSID bug (HETEROPTERA) at Rothamsted gave the curious result that, while a single individual could have either L over R or R over L, several individuals of the same species all gave a definite predominance of the

*See the article by E. R. Creed (3157) in the June *Bulletin* (*antea*: 46-47).—EDS.

same side on top. I would have expected either no rule, or a hard and fast one, not merely a preference. Choose a common insect for this investigation so that you can get plenty of evidence, whatever it proves.

In this connection it is interesting to note that in both the longhorned grasshoppers and in the crickets, sound is produced by rubbing one front wing on the other when the wings are folded one over the other. In the former group the stridulating organs are asymmetrical, and sound can be produced only when the left forewing (tegmen) overlaps the right. In the crickets the stridulating organs are symmetrical, and sound can be produced either by right on left, or left on right. It can, in theory: but what does the cricket do?

Most of you are familiar with the work that has been done in the last twenty-five years, with the co-operation of so many enthusiastic amateurs, on the immigration of insects, and especially butterflies and moths, into Britain. This work is typical of what can be done with insects which are often quite common. But it is also typical that one of the weak points in our evidence is that we know almost more about the immigration of rarities such as the Striped Hawk Moth (*Celerio livornica* Esp.) than of the Cabbage Whites. Yet the movements of these latter are just as important and still remain a challenge full of interest. It has been suggested that the Large Cabbage White (*Pieris brassicae* L.) is so heavily parasitised in Britain that without immigration from abroad it might cease to exist here as a resident. Any evidence for or against? And what about watching for and recording migrations or mass appearances of ladybirds or hoverflies?

At what time of the night are different moths active? Any ingeniously-minded person with a few tools can fit up an arrangement to sort the insects coming into a trap into different times of the night. Some of our results in this direction will be found in the *Trans. R. ent. Soc.* in 1935 and 1939. More species were active before midnight than after, but a few had a double period at dusk and dawn. We have only scratched the surface of the problem.

The relation of insect activity to weather conditions has always fascinated the amateur, who wants at the least to know the best conditions for collecting. But the problem goes far beyond that, and is of great practical importance in the understanding of outbreaks of insect pests. From my own experience of analysing the results of many years' trapping, the "ideal" conditions for great insect activity are warm temperatures, heavy cloud (which prevents the night from cooling), still air, high humidity, and no moon. Rain the previous day seems to be associated with a lower catch, but some of the largest catches I have had have been during light (or more rarely heavy) rain, which started after dark.

It is, from the collector's point of view, one thing to know what conditions are ideal, and another to get them, or to be free to collect when they occur. And then something may go wrong. The most perfect evening I remember was in Inverness-shire on 9th August 1958. Warm, heavy, still, thundery weather, with lowering clouds. My trap went on automatically half an hour after sunset—about 9.30—with a rush of insects. Half an hour later the lightning struck a main overhead wire, and we were without electricity till the following day.

In conclusion, may I suggest that, when planning a holiday, the amateur entomologist tries to find some place where little collecting has been done (Wales and Scotland abound in such localities)? So much more new information will result.

Furthermore, keep full records, and don't be afraid of accuracy, even in numbers. There is no virtue in vagueness. Use "about" only when you don't know the exact number or measurement, and remember that "common" and "rare" mean something different to each person according to his previous experience, and even with a single observer, they mean something different according to the insect under consideration.

Best wishes to our Society on its Silver Jubilee! Happy hunting and happy thinking!

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BUTTERFLY BOTANY

By H. K. Airy Shaw

That the vast majority of phytophagous, or plant-eating, insects have very definite foodplant-preferences is a fact that needs no emphasis. Although a considerable number of more or less indifferent, or 'polyphagous', species exist, they are nevertheless quite in the minority. But is it possible to say anything as to the chief factors influencing the more 'selective' species in their choice of foodplants? Wherein lies the main 'interest' of a plant for a phytophagous insect? How, in fact, do insects *classify* plants? This is a question of much interest to the botanical taxonomist, since there is always the possibility that insect foodplant choices may at least suggest lines of enquiry, if not provide actual clues, in regard to taxonomic problems.

A little reflection will show that the *primary* 'interest' of any given plant-species for any specially associated insect is either (a) nutritional, or (b) protective; very often both. The insect is not greatly concerned with the outward appearance or detailed morphology of the plant (though of course leaf-size and shape may be important from the protective point of view), nor, as a general rule, with details of floral structure. Its 'classification' of plants is therefore likely to reflect broad similarities (1) of chemistry or biochemistry; (2) of anatomy; and (3) of ecology. It will, in fact, be *biological* rather than *morphological*.

The nutritive value of a plant, or perhaps we should say, rather, its 'nutritional attractiveness', is obviously closely related to its chemistry; and this in turn may be influenced in some measure by the composition of the soil. The accessibility of the food will be affected by anatomical features: *e.g.*, in the case of mandibulate insects, by the toughness of the various lignified tissues, or, in the case of insects that feed by piercing and sucking, by the situation and penetrability of thin-walled tissue (though it is astonishing what tough material some delicate aphids can get through). Ecological factors, such as the micro-climate and intensity of illumination, will be of great importance to insects with thin cuticles. The protective value of a plant, especially for insects that live within shelters of rolled or spun-together leaves, will be largely determined by the flexibility of the foliar vascular system; whilst for gall-makers the important thing will be the capacity of the plant to react suitably to their salivary or other secretions.

Thus we can see that the criteria of insect plant-'classification' are mostly somewhat different from those employed by plant-taxonomists, for whom the paramount consideration is outward morphology. The two sets of criteria do, however, touch at certain points: for it is found that details of anatomy and chemistry, and even of ecology, can in fact sometimes provide valuable guides to classification. It is therefore a matter of some interest, both to botanists and to entomologists, to investigate the extent to which insect 'views' on this matter may support, contradict, or otherwise throw light on, the current ideas of plant-taxonomists; as well as to consider the probable or possible causes that may underlie the choice of apparently 'unrelated' foodplants by groups of apparently closely related insects.

The main groups of British phytophagous insects are, of course, found—amongst the Endopterygota, in the Lepidoptera, Coleoptera, Hymenoptera-Symphyta (sawflies), and certain small leaf-mining Diptera, and, amongst the Exopterygota, in the Hemiptera (plant-bugs, froghoppers, greenfly, etc.) and Thysanoptera ('thrips'). In some groups, *e.g.* in the Lepidoptera-Heterocera (moths) and in the Thysanoptera, foodplant 'patterns' are considerably less well-marked than in others. In the present brief note we shall look at some features of the foodplant pattern amongst the British Rhopalocera. Upon subsequent occasions it may be possible to discuss some interesting examples taken from other insect-groups. It is perhaps scarcely necessary to stress that any conclusions drawn from the consideration of such a restricted field as that represented by the fauna and flora of the British Isles may have only a correspondingly limited validity. A more truly valid and balanced picture can only be obtained by those workers who are in the position (which the present writer is not) to draw upon examples from the flora and fauna of the entire world.

The butterfly foodplant pattern

A glance down the foodplant list of the British Rhopalocera reveals a rather clear pattern. Here the correlation between the (presumed) insect

relationships and plant relationships is, in the main, so close, with so comparatively few 'irregularities', that we must probably assume the influence of biochemical, anatomical and ecological factors combined.

Thus we have, for example, the great majority of the PIERIDAE on CRUCIFERAE (mustard and cabbage family) and LEGUMINOSAE (pea and bean family); the majority of the NYMPHALIDAE on URTICACEAE (mulberry, nettle and elm family) and VIOLACEAE (violet family); more than half of the LYCAENIDAE on LEGUMINOSAE; and all the SATYRIDAE, and three-quarters of the HESPERIIDAE, on GRAMINEAE (grasses). That is to say, about 45 butterfly species, belonging to 5 families, together make use of only 5 plant families as foodplants. There is thus here a strong parallelism between insect and plant classification—between the insect groups and the plant groups with which they are associated; moreover, instances of polyphagy or near-polyphagy are comparatively rare.

In view of this general uniformity, the first two pairs of plant-families—CRUCIFERAE + LEGUMINOSAE for the PIERIDAE; URTICACEAE + VIOLACEAE for the NYMPHALIDAE—cause a botanist some surprise. Most taxonomists would say that, for practical purposes, there is almost nothing in common between the members of each pair; botanically they are poles apart. In the same category we should also place what we might call the 'minority preferences'—in the PIERIDAE, the preference of *Aporia* (Black-veined White) for woody ROSACEAE, and of *Gonepteryx* (Brimstone) for *Rhamnus* (buckthorn—likewise woody); in the NYMPHALIDAE, of *Apatura* (Purple Emperor) for *Salix* (sallow), of *Limenitis* (White Admiral) for *Lonicera* (honeysuckle), of *Melitaea* (Heath and Glanville Fritillaries) for SCROPHULARIACEAE and PLANTAGINACEAE*, and of *Euphydryas* (Marsh Fritillary) for *Knautia* and *Succisa* (scabious). Nearly all these plant-groups would be regarded as quite unrelated, both amongst themselves and with the 'majority' groups.

This leads a botanist to wonder—probably unjustifiably—whether there might possibly be unsuspected morphological differences, or at least a less close relationship than is generally supposed, between the respective Pierid and Nymphalid majority groups in question, and between the apparently 'exceptional' members of the other groups and the remainder of their families. Conversely it could, of course, equally well be that there were unsuspected biochemical *similarities* between the respective *plant-families*. Many of these apparent anomalies will no doubt receive their explanation as botanical and entomological investigations proceed. Incidentally, it is interesting to note that the isolated position, taxonomically, of *Leptidea* (Wood White), so strikingly elucidated by Dr. E. B. Ford (1941: 1945: 60, 83, 87) in his work on pigments, is not brought out in a like manner by its choice of members of the LEGUMINOSAE as foodplants, since it shares this choice with the two *Colias* (Clouded Yellow) species. In view, however, of the popularity of this large and cosmopolitan plant-family among insects in general, this fact need cause no surprise.

Why some choose other plants

For some of the seeming foodplant irregularities in the list, it is possible already to find or to suggest explanations. Certain Crucifer-loving PIERIDAE will so far depart from their customary tribal fare as to eat *Reseda* (mignonette) and *Tropaeolum* (garden 'nasturtium'—introduced from South America). Now, botanists are agreed that the RESEDACEAE are closely related (through the exotic CAPPARIDACEAE, or caper family) to the CRUCIFERAE, so that we may regard this as a not surprising extension of habit. But the TROPAEOLACEAE, in almost every morphological feature, are a family very remote from the Crucifers indeed. Why, then, should a normal Crucifer-feeder choose it as an alternative pabulum?

Many readers no doubt know the answer. Both plant-families contain mustard-oils (sinapin, *iso*-thiocyanates, etc.) (*cf.* Benson, 1950: 132). This is why 'nasturtium' leaves and fruits are sometimes used in salads, like watercress (*Nasturtium* proper, or *Rorippa*), and it explains why the botanical name of the watercress has become the popular name of *Tropaeolum*. These substances are evidently important to these PIERIDAE, and so, since the anatomy of *Tropaeolum* apparently presents no barrier, they are quite content to make use of this botanically 'unrelated' genus as an alternative foodplant. In Pierid plant-classification, there is evidently a family not recognised by human botanists —the 'SINAPIFERAE'!

Among the Urticaceous-feeding NYMPHALIDAE, we find some interesting departures from the 'norm'. The reported excursion of *Polygonia* (Comma)

*See Cribb 1956, 1957; Airy Shaw, 1956.

to *Ribes* (currant)* sounds more like an isolated idiosyncrasy than the expression of a genuine natural preference. At all events, I am unable to suggest an explanation for it. When, however, we come to *Nymphalis polychloros* (Large Tortoiseshell), and find that it will feed on *Salix*, *Populus* (poplar), *Betula* (birch), *Sorbus* (whitebeam) and *Prunus* (blackthorn), in addition to the more tribally orthodox *Ulmus* (elm), we are encountering the first example of an exceedingly characteristic and widespread foodplant-group. Ford (1945: 90) has pointed out the similarity of plant-*habit* here, in that all these plants are trees or shrubs. It suggests that *N. polychloros* is only happy when feeding well above ground-level—possibly for reasons connected with free air-movement and insolation. But the combination of AMENTIFERAE (catkin-bearing plants) + ROSACEAE occurs so frequently among phytophagous insects that it must evidently represent, to these insects, an association or relationship of unusual significance. Most schoolboy entomologists know the 'apple–sallow' alternatives for the Eyed Hawkmoth (*Smerinthus ocellata* L.); and it is an association repeatedly met with among the sawflies.

Ecological groupings

It may be that ecological requirements were responsible for the choice of the other tree foodplants, when there was a 'breaking out', so to speak, from the previously established Urticaceous provender (*Ulmus*); for there is little in common, morphologically, between the URTICACEAE-ULMACEAE and the true AMENTIFERAE; but then, having found certain members of the latter group to be 'good for food', as well as ecologically suitable, the step from them to the ROSACEAE would seem to have been primarily a biochemical one, since, once again, there is botanically little in common between these groups. (It should be noted, however, that some botanists have in fact suggested a relationship between them; but their reasons for this are not clear.)

A further example of the same association is clearly seen in the foodplants of the British hairstreaks: *Ulmus*, *Quercus* (oak), *Prunus*, and *Rubus* (bramble). One species, however—*Callophrys rubi* (L.) (Green Hairstreak)—is evidently on the way to polyphagy, since it has been found to feed on LEGUMINOSAE (*Ulex*—gorse—etc.), *Cornus* (dogwood), *Rhamnus*, *Vaccinium* (bilberry, whortleberry, etc.), and *Helianthemum* (rockrose), in addition to *Rubus*. Even so, however, these are all *shrubby* plants, so that there would still appear to be some ecological or even anatomical factor operative here. Botanically these plants can be said to be unrelated. It is perhaps not without significance that two of the 'blues'—*Aricia agestis* Schiff. (Brown Argus) and *Celastrina argiolus* L. (Holly Blue)—that feed upon plants other than the LEGUMINOSAE favoured by the group as a whole, also include amongst their choice, from the above list, the genera *Cornus*, *Rhamnus* and *Helianthemum*.

This kind of foodplant 'progression' comes out very clearly amongst the sawflies, some of which extend their tastes (from the ROSACEAE-AMENTIFERAE) to, *e.g.*, *Ulmus*, *Acer* (maple; undoubtedly related, through the HAMAMELIDACEAE or witch-hazel family, to the AMENTIFERAE: *cf.* Airy Shaw, 1944), *Cornus*, *Vaccinium*, *Viburnum* (wayfaring tree), *Fraxinus* (ash), and *Tilia* (lime). This botanically miscellaneous collection gives the impression of representing a transition—a kind of 'branching out'—from a relatively homogeneous diet to an increasingly heterogeneous one; the governing consideration or factor changing the while from the biochemical and anatomical (as found in botanically related plants) to the ecological (as found, in this case, in the arborescent or shrubby habit). Benson (1950: 131), in an interesting discussion on 'Foodplant Races', suggests that, in the past history of sawflies, "periods of foodplant instability have alternated during the evolution of a group with periods of stability, that polyphagy is neither more primitive nor more advanced than monophagy, each being characteristic of a different stage in a recurring evolutionary cycle. . . . A burst of physiological variation, leading to vigour, abundance and spread of the species, is followed by a burst of morphological variation; this again is followed by retrenchment, selection by the environment and so segregation of different forms, which, by the splitting up of the species in its range into isolated pockets, become geographical races, and so new species. A revival of the cycle of variation is no doubt restricted to certain lines, while others become static and decadent."

*Meyrick, 1928; Scorer, 1913.

This is a suggestion that strongly commends itself to the botanist, since the comparative study of a wide range of plant groups produces just the same impression of alternating phases of stability and instability, consolidation and differentiation, decadence and vigour. Benson says (*l.c.*): "It is impossible that all the sawflies could have evolved in step with the plants concerned . . . ." While this is no doubt true for all groups of phytophagous insects, one is nevertheless tempted to wonder whether some common cause—*e.g.* cosmic radiation—may not ultimately be responsible for 'sparking off' simultaneous "bursts of physiological variation" in plants and insects alike.* If this were so, it could well be imagined that under such conditions there would be a widespread breaking down of foodplant barriers—a kind of 'general post' of plants and insects—before a phase of relative limitation and stability once more supervened.

In conclusion, I should like to refer briefly to two of our butterflies whose choice of foodplant confirms their taxonomic isolation, at least so far as this country is concerned. *Hamearis lucina* (L.) (Duke of Burgundy Fritillary), our only member of the NEMEOBIIDAE (RIODINIDAE or ERYCINIDAE), feeds on the genus *Primula* (primrose, cowslip, etc.). It is apparently our only butterfly to be attached to any member of the PRIMULACEAE. For some reason this is not a 'popular' foodplant family, at least in Britain: for example only a few LEPIDOPTERA, two or three beetles, one sawfly, and no plant-bugs (HEMIPTERA-HETEROPTERA), are recorded as feeding on it. It would be interesting to know if the same holds good in other parts of the world.—*Papilio machaon* L. (Common Swallowtail), our only native Papilionid, feeds on various genera of UMBELLIFERAE, and again in Britain it is unique in this respect. But some few years ago there was an interesting record from Finland (Reuter, 1945) of how, in a district where *P. machaon* occurred regularly on its usual Umbellifers, the butterfly discovered some planted specimens of *Dictamnus fraxinella*, a herbaceous member of the RUTACEAE (rue family) from the Mediterranean region, and took to it as a foodplant like a duck to water! The larvae showed a preference for the young fruits, though they ate the leaves as well. Reuter pointed out that *Dictamnus* is strongly aromatic, the fruits especially being furnished with glandular hairs secreting a volatile oil, and he suggested that, in view of the aromatic oils found in the UMBELLIFERAE, it was probably this common feature which led the swallowtail to lay its eggs on this member of such a botanically remote family as the RUTACEAE. This is an unusually striking example of the operation of biochemical factors in a butterfly's choice of an alternative foodplant.

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[*It is hoped that Mr. Shaw will expand this theme in further articles.*—EDS.]

*Compare Clark's (1929, 1930) idea of 'eogenesis', and Velikovsky's (1956: 223-227) remarks on 'cataclysmic evolution'.

COMMUNICATION AMONG SOCIAL INSECTS

By A. N. Brangham

Fully social insects are confined to bees, wasps and ants among the Hymenoptera, and termites (Isoptera). According to O. W. Richards, "a truly social insect may be defined as one in which the female tends or helps to construct a brood-chamber for an egg (or larva) laid by another female".

Hymenopterous social insects may have emerged from the solitary Scoliid wasps which burrowed or built cells and supplied their eggs with food to last through the growing stages. At some phase in evolutionary time it must have happened that females of these solitary species came into collective association. The transition from solitariness to complete social integration is illustrated by the primitive social European wasps of the genus *Polistes*.

In southern Europe a number of fertile females may come together (whereas in the north this is not the case) to found a nest. By virtue of those slight differences in genetic inheritance common to all living organisms, one female emerges from among her peers as a more robust, more aggressively constituted dominant. This superiority is shown in her pre-eminence as the egg-layer, spending most of her time on the carton nest; her ovaries remain active and well developed. Those of the others degenerate, and they become auxiliaries, using up energy in flying off for food, building, feeding the dominant queen and the brood. Yet at the outset they had all shared the tasks of laying, building, and feeding. The superior aggression of one emerges gradually; she sustains her authority as queen by butting and buzzing at the others from time to time. She intimidates them to the extent of inhibiting them from laying eggs, and reduces them to the status of workers.

Between themselves the auxiliaries develop a "pecking order" in which a senior accepts food from a subordinate. After the true workers have hatched, the auxiliaries leave the nest to lead a solitary existence for the rest of the summer. Workers are also inhibited from egg-laying by the presence of the queen until she leaves the nest, when the workers lay eggs which become males.

Here is a rudimentary type of communication, all the more so since it seems to be largely a psychological influence, that is, the pattern appears to be a function of behaviour, and neither of selective feeding nor of glandular excretion as in higher social organisations among insects. This behaviour not only controls that of the other wasps, it governs the reproductive rate and sex-determination of offspring.

This kind of communication is made possible by the relatively simple social structure and small size of a *Polistes* colony.

Social complexity increases in proportion to the numerical size of the community, and there arises a need to evolve a more efficient means of communication. This is particularly the case in insects able, through flight mobility, to travel considerable distances from the nest. A distinctive nest-aroma binds a colony together in mutual recognition, and distinguishes it from others of the same and other species, a primary mode of communication through a physiological agency.

Ants possess the most flexible social organisms when compared with bees or wasps, but their methods of communication are probably less refined than those of the hive-bees. The ants are earth-bound, covering comparatively short distances from their nest in search of food or slaves, or else they are entirely nomadic. They are thus able to rely on the methods ants use to find their way about—through laying scent trails, by sun-compass reaction, by memory and sight, or orientation by polarised light.

How these forms of orientation dovetail into the ants' ability to communicate information about supplies of food to their fellows is not really known. That they do so is obvious, and it seems likely that the tapping of antennae holds the key to the sign language employed. The speed with which a raid is organised by workers of the slave-making ant, *Formica sanguinea* Latreille, on colonies of *F. fusca* Linnaeus, demonstrates the efficiency of their co-ordination.

The special sense in which the term communication has been used in connection with the social organisation of *Polistes* may be used to understand some of the complexities of termite communities. Termites have the most involved caste system of all social insects, in spite of their lowly place in the evolutionary scale. As there is no helpless grub stage, all individuals in the colony are almost immediately available for duties. Unlike other social insects, males are always present in the colony and play a fuller part in its life.

Changes from one caste to another occur. Whether these are brought about by special feeding, by ecto- or social-hormones, or by what P.-P. Grassé calls "group effect", is still in debate.

The group effect hypothesis is full of interesting possibilities to account for the multiplicity of phenomena manifested by termites. Its application need not be confined to them, nor merely to the social insects. It is a theory which may be valid for explaining behaviour in other gregarious but non-social (in the sense that Richards has defined the word) insects such as grasshoppers and cicadas, and to all other animals showing some degree of sustained communal cohesion. The group effect, in all probability, operates to its greatest intensity among locusts in their mass migratory phase.

The idea of the group effect is based on the belief that the sensory system of an individual is stimulated through the proximity of others of its kind, and plays some part in determining behaviour and physical development in all insects living, at some stage of their existence, in crowds. Precisely what visual, tactile, or olfactory principles are involved is not known, nor is it always easy to distinguish between psychological and physiological effects of proximity, but experiments by Grassé and others supply evidence in support of the hypothesis. Removal of a given number of sexual castes in termites brings about the production of the same number of substitutes, unless the egg-laying capacity of these substitutes is lower than that of the original sexual forms. In such an event, enough substitutes are permitted to maintain the optimal supply of eggs. Removal of a single soldier gives rise to one other soldier to replace it.

In a now celebrated experiment, Grassé and Noirot found that if two fourth-stage nymphs of the same sex of *Calotermes* were isolated, only one became sexually mature after the next moult. If both were of different sexes, both matured after the following moult.

Of the way in which termites pass messages little is known, although the antennal play and "nuptial promenade", in which the female searches for a suitable nesting site after swarming, closely followed by the male she has accepted, has been observed in many species. This, too, is a special aspect of communication. But the kind of communication demanded among hunting and foraging social insects is needed to a far smaller degree by termites. There is little individual initiative; most termites subsist on ample food supplies not eaten by other creatures, notably wood, for the digestion of which parasitic protozoa in the intestines are essential.

The discoveries of K. von Frisch have revealed methods of communication among hive-bees that represent the most intricate way of passing complicated information among any of the social insects. The language of the "dancing bees" has been widely written about, and the basic findings of von Frisch are confirmed by others, so that only the briefest resumé is necessary here.

When a foraging bee discovers a source of food, she emits a scent from abdominal glands, on or around it. On returning to the hive, the bee performs ritual motions which have been described as a dance, either at the entrance to the hive or within it. Food found at a short distance from the hive is indicated by the round dance, while that found at distances greater than about 100 yards radius is communicated by a tail-wagging dance in the rough form of two joined loops. Distance is indicated by the speed with which the movement is executed, together with the number of times the abdomen is waggled along the straight line before she performs the looping movements.

When this dance is performed outside the hive in full daylight, the bee's straight course points to the source of the food. But when the dance is carried out on a vertical comb within the darkness of the hive—as is most commonly the case—the straight run is executed at an angle to the sun, this angle corresponding to the angle at which the food lies from the sun. An upward run along the straight indicates that the food is to be found in the direction of the sun's position, and a downward run indicates the reverse. If the sky is totally obscured, bees do not dance. As long as there is some blue patch of sky, the bee's response to polarised light allows the direction to be indicated in relation to the actual position of the invisible sun. Thus, both distance and direction are indicated to the bees in the performer's proximity.

The efficiency of their language is not absolute. Bees which have received the communication from the forager fly off in the general direction of the food, and only a minority of them fly unerringly to it. The rest will have deviated in their angle of flight, and proceed to fly in increasing circular sweeps, making use of their sense of smell, vision, and topographical memory to find the correct

place.

Slight variations in the dance pattern—dialects, as it were—have been detected in Asian races closely allied to the European honey-bee.

Maternal care plays no part in the lives of grasshoppers (ACRIDIDAE), yet these members of the ORTHOPTERA deserve consideration in a special category of social insects. The same may be said of crickets (GRYLLIDAE) and bush-crickets (TETTIGONIIDAE). Their aggregation in smaller or larger communities reflects more than a haphazard coming together of a number of insects in a favourable ecological locality, and more than a mere assemblage of males and females for mating. This applies also to the cicadas (CICADIDAE).

The complicated song patterns of the grasshoppers are a form of expression and a means of communication sustained throughout adult life. Females have some powers of stridulation, but these are insignificant compared with those of their males. In the past, this fact has been interpreted as having purely sexual significance, but this does not account adequately for the whole behaviour of those ORTHOPTERA leading some kind of communal existence.

Male Acridians stridulate as soon as the last moult has been completed, but larvae occasionally execute soundless stridulatory movements in response to the adults surrounding them, such is the deeply ingrained phylogenetic urge to stridulate.

Stridulation is simultaneously an expression of sexual maturity, of social cohesion within an appropriate biotope, and of individual well-being. The evidence to support these contentions may be briefly presented.

Provided general environmental conditions of warmth, moisture, and suitable herbage are available, male grasshoppers stridulate for most of the daylight hours (many bush-crickets and crickets perform at night), vigorously when these conditions are optimal, feebly when less so. The basic song pattern of the male is the ordinary song, a kind of generalised range-finder, a way of informing the world at large of his presence. This song is modified through a rich variety of phrasing and intensity, modulated through transitions to the rivalry song when males meet, or to the courtship song when females approach within range of sight and hearing. Males stridulate in varying degrees of harmony while moving backwards and forwards in endless ritual. A little evidence has been produced to suggest that young adults need to learn the specific song. If this can be further substantiated, the importance of social solidarity is emphasised still more.

Sexual selectivity is involved in stridulation, but the fact that copulation results less frequently than might be expected suggests strongly that aggression, usually associated with sexual rivalry, is displaced, or toned down to an amicable contest. Rudiments of sociability are implied in such behaviour, in which crude impulses have been deflected into compromise.

Social cohesion is made necessary by virtue of the grasshopper's leaping or flying potential, which exceeds the range of sight and hearing. Without restraint, the colony is threatened with disintegration through scattering. The song helps to inhibit dispersal of individuals at various stages of development, and allows favourable biotopes to be exploited as feeding grounds and places for cryptic protection against predators.

An analogy between grasshoppers and bees can be drawn. Bees possess the means for dispersal to great distances from the hive. They have evolved complex methods of communicating to the nest what has been found outside it. Grasshoppers, too, are able to wander from the centre of their mobile community, which has no constructed fixed point. They also require a method of communication to preserve it, though what has to be imparted is essentially of a defensive or conserving nature.

It is significant that grasshoppers are unwilling to leap or fly unless disturbed; they try to make their way back when this happens, aided by a recognition of the species' song, and guided by sight to a lesser extent. A biological balance between immobility and diffusion is maintained partly by the general behavioural characteristics of the species, partly by fecund females who show a tendency to wander in search of egg-laying sites, and partly by the immature forms, which are much more addicted to spontaneous leaping than are the adults.

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SOME OBSERVATIONS ON TAXONOMY

By W. H. T. Tams

In a most useful book entitled *Collecting, Preserving and Studying Insects* (1958), Mr. Harold Oldroyd makes the following statement (p. 295):

"It is also wasteful of time if other people have to cover the same ground again".

On the next page he states:

"Above all, do not take up valuable printing space writing about nomenclature. Writing about names is not entomology".

As one cannot write or speak without using words, so in speaking and writing one must use some kind of word to designate the objects to which one is referring. Hence the use of nouns or names. The methods of using names in scientific subjects have been subject to so much abuse, that to hope to establish a permanent and reliable nomenclature seems not unreasonable.

Recognised zoological nomenclature is just over two hundred years old, and the Strickland Code of Rules was drawn up in 1842 at the instance of the British Association for the Advancement of Science. I, myself, have had dealings with zoological nomenclature for fifty years.

I now find it impossible to be sure of giving the correct advice in response to the many requests for help which come my way in connection with both nomenclature and terminology. The repudiation of the sanctity of the Law of Priority*, with the introduction of *nomina conservanda*†, has played such havoc with progress in stabilizing names, that one despairs of ever being able to provide a stable list of the names of even such a comparatively small fauna as that of the British Isles.

Often it is difficult, sometimes it seems impossible, to reach decisions on matters of opinion, but the most disheartening manifestation to-day is a deliberate evasion of fact.

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*The Law of Priority.

"Article 25. The valid name of a genus or species can only be that name under which it was first designated on the condition:

(*a*) That (prior to January 1, 1931) this name was published and accompanied by an indication, or a definition, or a description; and

(*b*) That the author has applied the principles of binary nomenclature.

(*c*) But no generic name nor specific name published after December 31, 1930, shall have any status of availability (hence, also, of validity) under the rules unless and until it is published either:

(1) With a summary of characters (seu diagnosis; seu definition; seu condensed description) which differentiate or distinguish the genus or the species from other genera or species;

(2) Or with a definite bibliographic reference to such summary of characters (seu diagnosis; seu definition; seu condensed description).

And further:

(3) In the case of a generic name, with the definite unambiguous designation of the type species (seu genotype; seu autogenotype; seu orthotype)."

(Taken from Schenk, E. T., and McMasters, J. H., 1936, *Procedure in Taxonomy*).

†*Nomen conservandum.* A name which should be preserved. (A name which has been preserved by the International Commission on Zoological Nomenclature, but which does not have priority.) (See Schenk, E. T., and McMasters, J. H., 1936, *Procedure in Taxonomy.*)

With the establishment by the International Commission of the Official Lists of names in various categories, including Official Lists of invalid and rejected names, the expression *nomina conservanda* will not be used. So far as I know, it first appeared in the volume published after the IX International Congress of Zoology held at Monaco in 1913. In the Section on Nomenclature, on p. 829, will be found a contriubtion by S. F. Harmer (British Museum) titled *Zoological Nomina Conservanda.* In 1915 Professor C. Apstein put forward certain proposals about *nomina conservanda* (*Sitzungsber. Gesellschaft Naturforsch. Freunde Berlin*, **5**: 119), and although these were not accepted at that time, it would appear that the principle of conservation of names outside the provisions of the Law of Priority is the outcome of these small beginnings.

In making a plea for at least some attempt at precision I propose to draw attention to a few examples.

First: *terminology*

In all his descriptions of moths, Sir George F. Hampson (1887-1926) used the terms *tegulae* and *patagia* in the wrong sense; *patagia* are the collar-tippets, *tegulae* are wing-base covers, not *vice-versa* (see Kirby and Spence, 1815, *An Introduction to Entomology*, **3**: 368, 377).

A slightly different case is the use of the term *gnathos* for a process below the *uncus* in the male genitalia of certain butterflies and moths. The term was first given by Dr. T. A. Chapman (1911, *Ent. Rec.*, **33**: 2) as *gnathus*.

There is a frequent lack of uniformity in the use of the adjective *medial* and its modifications. Use is made of other adjectives with the correct adjectival termination *-al*, but often one finds indiscriminate use of "median", which, it has to be admitted, is given as an adjective in dictionaries. Professor J. H. Comstock in 1882 wrote a little *Guide to Practical Work in Elementary Entomology* for students at Cornell University, in which he draws attention to the need for improvement in the use of terms, and gives some useful hints on the use of adjectives and adverbs. He gives a reference to the "anatomical preceptor of Professor Owen, Dr. John Barclay, who published in 1803 a volume of nearly two hundred pages, entitled *A New Nomenclature Relating to the Terms which are expressive of Position and Aspect in the Animal System*." From this Comstock adopted the most useful practice of modifying the adjective adverbially by substituting for the ending *-al* the suffic *-ad*, the Latin equivalent of the English *-ward*. So we have for the adjectives *dorsal, ventral, cephalic, caudal, dextral* and *sinistral*, the adverbs *dorsad, ventrad, cephalad*, etc.

Throughout Rothschild and Jordan's *Revision of the Sphingidae* (1903, *Nov. Zool.*, **9**, Supplement) the word "*ciliae*" is used instead of *cilia*. I mention this because it is so easily copied.

In the matter of citing colours, too, there is some lack of precision. The words *ochreous, ochraceous*, etc., are frequently used by themselves. One dictionary will state that ochre is "a yellow colour", another that it is "a tan colour", another "yellow with a slight tinge of brown", and yet another "yellow with a tinge of red". The fact is that it is an earth colour of such variety that an adjective of colour like yellow, orange, brown or red is necessary to give even the slightest indication of the real tint.

Second: *nomenclature*

When we come into the province of nomenclature, we are really in trouble. The Oxford dictionary says that a name is:

1. "The particular combination of vocal sounds employed as the individual designation of a single person, animal, place or thing".
2. "The specific word or words (term) used to denote a member of a particular class of beings or objects".

The word "epithet" has come into use in botanical nomenclature, and this has been defined thus:

"The Greek word ['επιθετον] was used by grammarians for 'adjective', but they did not distinguish between adjectives and descriptive substantives in apposition with a name".

Linnaeus devised a satisfactory system, which we are now supposed to be following, consisting of generic names and trivial names. In forming the specific name he made the trivial name agree in gender with the generic name, ignoring the fact that he was placing two names in apposition, thus obviating the necessity for inflecting the trivial name, which being a name is now a noun and **not** an adjective. The slavish adherence to a practice which was wrong at the very outset has led to a state of affairs which, if persisted in, precludes the possibility of ever establishing a stable nomenclature.

When the late Dr. C. D. Sherborn in 1902 published the first volume of his *Index Animalium*, he stated in the *Introduction*:

"All trivial names are entered as if they were masculine, *e.g.*

nigra will be found under *niger*
afrum will be found under *afer*
abdominale will be found under *abdominalis*

"It is obvious that no other arrangement is possible if we wish to preserve the history of a species; but cross references are given when the feminine and neuter forms vary so much as to obscure it to those who, like myself, are unfamiliar with the dead languages".

In 1932 the late L. B. Prout stated in a paper entitled "Some disputable questions of homonymy" (*Ve Int. Congr. Ent.*, 1932: 903):

"To call the second part of a binomial a "name", to allow its transference as such to another genus, and yet to claim that it can stand in any other relation to the generic name than that of apposition, seems to me as indefensible grammatically as it is inconvenient nomenclaturally. The struggles over *-a*, *-us*, *-um* and over the gender of *Spilosoma*, *Selidosema*, etc., though only occasionally having a bearing on our present topic of homonymy, have caused many other complications and absolutely wasted a great deal of valuable time".

I will go even further and say that I cannot understand why no member of the Commission seems capable of grasping so simple a principle. Why introduce grammar into nomenclature simply to misuse it!

It may be seen then, from the above examples, that the state of our practices in the employment of terms and names leaves much to be desired. Not many people seem to be interested in words, though they are compelled to use them for purposes of communicating with their fellows. In the matter of scientific names any attempt to introduce an unfamiliar name on the basis of priority for the purpose of stability seems to-day to raise so much resentment that the innovator is regarded as little short of an imbecile.

Through the complete failure of various people to grasp the difference between an animal and a name, or between a concept and a name, we are faced with continual wrangles. We have besides lost some valuable works which have been in the past of great use in providing guides for the resolution of nomenclatural problems.

The *Tentamen* of Jacob Hübner (1805) is a case in point. On a quibble it has been argued that this document was not published. That it was rare is certainly true, but it was known by Ochsenheimer and cited in his great work *Die Schmetterlinge von Europa*, 1807-1816, and it was regarded by the great American lepidopterist Scudder of such importance that he had it reprinted in facsimile. As its title indicates, it is a tentative classification. In the Preface to his *Verzeichniss bekannter Schmettlinge* [sic] (1816-[1826]) Hübner states that he published it in order that it might be examined and tested. It consists of a classified list of specific names in the form of a generic name followed by a trivial name, but without mention of the author of the trivial name. Most, if not all of the trivial names, are so well known that their authorship is almost inherent in the very name: *Plusia chrysitis*, for example, is *Plusia chrysitis* L., Hübner. However, after years of controversy, the *Tentamen* was suppressed, causing detriment to lepidopterological nomenclature.

The discovery of much valuable literature relating to Hübner's works brought to light Hübner's *Erste Zuträge* (1808), another tentative classification, which was the basis of the *Zuträge zu Exotische Schmetterlinge*, 1818-1825. Unfortunately Hübner did not use in the later work the generic names he put forward in the *Erste Zuträge*, where he associated the names with the figures of the later *Zuträge*. Acceptance of the *Erste Zuträge* would involve the use of the well-known generic name *Agrotis* for a North American moth of the Noctuid subfamily EUSTROTIINAE, *Agrotis grata* Hübner. We would, therefore, lose the name *Agrotis* Hübner [Ochsenheimer], in spite of the fact that Ochsenheimer cites the *Tentamen* as the source of his *Agrotis*, which Hübner in that work associated with the trivial name *segetum* [Schiff.].

I cite this example to show how the taxonomist is frustrated in his efforts to provide a name that cannot be changed. This is sometimes quite a simple task without any snags, but at other times it involves an amount of research which, to judge from results, evidently subverts the integrity of even the most conscientious worker. He either adopts an attitude of *laissez faire*, or takes "the line of least resistence". Result: Chaos!

But, to add to our difficulties, rather than to alleviate them, we now have to face a kind of dictatorship, the arrogated "plenary powers" of which have recently resulted in the suppression of the most important generic name in the LEPIDOPTERA HETEROCERA, viz. *Phalaena* Linnaeus, 1758, and the validation of the homonymous name *Noctua* Linnaeus, with an erroneous type *Noctua pronuba* Linnaeus, the said homonymous *Noctua* having been declared valid from its position as a division of the suppressed *Phalaena*, and having among its species one bearing the trivial name *typica* Linnaeus.

Not only space, but temperate words, fail me!

DISTRIBUTION, RANGE, AND THE BRITISH FAUNA

By R. W. J. Uffen

The British amateur entomologist is greatly stimulated, yet perhaps sometimes frustrated, by the plethora of prizes of the chase concentrated in the small space of his homeland. Excessively localized rarities lead him on pilgrimages to many beautiful corners of these islands; numerous subspecies and local races teach him to find pleasure in admiring species which in a more exotic land might be passed over as drab and uninteresting. It is fitting that this jubilee issue of our *Bulletin* should remind the amateur of some of the hypotheses which have been put forward to explain why some of our insects are so ubiquitous and often catholic in habit, whilst others should be so rare and frequently specialized as compared with individuals of the same species elsewhere.

Britain has had a complex geological history, which has led to a remarkable mixture of rocks and soils over the country, occupying relatively small areas. Since most insects are at least indirectly dependent on soil or on plants, and plants differ from one soil to another, the discontinuous distribution of these soils presents many barriers to the spread of the insects, although the diversity of soil and climatic aspect presents an opportunity of establishment to a vast assortment of species. Because of the intense climate changes associated with the Ice Ages, and the subsequent break-up of the British Isles, which at one time formed one land mass linked to the continent across Doggerland (now the fisherman's Dogger Bank) and across the English Channel, our present fauna is thought to have originated from various invasions, or expansions of range, of continental animals in favourable periods, interrupted by checks and extinctions in unfavourable periods. Thus there are many localized relicts, which spread slowly over the country in prolonged, favourable periods, but were wiped out again (many authors euphemistically say they retreated) except in a few areas, where they survive either still on the extreme edge of their possible range, or, weakened by an acquired non-dispersive or colonial habit which prevented dissipation in times of contracting range, lack the power to jump slight barriers into other areas. The west of Ireland, which is noted for the absence of many of the species which invaded Britain later from the east, and the extreme south-west and south-east of England harbour most of these now south-west European or Mediterranean species.

The production of subspecies is common in these areas, but endemic forms of specific status are rare amongst insects. The het-bug *Myrmedobia bedwelli* China occurs only at the Lizard and has not yet been found on the continent, whilst another bug, *Gonocerus acuteangulatus* (Goeze) survives on Box Hill, far from its Mediterranean haunts, by specialization including restriction of the foodplant to box (*Buxus sempervirens* L.). The British race of *Papilio machaon* L. (Swallowtail) is a good example of an endemic subspecies in the south-east.

Scotland and Ireland are also the homes of many arctic and Siberian species. The lepidopterist will remember the excitement caused by the discovery of the large green Noctuid moth *Calamia tridens* Hufn. in the Burren of Clare in the west of Ireland. This is not a southern relict, but a boreo-montane species, *i.e.* of northern distribution, but found also in the mountains of southern Europe, and might therefore be expected to occur also in Scotland. It has not so far been found either there or in Norway. The Irish colonies seem at present to be curiously isolated.

Then there are the old species which have spread again over all suitable terrain, and the post-glacial introductions which are in the process of so spreading. Many of the more slowly dispersing species were unable to reach Britain before the English Channel made its appearance. These may now be abundant in coastal Europe but absent here if they are unable to fly the Channel in other than freak conditions. In recent decades there has been a surge northward of formerly southern species both in Britain and on the continent. This has led to a greatly increased abundance of many mainland species opposite our shores, with increased chance of sufficient specimens being blown over the Channel to establish themselves here. We thus have many isolated colonies of such species on our southern coasts, such as the recent ephemeral colonies of the Phycitid moth *Heterographis oblitella* Zell. Other species formerly with this precarious foothold, such as the hoverfly *Volucella zonaria* Poda, have now spread over

the whole of S. England. Some, such as the moth *Polychrisia moneta* F., have been able to spread only recently partly because their foodplants are garden plants, not widely grown for more than one or two hundred years at most. An important section of the post-glacial introductions comprises the many common species which spread westwards from their homes on the steppes of Central Europe. These species are obviously well adapted to living on open, cultivated terrain, and have been able to maintain a wide distribution in Britain despite man's interference. It is probably these species which provide the ubiquitous "low plant" feeders which seem to thrive the better the more artificial the environment becomes, as for instance on bombed sites.

We must constantly bear in mind, if we are not to be seriously misled, that the distribution of many insects is largely the result of man's interference since the Middle Ages. Primary forest relicts and marsh dwellers provide many puzzles if we forget man's detrimental influence on them. The chafer *Gnorimus variabilis* (L.) is now found only in Windsor Forest, where it is a sedentary creature whose larvae live in wood-mould in the boles of old trees. There are, however, older records to show that it was formerly more widespread in the primary forests of south-east England. Many species, such as the hoverfly *Callicera rufa* Schummel, are confined to the native coniferous forests of northern Scotland. Some species formerly so confined have recently appeared in plantations in south-east England. These may well have been introduced with nursery stock or migrated from the continent, rather than have spread southwards of their own accord. Occasionally this is proved by their being southern subspecies.

The now extinct British subspecies of the Large Copper (*Lycaena dispar* (Haw.)) had for long been confined to the fens of East Anglia, but old, unreliable records remind us of the possibility that this insect occurred further west before the land was so much drained. The moth *Pyrausta perlucidalis* (Hübn.) has only recently been discovered in Wicken Fen, and could have already disappeared from Britain were it not for the protection of this area.

There are numerous species about which so little is known that it is profitless to speculate about their intriguingly anomalous position. The beetle *Chrysolina cerealis* (L.) occurs here only at the top of Snowdon, where it feeds on so common a plant as thyme. This plant seems a favourite with eccentric insects. The bug *Lasiacantha capucina* Germ., which although common on the continent lives here only at the Lizard, and the local micro-moth *Coleophora niveicostella* Zell., feed on thyme, whilst *Coleophora lixella* Zell. has the curious habit of eating thyme in the autumn and grass in the spring.

Coleophora otitae Zell. occurs only at Dungeness, but whether as a relict or a recent immigrant we do not know. The sawfly *Amauronematus abnormis* (Holmgren), a high alpine species, is known in Britain only from the summit of Mt. Braeriach in the Cairngorms. Another sawfly, *Blasticotoma filiceti* Klug, now the only European member of a Japanese group, was known in Britain only from larvae feeding in the stems of ferns in the Royal Horticultural Society's gardens at Wisley. A recent record from the Pennines shows the species to be native, however. Finally, there is the delightful case of the plume moth *Stenoptilia saxifragae* Fletcher described from suburban gardens in Dublin, feeding on mossy saxifrage. No one knows where in the world it came from.

Besides the question of the range over which an insect lives in our country, there is also the very apparent problem of the distribution of the species within that range. Because of the widely differing soil types, aspects, histories of cultivation, and so on, only a proportion of a geographical area within the range of an insect is generally suitable for occupation. A fire, the intensity of grazing, and similar disturbances, may render even this proportion temporarily unsuitable. Many insects are colonists, occupying an area when the succession of vegetation as it matures after disturbance reaches a certain stage. Other insects typically occupy what under present conditions are relatively stable areas, yet they may be scattered among such localities, occupying this one, but not that, where the eye sees no obvious difference. There are many instances documented of these very local insects appearing or disappearing unexpectedly in a locality which has been kept under close observation for many years. For the naturalist, there has been no apparent change in the area. Why should the insects change?

At the edge of the range of an animal the abundance tails off to zero. There are two ways of approaching this zero. Some insects, with their powerful flight and efficient means of assembling for mating, can exist extremely thinly,

and relatively uniformly, over the ground, and cease to exist, apart from stray, wandering individuals, beyond the line where insufficient progeny mature for one of them to find a mate in the attenuated population. These are the species which we find as one in a hundred "commoners", and those, like some butterflies, which expand and contract their range by many tens of miles in a few decades. Other insects are gregarious, or are inefficient at assembling for mating, or are weak fliers. These species must exist in relatively dense colonies right to the edge of their range. At this borderline it is the number of places which are permanently suitable for the maintenance of a colony which falls to zero. Perhaps only a few times a century, otherwise suitable areas will be afflicted by a sufficiently severe fluctuation of climate, or perhaps general predator or parasite population, to kill off the colony of this particular animal, and because it can only just maintain itself, and is so slow to recolonize such areas, it cannot re-establish itself before the next fluctuation extinguishes it again. Further from the edge of the range permanent colonies exist in a proportion of the places which would be regularly inhabited in the centre of the range, where the general conditions are optimal. These colonies may be ecologically isolated for long periods and give rise to local races or subspecies specialized to fit into the conditions in each locality. If the environment is more fluctuating, with reasonably long favourable periods, the colonies expand and are periodically connected, and colonies may develop in intermediate places of general suitability. The ecology of some species is such that when the next unfavourable period develops, some of the original colonies are killed off, whilst some of the new ones survive. In this case we have a species which periodically shifts its ground for no obvious reason.

It will be seen that the study of distribution and abundance in an area such as ours, situated at the edge of a great land mass, and so at the edge of the range of so many of its inhabitants, is a fascinating study which is capable of yielding a tremendous amount of information about the creatures concerned. It is supremely a study in which the amateur can play an important part, for only by collating the records and experiences of naturalists over a wide area for many years can a picture be built up which is truly enlightening.

The Presidents' Appeal

Have you found this *Bulletin* interesting?

The publication of an additional and enlarged number has put a strain on the society's finances, and members will have read the appeals for donations by Mr. Hobbs in April, and by Mr. Uffen in July. If every member gave, for instance, a shilling for each year of membership, or for each hundred of his membership number, the resulting sum would go far towards covering the cost of this special *Bulletin.*

Some members have already sent donations; but if you have not, and can spare something, please send your contribution to the Hon. Treasurer:

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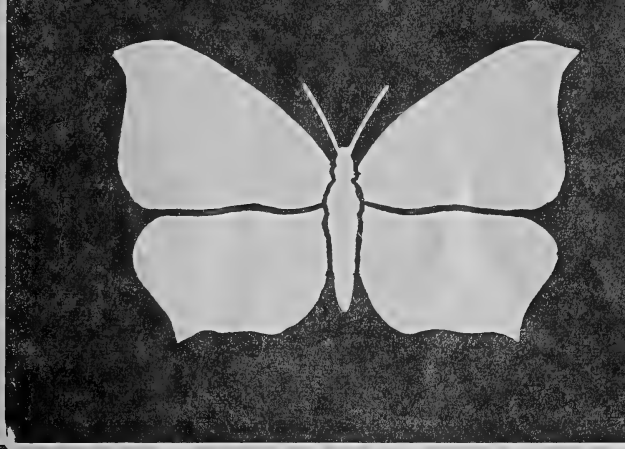

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by W. N. LAWFIELD

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A E S

BULLETIN

No. 237

SEPTEMBER 1960

EDITOR'S LETTER

The Secretary has handed his space over to me for this month, as I want to make an appeal for more material from members. As you will see this is the first of the enlarged issues running to twelve pages. If we are to continue with twelve pages I shall need the co-operation of members. Scientific data, short notes, or even a letter will be of use provided that they are of interest to other members. If you type them try and use double space, and if they are written please write clearly on one side of the paper only. Drawings and diagrams should be on stiff white paper or board and done in Indian ink, and as large as possible. I will do my best to acknowledge all articles sent to me, and if a stamp is enclosed I will return any that I am not able to use. There must be many members who have never sent in anything, so do try and do something about it. The more material I get the more interesting the *Bulletin* will be as I shall be able to make a selection each month, but when material is scant it means using it all, so that a nice balanced mixture is not possible. Even if I do not use the article at once I can hold it for a future issue. The thing to remember is that members are widespread and that means meetings are hardly possible; the *Bulletin* is, therefore, the means of exchanging information and ideas, and I am waiting for yours.

W. N. Lawfield.

COLLECTING HINTS—September

The Macrolepidoptera

One of the more interesting habitats to work this month is heathland. Many species such as *Amathes agathina* Dup. (Heath Rustic), *A. castanea* Esp. (Grey Rustic), *A. glareosa* Esp. (Autumnal Rustic), and *Stilbia anomala* Haw. Anomalous are to be obtained on most of our larger tracts of heather throughout England, Scotland and Wales. Good results are often had by walking over the heather at dusk, netting the moths as they fly over the heather blossom.

Leucania l-album Linn. (White L. Wainscot) is now quite widespread along the south-western coastline. It is attracted by light, m.v. or otherwise, sugar, and wild flowers such as Ragwort. After dusk it settles on the heads of various grasses and is then easily captured. Other local species occurring on the same ground at this time of the year are *Leuchochlaena hisbida* Gey. (Beautiful Gothic) and *Eumichtis lichenea* Hübn. (Feathered Ranunculus).

B. F. Skinner.

In the July *Bulletin*, under Collecting Hints (Macrolepidoptera), please read Titchfield for Lichfield. My apologies to Mr. Skinner and other members for an editorial error.

W. N. L.

The Smaller Moths

The common melilot, *Melilotus officinalis* L., is quite a conspicuous plant to be found on waste ground. During this month look for the cases of *Coleophora frischella* Linn. on its seed. Most of the cases will be found within two feet of the ground.

Look for the 'windows' in the leaves of thistles which may betray the presence of the fairly large cases of *Coleophora peribenanderi* Toll, the larva being fully fed in the autumn. Acorns which show signs of exuding frass should be gathered soon after they fall for the larvae of *Ernarmonia splendana* Hübn. They hibernate in a cocoon and so should be kept out of doors.

Many leaf miners may be taken when fully fed and put in plant pots for the winter. First grind the edge of the pot flat, and then put some plaster of paris in the bottom (to keep out pests), then sand and then pebbles on the top, covering the pot with muslin and placing in a sheltered part of the garden for the winter. In the spring the muslin can be changed for glass to facilitate seeing the emerging moths. Place a weight of some sort on top of the glass to prevent its falling off.

Similar treatment can be made for the nuts and seeds which are likely to breed larvae. In particular beech nuts, and if members would take samples of the seeds of sycamore this autumn, perhaps a new station for *Pammene aurantiana* Staud. may be found.

A mine leading to a blotch in the leaf of bindweed (convolvulus), *Calystegia sepium* L., may betray the presence of *Bedellia somnulentella* Zell. The pupa, with its pink, black-striped abdomen, may be found in a slight web on the underside of the leaf.

D. Ollevant.

The Coleoptera

There are 15 species of the genus *Phyllotreta* listed in Kloet and Hincks' Check-List of British Insects. They are flea-beetles, that is they belong to the sub-family Halticinae (family Chrysomelidae) which can be distinguished by having the hind femora greatly enlarged for hopping. Most of them feed on plants of the family Cruciferae and some are serious pests of farm crops such as turnips and seedling cabbages.

Most of these beetles feed on a great variety of cruciferous plants and do not seem to have marked preferences for any particular species. The plants most worth examining for them are *Nasturtium* spp. (water-cress), *Cardamine* spp. (lady's smock and the bitter-cresses), *Alliaria* (jack-by-the-hedge), *Sisymbrium* spp. (hedge mustard and allied plants), *Cochlearia* (scurvy grass), *Sinapis* (charlock), and any cultivated plants of the family.

Sweeping will produce good results, but it is best to collect individual specimens by hand in a glass tube if it is desired to establish exact records of beetle and foodplant. *Phyllotreta* species have a long season and several of them can be found feeding late into the autumn. During winter they hibernate and can be found in litter, in grass tufts and under flaking bark.

In the list which follows, foodplants are mentioned only when the insect shows a definite preference.

Phyllotreta vittula Redt. Local in England and Wales. Rare in Scotland.

P. nemorum (L.). Very common and widespread.

P. undulata (Kutsch.). Even commoner and equally widespread. These two species are the insects which farmers refer to as the "Turnip Flea".

P. tetrastigma (Comolli). Local, but often abundant where it does occur. It is found on *Cardamine amara* L., a plant of damp woods and stream-sides.

P. flexuosa (Ill.). Rare. Records are few from widespread localities. Wild radish and watercress are mentioned as host-plants but it could well occur on others.

(*To be continued.*)

K. C. Side.

JUNIOR NEWS SECTION

Editorial.

As usually happens, a number of records of butterflies have come in since I published your list in the July *Bulletin*. As they are from areas we have not formerly covered, I think they are worth inclusion. Here are extracts from some of the letters:—

Miss Cynthia Longfield admits to being no junior member—as some readers who know her books on dragonflies would probably guess. "I was very interested to read the list of spring butterflies in the Junior News Section, as I had been keeping a record of first appearances here in the south of Ireland. I have only recorded the butterflies that I have seen in my garden and in its immediate neighbourhood. I have never seen a brimstone in this part of Ireland, and of course we have no commas. We seem to have been having very much the same temperature as the Cornish records of Brian Sheen suggest, but possibly some species were rather more abundant in numbers when I first saw them. This year would seem to be a splendid one for butterflies—I have seldom seen more speckled woods, meadow browns or ringlets and walls".

J. Vincent sends records from Cambridge made by himself and a friend, David Scudamore, from Foxton, Shepreth and Harston in the Royston area. He is preparing a list of beetles for his area, which should be interesting, as he has already found one species new to the county list—and several other rarities.

Paul Boswell has sent me some Bristol records.

Here is my summary of the notes kindly sent to me by these recorders:—

Speckled Wood (*Pararge aegeria* Linn.).
11/4/60 Cloyne, Co. Cork, Eire (C.L.).
25/4/60 Tickenham Moor, near Bristol (P.B.).
Small Tortoiseshell (*Aglais urticae* Linn.).
3/4/60 Cloyne, Co. Cork (C.L.).
6/4/60 Horsey Mere, Norfolk (D.S.).
18/4/60 Harston, Cambs. (D.S.).
25/4/60 Tickenham Moor, near Bristol (P.B.).
Peacock (*Nymphalis io* Linn.).
6/4/60 Horsey Mere, Norfolk (J.V.).
16/4/60 Cloyne, Co. Cork (C.L.).
3/5/60 Lord's Wood, near Bristol (P.B.).
Red Admiral (*Vanessa atalanta* Linn.).
15/5/60 Cloyne, Co. Cork (C.L.).
Comma (*Polygonia c-album* Linn.).
17/4/60 Kingston, Surrey (P.B.).
3/5/60 Lord's Wood, near Bristol (P.B.).
Holly Blue (*Celastrina argiolus* Linn.).
19/4/60 Cloyne, Co. Cork (C.L.).
19/4/60 Foxton, Cambs. (J.V.).
3/5/60 Lord's Wood, near Bristol (P.B.).
Small White (*Pieris rapae* Linn.).
26/4/60 Kingston, Surrey (P.B.).
27/4/60 Cloyne, Co. Cork (C.L.).
Green-veined White (*Pieris napi* Linn.).
19/4/60 Cloyne, Co. Cork (C.L.).
Large White (*Pieris brassicae* Linn.).
17/4/60 Kingston, Surrey (P.B.).
9/5/60 Cloyne, Co. Cork (C.L.).
Orange Tip (*Euchloë cardamines* Linn.).
3/4/60 Cloyne, Co. Cork (C.L.).
3/5/60 Lord's Wood, near Bristol (P.B.).
8/5/60 Shepreth, Cambs. (J.V.).
Brimstone (*Gonepteryx rhamni* Linn.).
7/4/60 Foxton, Cambs. (J.V.).
18/4/60 Harston, Cambs. (D.S.).
26/4/60 Bristol (P.B.).

The two records of the large white are the only ones I have had this year. In my opinion, this species has been all but exterminated by its parasites. No doubt the few survivors, backed by immigrants, will soon re-colonise our cabbage patches. Since many of the predators must now have failed to find hosts, we can expect their numbers to have fallen very low too, so that an explosive increase of population may well take place this autumn or next season.

News from Members:—

J. F. Pedley writes from Guildford, Surrey:—"Last year a boy at my school saw what he thought was a queer-looking leaf, so he picked it up and found it was a large moth which he could not identify. So he showed it to a master and he correctly identified it as a Death's-head Hawkmoth. This moth has gone from hand to hand and it has eventually come into my possession."

Well, some people have all the luck, don't they? But I hate to think of the indignities the specimen may have suffered as it went from hand to hand!

T. S. Robertson (2417), *Youth Secretary*.

OBSERVATIONS ON *ZYGAENA LONICERAE* SCHEV. (THE NARROW-BORDERED FIVE-SPOT BURNET MOTH)

Having known of the existence of a colony of burnets on a stretch of waste land at Cannock, Staffordshire, since I was very small, I visited the locality on June 25 this year. I had always assumed the colony to be *Z. trifolii* (Five-Spot Burnet), but having obtained several cocoons (only one or two moths having emerged at the time) I subsequently identified the moths, which all emerged on June 27 as *Z. lonicerae*.

South states that specimens with spots joined are rarely seen in Britain and so I visited the colony again on July 2, with the intention of searching for varieties.

The piece of waste land in question is roughly an acre in extent, one side

consisting of a steep railway embankment. About two-thirds of the area is rough grass with few flowers, while the remainder has an abundance of rose bay willow herb (*Epilobium*) and shrubby hawkweed (*Hieracium*). Some 200 square yards of the embankment is heavily clothed with red clover (*Trifolium*) and it is here that the nucleus of the colony is situated. The day of my visit being dull but warm, almost every grass stem and flower head was the resting place of one or more moths. I estimated their numbers to run into several thousands, about 90% of which were confined to the embankment area.

From an examination of cocoons on the grass stems, etc., I concluded that only about 60% of the moths had emerged. The situations of the cocoons were inconsistent to say the least. While the majority were at varying heights on grass and flower stems, some were spun on old wire and pieces of corrugated iron. A small hawthorn, about 6 ft. high, half-way up the embankment, was brilliant with live moths, which had emerged from cocoons spun everywhere on its branches, even at the very top. I was struck by the number of deformed moths, the most conspicuous having only three wings fully developed while the left forewing was rolled into a thin straight "stick". Another had both forewings bent upwards for half their length at right angles to the normal plane, yet it could still fly satisfactorily. I made a rough estimate that one in every 30 or 40 moths had some deformity.

I took one female moth with an outstanding spot aberration. The outer spot was enlarged and almost ran into the two central spots which, in turn, were fully joined together and substantially connected to the two basal spots which also were joined, having overcome the black rib which normally separates them.

This was the only moth I saw which was, to a great extent, out of the ordinary, though I found a great variation in the size of the leading central spot and the size and shape of the rear central spot. Occasionally the two central spots ran together, so that the moths were practically identical to typical *Z. trifolii*. The outer spot also varied in size and I took one specimen with two very small spots of red just inside and to the rear of the outer spot.

By this time the sun had appeared and the moths took to the wing almost as one, so that I was surrounded by them in such numbers that their humming was extremely audible. Since it was rather futile to search any longer, I took a series with the net and left the spot.

I intend to watch this colony in future years, both for varieties and to observe any fluctuation in numbers. All I hope is that nobody decides to commandeer the waste land for a factory site.

T. J. Knowles (3061).

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THE WHITE ADMIRAL IN WORCESTERSHIRE

I was very interested in J. C. Bobbit's article on *Limenitis camilla* Linn. in Middlesex (June *Bulletin*). On July 27, 1958, two of us set out in search of this species which we were informed occurred in a small wood near Ombersley. A day's collecting resulted in a very worn male being obtained, and as it was then rather late for *camilla*, we had to postpone our investigation until the next year.

On June 23, 28 and July 1, 1959, the wood was literally swarming with *camilla*, but two females which we took failed to deposit ova on cut honeysuckle in my greenhouse. At about the same time a friend found *camilla* in lesser numbers in a larger oak wood near Chaddesley, and in mid-September of the same year yet another acquaintance took a worn male specimen at a gashed oak bough in Wyre Forest.

We decided to search this year for the larvae at Ombersley. On May 6 a diligent search of the areas of the wood where *camilla* had appeared most plentiful, resulted in a total of seven larvae, the largest measuring about half an inch in length. They are marvellously camouflaged but eaten foliage and bare leaf midribs usually indicate a larva in the immediate vicinity. One of the smaller larvae was brownish in colour. In accordance with South's observations all the larvae were on medium sized clumps of honeysuckle, often those deeply situated in the wood. The larger clumps were unproductive.

I placed the larvae on the growing foodplant in my greenhouse. Two were despatched to Mr. P. W. Cribb, and the remainder fed up to 70-90 degs. F. in 17 days. Two produced perfect pupae suspended from the mid-rib of a leaf,

and a third pupated successfully on a bed of cotton wool after falling from its support. Of the remaining two, one has disappeared (the honeysuckle occupies a large area of the greenhouse), and the other plunged to its death after unsuccessfully negotiating the removal of its skin during pupation. Imagines, all of which were males, emerged from the three perfect pupae from 2nd to 4th June.

I intend to try to induce a female to lay this year; should I obtain enough ova I will be glad to send Mr. Bobbit a few; then perhaps between us we can arrive at some definite conclusions about the most suitable food.

It is interesting to note that the wood near Ombersley, measuring little more than three-quarters of a square mile in area, is by far the most productive of the three localities investigated.

L. S. Plester (2968).

PROTECTIVE RESEMBLANCE IN *ARGYNNIS SELENE* SCHIFF.

On a visit to the Chiddingfold, Surrey, area on 27th May 1953, many *Argynnis selene* Schiff. (Small Pearl-bordered Fritillary) in good condition were flying with faded examples of *A. euphrosyne* L. (Pearl Bordered Fritillary). Both species were feeding from flowers of bugle, and although there was not much sunshine the day was warm and humid.

In the late afternoon, I noticed that quite a few *A. selene* had congregated in a water-filled hollow where the common rush *Juncus effusus* L. was growing. The butterflies were sitting on the stems of the rushes, some with wings tightly closed and others 'fanning'. The situation appeared to be a roosting-place, and about a dozen specimens were present.

The most remarkable thing was that the roosting butterflies resembled to an amazing extent the old bloom-tufts of the rushes, and from a short distance it was difficult to differentiate between them. Whether this was an isolated incident, or is the usual habit of the species I do not know. I should be interested to hear if the habit has been noticed by other members.

The illustration shows to a certain extent the position taken up by the butterflies in relation to the bloom-tuft, but nothing short of a good photograph would fully illustrate this strange resemblance.

B. R. Stallwood (1547).

AN INTRODUCTION TO THE BRITISH COLEOPHORIDAE (LEP.)

Amongst the British microlepidoptera the Coleophoridae is one of the larger groups, comprising about 90 species of *Coleophora*, or *Eupista*, and three species of other genera which are not dealt with in this article. Additional species have been found almost every year recently. *Coleophora* is one of the few large genera which has not been split up, despite recent revision. Groups of species may be recognised, and the least related species are different indeed, but the vast assemblage of Holarctic species contains groups at every stage between the extremes. Future work on the young stages of these insects may yet divide the genus into groups of independent origin.

The adult *Coleophora* is long and slender, resting with the fore part raised and wing tips touching the ground. In true repose the forelegs are often drawn up against the thorax. The antennae are held straight out in front, almost parallel. The Plutellidae share this character, but they settle with the body horizontal, and are less slender winged. Wing-pattern is absent or little more than striae following the veins of the wings, but the ground colour may be any fairly neutral shade from white to brown and black, or even metallic in a few cases. Superficial characters for identification include wing-pattern, distribution of light and dark segments on the antennae, and tufting of scales on the basal segments of the antennae.

These characters are unreliable for determining worn or single specimens of closely related species. Fortunately structural characters are extremely reliable. Toll (1954) illustrates the male and female genitalia most satisfactorily. Male genitalia mounted in balsam in the customary way can usually be identified by comparison with such drawings using only a young pair of eyes and a ×15 aplanatic hand lens. It is necessary to resort to a low power microscope to study a mount which cannot be positively recognized as tallying with one of the drawings. Far too many amateurs reject this powerful technique as too difficult for them without trying it. When the whole abdomen is mounted with the genitalia, the distribution of spines in the dorsal patches and the form of the strengthening bars at the base of the abdomen may be examined with advantage. Toll's whole mounts showed that one of our species, *C. leucapennella* Hübn., is viviparous.

Eggs of a number of species were described by Turner and others in early issues of the *Entomologist's Record*. This work is summarized by Sich (1921). Those of the more primitive species are plastic and take up the shape of the crevice in which they are thrust. The larva hatches into the air and wanders around before commencing its excavations. The eggs of the more advanced leaf miners are sculptured, and the micropyle is on top. The larvae bore through the base of the egg straight into the leaf, as do the nepticulid moths and the dipterous Agromyzidae. This is a surprising development to occur within a single genus.

The habits of the various groups of *Coleophora* are too diverse to be described in detail here. The one apparently universal feature is that the larvae make portable cases into which to retire when alarmed or when resting and in which to move from one feeding site to another, or from the feeding site to the place of pupation. The British species are all normally single brooded, and the larvae hibernate in their cases. In some species the young larva hibernates, in others the fully grown larva. A few species take two years to mature, when larvae of various sizes may overwinter.

The caterpillar is modified from the usual form in accordance with the case-bearing habit. The anal claspers are well developed for grasping the case, but the other prolegs are weak, and in some groups the posterior pair is absent. The abdomen is arched to wedge it against the case. The thorax bears a pattern of sclerotized plates which are probably the sites of attachment of powerful muscles for supporting the abdomen and case. The form of these plates is useful in identification. The head is dorsoventrally flattened, with the mouth directed forwards. This prognathous form is typical of many leaf miners. Morphological characters are difficult to use for specific identification because they are so unstable, even on the two sides of an individual. The cases and foodplants offer good characters for populations of larvae, but individuals may prove puzzling.

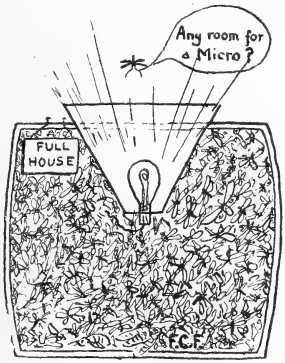
Coleophora larvae fall into two main biological groups: seedhead borers and leaf miners. The first group are, in general, the more primitive. Here the case is made from silk, or silk and debris, or is simply a hollowed seedhead lined with silk (an exasperatingly perfect form of camouflage). Leaf miners mainly construct their cases from one or more pieces of mined leaf, sewn up

with silk where they have been cut out, and lined with the same material. Most *Coleophora* species reinforce their cases with salivary cements to produce a very tough material in the manner of papier mâché and reinforced plastics. As the larva grows, the case may be cut open and enlarged, or wider pieces may be added in front. Some species discard the old case instead of enlarging it, and make a new one. Autumnal cases of first-instar larvae are often hooked, and quite different from the bigger spring case of which they form the tail-end in some groups. The completed case is distinguishable at once from those of other insects by the compressed anal end, which is formed into two or three flaps sealed with silk at their edges. When the larva is feeding, it unseals the flaps and ejects its excrement through them. Sich (1923) admirably describes the fascinating details of how these larvae construct and enlarge the various types of cases.

(To be continued) R. W. J. Uffen.

MOTH TRAPPING WITHOUT M.V.

It is some long time since I inveighed against the use of m.v. traps, and this because I soon realised that I was butting my head against a wall. Meanwhile, the number of lamps being used has grown steadily and the annual holocaust of our fauna becomes proportionately prodigious. Now a menace has appeared on the scene—the trapping of moths without the use of a m.v.l. All one needs is an old cheese tub and a 100-watt lamp and the local fauna simply queue up to get in. Mr. R. C. Goodden has secured as many as 650 specimens in a single night, and that whilst he slept peacefully in bed unmindful of the raging Belsen in his garden!



"WHAT FUN?" Performances nightly.
Seating accommodation for 650.

One would like to learn more of his technique, how he makes his counts, marks individual moths and then carts them away for a half mile to release them, and all presumably without handling or removing a single scale from their wings. Perhaps it is because after a night of free-for-all in a confined space, the hundreds of victims haven't a scale or bit of fluff remaining between them? Mr. Goodden has not yet taken anything very rare. Would it be possible to recognise one if it was among the catch?

F. C. Fraser (890).

STAG BEETLES

Although the stag beetle (*Lucanus cervus* L.) is the largest insect on the British list, surprisingly little is known about its distribution and habits. Published records indicate that the main centre is South London—between the Thames and the North Downs. Isolated cases have been reported from a few other districts in the Home Counties and very occasionally elsewhere.

Because of the large amount of housing development in South London, many of the beetle's haunts are disappearing and it may be that its numbers are dwindling. With this in mind, the London Natural History Society decided to investigate its distribution and would welcome any records that members and others may have. Details should be sent to Mr. D. G. Hall, 34 Ellerton Road, London, S.W.18.

FURTHER OBSERVATIONS ON *ARCTIA CAJA* LINN.

The article by C. Janes (*Bull. amat. Ent. Soc.*, **19**, 233) has prompted me to look up the results of some observations I made in 1954 and 1955. In each of these two years I collected twelve larvae during May. There is no significance in the numbers except that twelve is a suitable number for my rearing cage. The caterpillars were fed with the dock, *Rumex crispus*.

Of the first twelve, two larvae became limp and watery and died. Unfortunately, I did not have these larvae examined and the exact cause of death is, therefore, unknown. Whatever the cause it did not appear to be very infectious. Three larvae were parasitised by a species of *Ophion*—a genus of ichneumon flies commonly attacking Lepidoptera—and the remaining seven all pupated. Six perfect males and one crippled female emerged.

In 1955 one larva died in the manner described and one was parasitised by *Ophion*. Ten pupated, of which only six emerged—four males and two females with one of each deformed. Three pupae exhibited fungal growth and the tenth died from an unestablished cause.

The results give the following percentages:—

Imagines	54·2
Parasitised	16·7
Larval disease	12·5
Fungal infection	12·5
Misc.	4·1

I did also note that some larvae became very restless before pupation—these may well have been the parasitised individuals. Although the samples are too small to show any significant trend, the males seem to be more resistant to attack—unless they are generally more common than the females. I would be very interested to know if this is so.

M. Chinery (2466).

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FIFTH (HALF-YEARLY) REPORT OF THE WAINSCOT STUDY GROUP

As at date of writing we have been as yet unable to obtain new members for the counties still remaining unrepresented in this Study Group. Our total membership since the inception of the Group is 52, but of these 12 have for one reason or another "petered out". Our actual life membership at the moment, therefore, stands at 40, made up as follows:—

No. of active members (senior)	29
No. of active members (junior)	8
No. of corporate members (groups or organisations) ...	3
	40

Our active members now represent the following counties:—Buckinghamshire, Derbyshire, Devon, Dorset, Hampshire and the Isle of Wight, Hertfordshire, Lancashire, Leicestershire, Middlesex, Norfolk, Northamptonshire, Suffolk, Surrey, Sussex, Warwickshire, Worcestershire and Yorkshire. In addition, we have records from Wiltshire and Cheshire from defunct members.

Since the Group's inception a total of 5,015 records have been received, and we should like to take this opportunity of expressing our appreciation to all concerned for this magnificent and quite unexpected response. In addition to the above-mentioned records, we have also received additional information of various kinds concerning life-histories, breeding hints for particular species and in one case a most interesting account of dipterous parasitism of one of the migrant species. It is now felt, therefore, that a start can be made with the proposed Monograph of British Wainscots, which will be published in parts as completed, and for this purpose it has been decided to set up a sub-group working along committee lines, to deal with the matter, with terms of reference as follows:—

(a) To prepare from the available information at our disposal a draft of the proposed Monograph of British Wainscots, fully annotated, cross-referenced and indexed, with summaries, acknowledgements, references and bibliography, for eventual publication in 36 parts (a separate part for each of the 36 species on the British list).

(b) To decide to which of the entomological publications the proposed Monograph shall eventually be submitted (in addition to abstracts for the *Bulletin* of the Amateur Entomologists' Society), in connection with which a letter will be drafted to the Secretary of the AES asking his advice on the matter.
(c) To decide upon the subject of illustrations.

Regarding the other activities of the Group, we report as follows:—

(i) *Proposed Field Meetings for 1960.* Owing to various circumstances, it is not yet possible to say with any degree of certainty whether a week-end expedition can be arranged for members this year, but if at a later date it is found that such a project is practicable, members will be notified of the arrangements by duplicated letter.

(ii) *Livestock.* Living ova, larvae and pupae are still needed for various breeding experiments and to find out more about the life-histories. All species are wanted—even the common ones. Full data must accompany all livestock sent.

(iii) *AES Annual Exhibition, 1960.* It is intended this year to have a Wainscot Study Group table exhibit at the Exhibition. Members are invited to contribute exhibits of any kind having a bearing on the Leucaniidae. Any specimens shown must be accompanied by full data. Living material is particularly welcomed. The Joint Conveners will be in attendance to answer enquiries and—we hope—learn something new ourselves!

Joy O. I. Spoczynska (751) and P. Maggs (244),
Joint Conveners, Wainscot Study Group.

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REVIEWS

Warwick Natural History Society. Sixth Annual Report. April 1960.

This Annual Report is much improved in appearance, being printed on octavo paper. However, there is no price and no address. It contains the following items of interest to entomologists:—

A list of the macro-lepidoptera taken in Ufton Wood from 1955 to 1958, a total of 106 species. Additions to the list of macro-lepidoptera of Warwick and district, making a grand total of 260 species. A report of bees and wasps in Warwickshire in 1959 (very brief), and a report of the larva of the Alder moth being found at the Priory Pools, Warwick.

D. O.

The Young Naturalist. Price 1/- monthly. Published by the Dalesman Publishing Company, Clapham via Lancaster, for the British Junior Naturalist Association.

This magazine is now on sale at booksellers and is an excellent 'buy' for the younger naturalist. It contains short articles and plenty of photographs on all aspects of natural history and outdoor activities (e.g., rock climbing and canoeing). The first number (April) contained 44 pages, and it is to be hoped that the sales enable the present standard to be maintained. The magazine is issued free to members of the B.J.N.A., the subscription which covers other items, being 15/- a year.

It will be interesting to see how this marriage between a commercial business and an amateur society progresses.

"Field Studies" Vol. I, No. 1. Published by the Field Studies Council. Price 5s. (plus postage) from the Field Studies Council, 9 Devereux Court, London, W.C.2.

The F.S.C. has decided to publish two publications periodically, their report for members, and this publication which contains scientific papers by members and is available to anyone who cares to purchase it. This first one was delayed and was not on sale until October 1959.

Although this number does not contain any strictly entomological papers, one—Freshwater Studies in the Shropshire Union Canal, by H. M. Twigg—includes aquatic insects, and two of the papers on the Dale Peninsula, Pembrokeshire, give intending visitors a good idea of the climate and the type of land around the Centre. The F.S.C. are to be congratulated on this excellent publication, and I, for one, am looking forward to seeing No. 2.

D. O.

SOME OBSERVATIONS MADE IN THE FRENCH ALPS ON BUTTERFLIES ON THE BRITISH LIST, JULY 1959

During the fortnight spent in the Basses and Hautes Alpes, we captured or identified 57 of the species on the British list. Some of the species were, of course, the continental forms of our butterflies, e.g., *Papilio machaon* ssp. *brittanicus* and *Erebia epiphron* form *cassiope* Fab et Cram., and these have been included in the score. Those not seen were *A. selene* Schiff., *L. camilla* Linn., *A. iris* Linn., *N. antiopa* Linn., *H. lucina* Linn., *T. betulae* Linn., *S. w-album* Knoch, *S. pruni* and *C. boeticus* and, of course, the Milkweed, *D. plexippus* Linn.

It seemed strange to net *H. comma* Linn., the Silver-spotted Skipper flying in company with *C. palaemon* Pall., butterflies which in England have three months between their months of emergence. This is perhaps the most striking feature of this area for all experience of emergence dates in Great Britain are worthless and in the first fortnight of July there are over 100 species of butterfly on the wing, many being a second generation. One of these was the Orange-tip, which were just emerging on July 9 at an altitude of 5,000 ft. The second observation was the tendency of all species to rest during the peak temperature of the day. Early morning activity was very marked and good hauls were made soon after nine in the morning, but as the sun mounted the sky there was little on the wing. This has been noticed in regard to the Large Blue (*M. arion* Linn.) in this country which may be an indication of its natural habitat being a southern one and a reason for its decline in this country. Another observation was that the butterfly population was concentrated into the areas where water lay nearby, that is in the vicinity of the mountain streams or irrigation channels. These, of course, are the areas of the vegetation and little apart from the Satyridae could be found on the bare mountain-sides. There was a second reason for this concentration, for it appears that the whole butterfly population suffers from de-hydration and spends the mid-day hours drinking at the damp places beside the streams or where the water oozes up through the shale. Below the glacier of La Meije in the Hautes Alpes we saw swarms of the Blues hovering over the glacier streams where they spread across the mountain paths. I have seen the Chalkhill Blue (*L. coridon* Poda) doing this over damp cow pats on the South Downs, settling to sip at the moisture. With sun temperatures well above 100° F. the moisture loss amongst the sun-loving butterflies must be very high.

During our fortnight, I tried to note what points I thought would be of most interest to the British collector. With so much to see and capture, this was no easy task, but I think that the following may be of general interest. We saw three forms of the Wood White (*L. sinapis* Linn.), these being our own form (summer markings): *sartha* with a yellowish underside and *duponcheli* with underside greenish. The Marbled White is very varied, the commonest being the form *procida* which has heavier black markings than the typical. Another form is *leucomelas*, which has this underside of the hindwings a creamy white without markings. I took one variety which had large areas of white on the upperside in place of the black markings. This species is abundant everywhere and it would have been impossible to capture and examine all that were seen and only sampling could be done. The Large Blue was taken at all altitudes up to about 7,000 ft. and the nature of the terrain was very similar to that found in North Devon. The normal form is similar to our own but very much darker both as to the depth of the blue and the width of the margins. The undersides generally have smaller spots than our form. Some areas support a majority of the ab. *unicolor* which is akin to the typical but has only the discoidal spot on the forewings. Being interested in the ant hosts of this species, I made some examination of the ants resident in the two areas where I found *arion* fairly concentrated—one in the Forest of Napoleon near Bedejun and the other in the fields below the glacier at La Grave. In neither area could I find the red ant, *Myrmica* sp., but two species of black ant about the size of *Formica fusca* Linn. and *Acanthomyops niger* Linn. were common under the small stones, also a very small ant, smaller than any of our native species that I know, and at La Grave an ant which makes a nest similar to *F. rufa* Linn., the wood ant, but is about a third smaller than that species. This absence of the red ants remains as much a puzzle as it does in the N. Devon colonies. In one small area where thyme grew on a stony bank, I netted six rubbed females coming to the thyme and several males also close by and feel certain that this was the centre of this colony, yet no red ants could be found.

At Digne in an alpine meadow I was able to net several specimens of *Colias australis*, the New Clouded Yellow. This meadow was the top one of three and had large patches of horseshoe vetch. The butterflies were flying about the field, unlike the *C. croceus* Fourc. which now and then passed through and away up the slopes. The butterfly seems slightly larger than *C. hyale*, particularly in the female, has more rounded wings and the dark edges of the upper wing are narrower and have not a secondary inner line towards the outer margin. Later in the same week we were able to capture a large number of *C. hyale* Linn., which were migrating through a pass several miles away. Whilst the *C. australis* had been newly emerged, the *hyale* were worn and were flying north without settling anywhere. We observed *hyale* migrating all round the Digne area, but found *australis* in two meadows only, the one mentioned and another just above the town. The Meadow Brown, *M. jurtina* Linn., is represented by the form *hispulla*, which is about a third larger than our form and resplendent in the female.

Amongst the blues, the Small Blue (*C. minimus* Fuess.) was common everywhere and the Silver-studded Blue (*P. argus* Linn.) occurred in most of the areas visited. The Short-tailed Blue was taken in one meadow only, and is so localised and such a poor flier that it seems extremely unlikely that this species is responsible for its few occurrences in our islands. A second brood of the Holly Blue (*C. argiolus* Linn.) was just emerging, and the Common Blue (*P. icarus* Rott.) was fairly plentiful around Digne. The Purple Hairstreak was just emerging as we left Digne as was the Large Tortoiseshell. This large butterfly was taken visiting the tall thistles growing in the river bed, flying with the *Apollo*.

The Fritillaries were typical but for the Glanville (*M. cinxia* Linn.) which appeared to be greenish in the female, and both sexes seemed to be smaller than those of the Isle of Wight. The Heath Fritillary was fairly common near Digne and I was able to get one female to deposit a batch of eggs on ribwort plantain. These resulted in larvae on our return and all went into hibernation in the way I have described previously—inside curled dead leaves, except for one which fed up and emerged in September, a male. The Swallowtail (*P. machaon* Linn.) is very widespread and wanders all the time, so that they may be met with anywhere. We took them in the lavender fields at Digne and flying along the glacier streams at La Grave. Those taken varied in ground colour from a rich yellow to a pale primrose. In my opinion, they are the most difficult of the Alpine butterflies to net when disturbed. This is true of the two other *Papilios, podalirius* and *alexanor*, and visiting the lavender fields seems to be the only certain way of taking these three butterflies.

P. W. Cribb (2270).

NOTES AND OBSERVATIONS

THE REVIEWER REVIEWED

I find Mr. Stallwood's review of the work "Dragonflies" by Drs. Corbet and Moore and Miss Longfield somewhat misleading, and so apt to lead the beginner into investing in an expensive work and then finding it to be of little use to him for identifying and classifying his captures. Paragraph 5 of the review states that each species is described and photographed in colour. What are the actual facts? There are 43 species of dragonflies found in the British Isles and since the females differ greatly from the males in most cases, 86 descriptions and illustrations ought to be shown. Of this lot, I find that both sexes of seven species, four males of others and seventeen females of still others are not illustrated! Of the supposed descriptions, the less said about them the better; the whole of the descriptions of the 86 forms are crowded into one short chapter of twelve pages of large twelve point print!

Under venation, in a foot-note, Miss Longfield has warned students not to employ the notation CuP in favour of Cu2 as it is likely to be confused with a similar notation employed by others in another Order. Miss Longfield has entirely overlooked the reasons for the change of Cu2 to CuP (posterior branch of cubitus), which are evident from a study of the notation tables which she has herself given. At the present time, two different notation systems are being employed about equally, viz. that of Needham and Comstock in which

Cu2 stands for the Anal vein, and that of Tillyard and Fraser, in which CuP (Cu2) stands for the Cubitus. It would be difficult to conceive a situation which would lead to greater confusion were Miss Longfield's advice taken. The student must make up his mind to use either the one system or the other in full, not a blending of the two as suggested by Miss Longfield.

Your reviewer states that the work would be useful if used in conjunction with a standard text-book. I quite agree in this although the publishers claim that the work is and is likely to be for years the standard work on British dragonflies. The beginner is recommended to employ Miss Longfield's book on British dragonflies or the handbook published by the Royal Entomological Society of London; the larvae may be learnt from Gardner's keys which appeared in the *Entomologist's Gazette* and which have been copied into the present work.

F. C. Fraser (890).

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HYLESIA NIGRICANS BERG. AT CHEAM, SURREY

On May 30 this year I received a telephone call from a non-entomological friend who stated that he had found a rather odd-looking moth. I was not particularly interested as I get a number of such calls every year. However, I called on him the same evening, and was able to identify the moth as a female of the genus *Hylesia*. The different species of this genus are very similar, but I feel sure that it was *H. nigricans*.

I have seen *H. nigricans* offered in dealers' lists, although it is stated in the *Silkmoth Rearer's Handbook* that it has only been reared under laboratory conditions, as even a casual escape could lead to a serious plague. I ordered a dozen ova from this dealer but in the end he was unable to supply. The specimen found at Cheam must have been an escape from a breeder's cage. If anyone who may have bred them and lost one would like to see the photographs that we took I should be pleased to show them to him and furthermore to hear of his experiences with the rearing of *H. nigricans*.

M. J. Friend (2786*).

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HERSE CONVOLVULI LINN.

I would like to put on record that early in September 1959 a very worn female *H. convolvuli* (Convolvulus Hawk) was brought to me. The specimen was very weak and died the same day. Dissection revealed that the abdomen was still full of ova, so presumably it had not bred here. The moth was found at Parkstone, Bournemouth, on the edge of a wood.

M. J. Friend (2786*).

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VANESSA ATALANTA LINN.

On one sunny afternoon in the beginning of August last year, I witnessed a scene which I found to be most puzzling. In the midst of rambling in a large field close to my home (Torquay district) I discovered a rotten stump of an elm, which was twelve or so feet high and covered profusely with closely interwoven ivy tendrils. At the uppermost regions of the stump I saw a number of red admiral butterflies flying around and occasionally settling on the parched ivy leaves in order to benefit from the sun's rays.

This gregarious behaviour held my interest for some minutes, and perhaps I would have wandered further, if I had not noticed two or three avaricious hornets flying amongst the butterflies and appearing to chase away any which attempted to approach the back of the stump which faced the edge of a wood. This war-like action stimulated my interest further, and after conducting a guarded detour around the stump, I soon discovered the source of the hornets' hostility and eager aggression, for within the ivy and rotted wood was a hornets' nest which was just visibly protruding.

This activity was only apparent so long as the sun was shining and was never seen to occur on any further occasion. I was never able to ascertain whether the red admirals had assembled as a result of the scent of the honey from the hornets' nest or as a result of the less dangerous desire to bask in the heat which had been absorbed by the stump and its appendages.

I shall be glad to hear whether any member has witnessed similar gregarious habits of this species and whether there is a positive reason for this behaviour.

M. F. Gosling (3170).

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The Amateur Entomologists' Society

ANNUAL EXHIBITION

1960

SATURDAY, 1st October, from 2 p.m. to 5.30 p.m.

BUCKINGHAM GATE CENTRAL SCHOOLS, Wilfred Street, London, S.W.1.

ADMISSION FREE

EXHIBITS. The Hall will be open from 10 a.m. for receipt of Members' exhibits. Bring along your specimens (any Order, living or set), equipment, apparatus, photographs, drawings, etc. If you require a large space, notify Meetings Secretary in advance. Please label clearly.

TALKS. Entomological talks will be arranged.

DEMONSTRATIONS. Members will demonstrate setting of insects of several Orders.

GROUPS. Members of Groups who have been corresponding will be able to meet for discussion.

SURPLUS TABLE. If Members have spare ova, larvae, imagines, equipment, books, etc., for sale or exchange, bring them along labelled with name, price or exchange wants. No charge for use of this table.

ENTOMOLOGICAL TRADERS will be in attendance.

Light Refreshments will be available.

Offers of help and enquiries to Hon. Meetings Secretary (F. C. Brown, 6 Osmond Gardens, Wallington, Surrey).

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HOW TO GET THERE—

VOL. 19

No. 238

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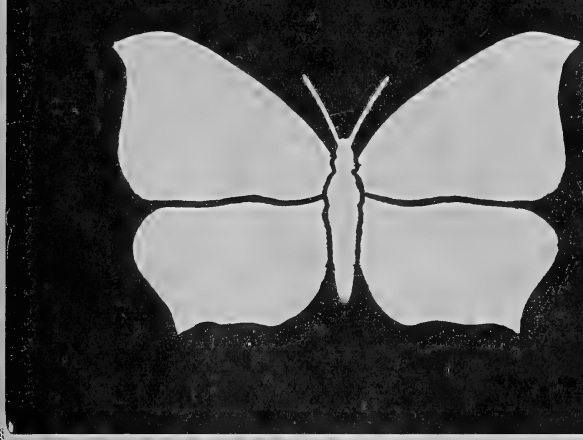
OCTOBER 1960



THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by W. N. LAWFIELD

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A E S BULLETIN

No. 238

OCTOBER 1960

SECRETARY'S LETTER

The July Council meeting was a cheering one. The Society has increased in membership, there were fewer non-payers to report than is usual, and the finances of the Society were good enough to stand the burden of the larger 'Bulletins' until the increased subscription took effect. The foundations are there, and now the members can build up a flourishing society by taking a more active interest in it. If you cannot write an article, Mr. Lawfield would be grateful for short notes for 'Notes and Observations' or for those dealing with previous subjects raised in the *Bulletin* for 'Letters to the Editor'.

On the same subject, this is the only Entomological periodical which really caters for the breeder of the foreign Saturniidae, and so it would be much appreciated if these breeders would pass on to members through the medium of the *Bulletin* information which has not been published in the *Silkmoth Rearer's Handbook*. Of course, information is always wanted from breeders of all other families of the Lepidoptera, and, indeed, of all other orders of insects.

D. Ollevant.

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COLLECTING HINTS—October

The Macrolepidoptera

Apart from pupa digging, day work, such as beating and searching for larvae, tends to produce poor results. On the other hand, light and sugar will continue to attract a good assortment of moths, mostly commoners, of course, such as *Anchoscelis helvola* L. (Flounced Chestnut), *A. litura* L. (Brown-spot Chestnut), *Agrochola lota* Clerck (Red-line Quaker), *A. macilenta* Hubn. (Yellow-line Quaker), and *Conistra vaccinii* L. (Common Chestnut). There is always a chance of migrants, forgetting that is *Plusia gamma* L. (Silver Y), *Peridroma porphyrea* Schiff. (Pearly Underwing) and other common species.

Dasypolia templi Thunb. (Brindled Ochre) will be emerging throughout this month. The moth, which has a strong affection for mercury vapour light, inhabits rocky places on the coast. Freshwater, Isle of Wight, is said to be a good locality. It is also well distributed throughout Scotland.

The beginning of October is the best time for imagines of *Lithophane leautieri* Boisd. (Blair's Pinion). The publicly known localities are the Isle of Wight and the area from Eastbourne to Seaford. It probably occurs in similar places along the south coast. In my experience the moth flies fairly late, only twenty-five per cent. of the total capture of one night arrived at the light before midnight.

B. F. Skinner.

The Smaller Moths

The elder bush (*Sambucus nigra* L.) does not support a large number of species of Lepidoptera, but the larvae of *Phlyctaenia coronata* Hufn. may be found feeding on the younger leaves. The larva remains on a leaf which has been turned down by spinning silk threads, but moves around more freely when the light begins to fade; it hibernates as such in a puparium.

The larvae of *Leucoptera laburnella* Staint. make a blotch in the leaves of laburnum, and I have found the larvae leaving the tree on the end of silken threads in this month. If found in this way they very rapidly spin up and pupate.

The males of *Diurnea phryganella* Hubn. may be seen flying in oak woods; the female of this species has, of course, abbreviated wings, and so they will have to be searched for.

Seed heads are best kept for the winter in linen bags hung up in a shel-

tered place in the garden, although obtaining these bags, other than making them, is becoming a bit of a problem. In the spring either turn out the contents in a breeding cage, or simply tie a jam-jar on to the neck of the bag—emerging moths will fly into it and be easily seen—and leave it in its place in the garden. Remember not to expose these bags to too much sun Seed heads of many plants may be collected in this month. It is best to employ some method of labelling. The gardeners' type of label can be used, with fuller details in a note book. Some bags which I possess have a piece of stout paper sewn on to them and I have found that the red ink from a ball-point pen has survived for ten months. Data is most important, as it is quite likely that new habitats or new foodplants may be found by this method of breeding. Broadly speaking, it is on the seed heads of the Umbelliferae and Compositae that most species may be found, though not, of course, including the *Coleophora*.

D. Ollevant.

The Coleoptera

(*Continued from last month*)

Phyllotreta vittata (Fab.). There is some confusion over this species. Kloet & Hincks state that it is synonymous with *P. sinuata* Redt. but not *P. sinuata* Steph., the latter being given as a synonym of *P. flexuosa*. Both Joy and Fowler have *P. sinuata* Steph. as a distinct species. I have never found this beetle myself and am in some doubt as to the true name. If any member could clear up this confusing point it would be most helpful. At any rate, *P. vittata* would appear to be rare.

P. ochripes (Curtis). Local in England from Yorkshire southwards.

P. exclamationis (Thunb.) Local but widespread, common in the south.

P. atra (Fab.) and its variety *cruciferae* Goeze. Local and widespread.

P. diademata (Foudras). Local, in southern England.

P. aerea Allard. Uncommon. England, as far north as Yorkshire.

P. hintoni Donisthorpe. First introduced to the British List in 1944 from a Middlesex locality. There is a further record from Windsor Forest, but no others that I can trace.

P. consobrina (Curtis). Local in England, extending only as far north as Derbyshire.

P. nigripes (Fab.). Common in the south but rarer in the north.

P. nodicornis Marsham. Local but common where it does occur. It is our only species which is not normally found on Cruciferae, the host plants being *Reseda lutea* Linn. (Wild Mignonette) and *Senecio jacobaea* Linn. (Common Ragwort). *Reseda* is placed close to Cruciferae by botanists but *Senecio* is a member of the Compositae, a family with quite different affinities. It would be interesting to know if the specimens recorded from *Senecio* were actually feeding on it. Often by accident an insect will get on to a plant other than its true host and entomologists should try to ascertain if this is the case before recording a plant-insect relationship.

K. C. Side.

Diptera

October sunshine entices a large variety of flies from their hiding places to 'sun bathe' on the large leaves and the tree trunks, and on fences. Ivy blossom produces food and drink for many large species of Muscidae and Syrphidae and the rare Conopid—*Leopoldius signatus* Wied., which can be distinguished from our Conopinae by its short, yellow proboscis.

This is the month for species of *Platypeza*. Eight of the nine British species can be found in October and *furcata* Fln. generally taken in May and June has been bred in September in Denmark. Probably all breed in fungi, for I have bred *infumata* Hal. from *Polystictus versicolor* which can be found on tree-stumps, fences and posts, and others have bred *consobrina* Zett., *rufa* Mg., *modesta* Zett. and *fasciata* Mg. from the Honey-tuft fungus, *Armillaria mellea*.

The fungus-gnats, Mycetophilidae, are still numerous and varied this month. They are delicate and can be damaged easily by sweeping. Breeding is a better method of securing specimens. Many species can be reared by simply laying small pieces of fungi on sand. Take care to place only small fragments of fungus and the maggots in a jar. The water coming from large portions of fungus will drown the grubs or cause adults to be damaged. Don't be tempted to rear a 'good series' in one jar. Try and have the host fungus correctly named by an expert. Several counties have experienced mycologists

who may be willing to assist. Tell the botanist why you wish to have the fungus named and it is possible that you may be offered rare fungi that have been attacked by flies so that these may be reared and named.

L. PARMENTER.

JUNIOR NEWS SECTION

Editorial

Last year I wrote two notes to which I am now in a position to add a sequel. The first (*Bull. amat. Ent. Soc.*, 18: 26) gave advice on rearing the Comma butterfly (*Polygonia c-album* Linn.). The second (*ibid.*, 84) mentioned my attempt to obtain ova from a female Small Copper (*Lycaena phlaeas* Linn. ab. *radiata*).

On 20th April of this year I went with Mr. G. D. Trebilcock (2976) to Bricket Wood, Herts., where in a rather localised area of the wood we found the Comma in good numbers. A female was taken and caged. She began laying on 27th April, and continued to do so until she died on 29th May. Some difficulty was experienced with the ova and larvae in the early stages, but nevertheless some 40 larvae were reared. The first adults emerged on 5th June and at the time of writing about half are still in the larval stage. All of those hatched so far (13 specimens) are of the typical form and none are of the light form (*hutchinsoni*). You will observe that the parent lived nearly six weeks in captivity, surviving long after the wild specimens had vanished, and just failed to meet her offspring, as adults, by one week!

As for my *radiata* female of the Small Copper, she laid about 20 ova, which hatched successfully and were overwintered on growing foodplant in a cool room indoors. However, through the winter months there was a steady drain of casualties, so that only 8 pupae were obtained, by the end of April. Of these, only two hatched, both females, and I was unable to get a wild male to maintain the stock. So failed my attempt to breed abundant varieties! The two bred specimens had noticeably narrower borders than the typical specimens have.

News from Members

J. A. Dawkes (3138*) disagrees with me on the frequency of ab. *coeruleopunctata*, the blue-spotted form, of the Small Copper as follows:—"In reply to C. D. Gadd's (3033*) query on *Lycaena phlaeas* var. *coeruleopunctata*: On 10th September, 1959, I took a specimen of this variety on the wing on a waste plot in Croydon, Surrey. I do not think, however, that, as is stated in the March *Bulletin*, 30% of all broods have blue spotting, as I have had experience with this species over several generations, and this is the first *coeruleopunctata* I have witnessed in Croydon". Well, I wrote that "perhaps 25%-30% have some blue spotting". Perhaps I should have added that in some cases it is necessary to use a lens to see the blue spots, they are so small. I have since examined 114 set specimens, and of these 44 have some blue on the upperside—often the faintest trace only. This I calculate to be 38·6%. Since collectors will have tended to select the obviously blue-spotted specimens, this almost certainly represents a higher percentage than occurs in a natural population, and I am inclined to hold to my original guess of 25% to 30%. This is by no means an attempt to demolish my young friend's objection—he may well be perfectly correct so far as his area of Surrey is concerned. Have any other Juniors (or other Members for that matter) views on this matter?

Brian Sheen (2596*) also challenges authority in these terms:—

"I have come to the conclusion that the phenomenal spread of the Peppered Moth and certain other species, in the melanic form, has no evolutionary significance in the sense that a completely new form has appeared and assumed dominance.

The theory held by Dr. Kettlewell is that the dark form of the moth was the original and lived on dark-barked trees. However, the forests changed, and the lighter less-viable variant replaced it. The fact that the lighter form is less viable is no help to an evolving species. Nowadays the prevalence of soot has necessitated the return of the dark form.

The theory is supported by the fact that there are the so-called geographical melanics which are Mendelian dominants. These are found in isolated groups far from industrial areas in Ireland and the Highlands of Scotland. They are, in fact, the remains of a relict fauna which once covered the whole of the British Isles.

Now I will examine the question of dominance more carefully. The fundamental problem of evolution is to turn a recessive gene into a dominant one by "Natural Selection". The fact is that geographical and Peppered Moth type melanics are Mendelian dominants. Also, black forms of Mendelian recessives have not spread through the population at all—most of these are weak and semi-viable. If the moths are evolving from a *light* form to a dark one two important questions have to be answered. Firstly, why after "thousands" of years subjection is the melanic Peppered Moth still dominant to the other form? Secondly, why after a hundred years of supremacy have the Mendelian recessives failed to become dominant? The spreading of a reversion cannot by definition be called Evolution.

(Facts and Figures from "Evolution in Action" by Dr. Kettlewell. *Times Science Review*, Spring, 1956").

Now, I must admit Brian is better-read than I am on this topic. I think we must face the fact that what we have is a certain body of fact covering the last 100 years, and a large amount of speculation covering an unspecified but large number of thousands of years. Certain it is that the case of the Peppered Moth story is of great importance as an example of *an evolutionary process*, and at that a very rare thing for us to be able to observe in a comparatively natural population of wild animals. Whether we regard it as a very minor example or not depends, I suppose, on the views we take of the more speculative points to which Brian draws attention. Have any learned Members opinions to express?

T. S. Robertson (2417), *Youth Secretary.*

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AN INTRODUCTION TO THE BRITISH COLEPHORIDAE (LEP.)

(*continued*)

Leaf mines are full depth and easily recognisable as small white or brown blotches with a tell-tale circular aperture in one cuticle where the larva attached its case and chewed its way in. The case is usually to be found beneath the leaf. The larva eats a radius of little more than its own length from any one mine, in some species far less. Thus a bird or entomologist finds many blotches but few larvae. The cases are often not well camouflaged, but they are tough, and the owner is usually half in the blotch and not at home. A predator or parasite is likely to be disappointed when a flimsy, unfinished case, or one being enlarged, is found, as it is then ridiculously large for the size of its inhabitant. One group of species is strongly procryptic, feeding in fancy, black, pistol-shaped cases exposed on the upper surface of the foliage and mimicking bird droppings. The illusion is supported by the larva 'window-feeding', i.e. eating the top cuticle and irregular patches of green parenchyma of the leaf, leaving the lower cuticle and some parenchyma intact. Unlike a white mine, these patches are inconspicuous from above.

Coleophora caterpillars are much parasitized by Hymenoptera, but host records, apart from those resulting from population studies, should be treated with caution, as parasitized individuals may behave in a most aberrant manner and be incorrectly identified.

Before pupating, the larva wanders around to find a spot to its liking, secures the mouth-opening of its case to the substrate with a pad of silk, and seals the flaps at the anal end. Whenever these flaps are sealed or unsealed the larva must turn completely round in a case little wider than itself. The pupa faces the tail-end of the case. It bears the usual cremasteral hooks on the last segment, and may be variously tubercled or may be a thin, apparently featureless sheath. The moth partly emerges within the case, and probably uses the unusual paired patches of small, backwardly directed spines on the abdomen to replace the rows of spines found on the pupae of microlepidoptera whose pupae, rather than moths, force their way out of the cocoon.

Coleophora species are very sensitive to their micro-habitat. It is consequently difficult to rear them, and more difficult to overwinter them successfully, indoors. They are very localized in their natural occurrence, although often abundant in limited areas. On one occasion, for example, I wanted some *C. fuscedinella* Zell., one of the most ubiquitous and abundant species. I wandered a few yards into a belt of birch trees, and began to look for mines. I could not understand why, after an hour's search, I had found only half-a-dozen larva. I left the belt of mature trees and walked thirty yards into a growth of seedling trees and young shoots regenerating after a fire, and found a larvae on almost every twig. I have known similar young growths, equally

populated, to be almost deserted within three or four years. Again, *C. solitariella* Zell. mines the leaves of *Stellaria holostea* L. where the plant grows strongly, buried in the vegetation of hedgerows. The smaller plants which often carpet oak woods in Surrey are almost unaffected. Some of the shrub feeders seem similarly attracted to hedges. *C. otitae* Zell. is known only from Dungeness, where it has presumably been blown from the continent. Unlike recently established migrants, it does not seem to have spread. The distribution of many species is ill known, partly because of this tendency to localization. Records and specimens will be welcomed.

Young overwintering larvae on trees may easily be found tucked away between buds and twigs or in other protected places, but many hours can be wasted if it is not known from observation of the tiny mines peppering the leaves in autumn that there is a worthwhile number of larvae on a tree to be sought for. A tree which is productive one year may produce almost nothing the next. I have yet to discover the normal situation of larvae which hibernate fully grown. They seem to leave young trees altogether. The rush feeders behave similarly. *C. alticolella* Zell. normally hibernates fully grown in the litter at the base of the plants, whilst *C. glaucicolella* Wood hibernates on the seedheads and continues to feed in the spring.

Ford (1949) presents an arrangement of the biological data available in a form to facilitate the identification of larvae found on known foodplants, whilst the keys in Meyrick (1928) enable the more distinctive species reared to be identified. At present the drawings in Toll (1954) already alluded to are the best means of accurate identification of the moths, but there is no complete work on the early stages.

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SICH, A., 1921. Observations on the family Coleophorides—descent and ovum. *Ent. Rec.* **33** : 131-133.

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R. W. J. UFFEN.

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A SUMMARY OF SERIAL PUBLICATIONS, 1935-1960

JOURNAL

(*Amat. Ent.*)

The Journal of the Entomological Exchange and Correspondence Club

No. 1 4to, rest foolscap; duplicated; irregular.

Vol. 1. 1935-36. Nos. 1-13. Ed. L. R. Tesch (1), B. A. Cooper (19), A. N. Brangham (18). 91 pp., numbers individually paged.

The Entomologists' Bulletin—The Journal of the Amateur Entomologists' Society

Foolscap; duplicated; nine times per year.

Vol. 2. 1937. Nos. 14-22. Ed. B. A. Cooper (19), A. N. Brangham (18). 113 pp.

Vol. 3. 1938. Nos. 23-31. Ed. B. A. Cooper (19). 107 pp.

The Amateur Entomologist—The Journal of the Amateur Entomologists' Society

Demy 8vo; printed; bi-monthly.

Vol. 4. 1939. Nos. 32-37. Ed. B. A. Cooper (19). 48 pp.

Demy 8vo; printed; annual, later irregular.

Vol. 5. 1941. No. 38. By various authors, ed. B. A. Cooper (19). 64 pp., 84 figs. (Nos. 5-73 + A-H + 7 unnumbered). 4 plates.

Vol. 6. 1942 [1943]. No. 39. *Silkmoth Rearer's Handbook* [1st edition.]. By various authors, ed. B. A. Cooper (19). 72 pp., 21 figs. (Nos. 2-22), 4 plates.
Vol. 7. 1943 [1945]. No. 40. *The Hymenopterist's Handbook.* By various authors, ed. B. A. Cooper (19). 160 pp., 18 figs. (Nos. 0-183), 2 plates.
Vol. 8. 1944 [1945]. No. 41. By various authors ed. B. A. Cooper (19). 48 pp., 32 figs., 6 plates.
Serial numbers discontinued.
Vol. 9. 1947 [1951]. *Practical Methods and Hints for Lepidopterists.* By various authors, ed. T. Trought (1373), W. J. B. Crotch (1181). 42 pp., 48 figs. (Nos. 1-47 + 1 unnumbered), 6 plates.
Vol. 10. 1948 [1951]. By various authors, ed. T. Trought (1373), W. J. B. Crotch (1181). 40 pp., 10 figs., 12 plates.
Vol. 11. 1954. *A Coleopterist's Handbook.* By various authors, ed. G. B. Walsh (24), J. R. Dibb (1195). 120 pp., 50 figs., 20 plates.
Vol. 12. 1956. *A Silkmoth Rearer's Handbook.* [2nd edition.] By W. J. B. Crotch (1181). 165 pp., 26 figs. (Nos. 1-23, 25-27), 26 plates (2 coloured).

BULLETIN

(*Bull. amat. Ent. Soc.*)

The Bulletin of the Amateur Entomologists' Society
Foolscap; duplicated; nine times per year. (*Volume and serial numbers began with those of the corresponding issue of the Journal.*)

Vol. 4. 1939. Nos. 32-40. Ed. B. A. Cooper (19). 48 pp.

Amateur Entomologists' Society Wartime Exchange Sheet
Foolscap; duplicated; bi-monthly, or irregular.

Vol. 5. 1940-44. Nos. 41-63 (1-23). Ed. B. A. Cooper (19). 74 pp.

The Bulletin of the Amateur Entomologists' Society
Demy 8vo; printed; bi-monthly, sometimes irregular.

Vol. 6. 1944-45. Nos. 64-72. Ed. B. A. Cooper (19), E. W. Classey (41), A. F. O'Farrell (58), H. K. Airy Shaw (545). vii + 93 pp. Supplement to No. 71 (Meeting Notice, No. 2), vi pp. *Monthly.*
Vol. 7. 1946-48. Nos. 73-96. Ed. B. O. C. Gardiner (225), B. A. Cooper (19), T. Trought (1373), xiii + 232 pp. Supplements to Nos. 92 and 93, *duplicated*, 4 pp., unnumbered.
Vol. 8. 1949. Nos. 97-108. Ed. T. Trought (1373). viii + 96 pp.
Vol. 9. 1950. Nos. 109-120. Ed. T. Trought (1373). viii + 108 pp., 1 plate.
Vol. 10. 1951. Nos. 121-132. Ed. T. Trought (1373), W. J. B. Crotch (1181), viii + 124 pp.
Vol. 11. 1952. Nos. 133-144. Ed. W. J. B. Crotch (1181). vi + 116 pp.
Vol. 12. 1953. Nos. 145-156. Ed. W. J. B. Crotch (1181). vii + 96 pp.
Vol. 13. 1954. Nos. 157-168. Ed. B. R. Stallwood (1547). vii + 116 pp.
Vol. 14. 1955. Nos. 169-180. Ed. B. R. Stallwood (1547). viii + 100 pp.
Vol. 15. 1956. Nos. 181-192. Ed. B. R. Stallwood (1547). viii + 120 pp.
Vol. 16. 1957. Nos. 193-204. Ed. B. R. Stallwood (1547). vii + 96 pp.
Vol. 17. 1958. Nos. 205-216. Ed. B. R. Stallwood (1547). vi + 76 pp.
Vol. 18. 1959. Nos. 217-228. Ed. B. R. Stallwood (1547). viii + 92 pp.
Vol. 19. 1960. Nos. 229-

LEAFLETS

(*Leafl. amat. Ent. Soc.*)

Large Crown 8vo; printed.

No. [1] (unnumbered). [1939.] *Coleoptera Collecting.* By G. B. Walsh (24). 4 pp. (Reprinted from *Amat. Ent.*, **4**: 17-19, 25-26).

Demy 8vo; printed; irregular.

No. [2] (unnumbered). 1942. *Setting Lepidoptera.* By B. A. Cooper (19). 8 pp., 3 figs. (Reprinted from *Amat. Ent.*, **5**: 47-55).
No. 3. 1943. *Silkworm Rearing.* By B. A. Cooper (19). 4 pp., 2 figs.
No. 4. 1946. *Collecting Sawflies.* By R. B. Benson (543). 12 pp. (including 2 plates), 26 figs. (Reprinted from *Amat. Ent.*, **7** (*Hymenopterist's Handbook*): 3, 17-19, 30, 36-42, 143).

No. 5. 1951. *Collecting Flies (Diptera).* By L. Parmenter (895). 8 pp., 1 fig., 8 plates.

No. 6. 1951. *Collecting Beetles Associated with Stored Food Products.* By E. B. Basden (550). 9 pp., 6 figs., 3 plates. (=*Amat. Ent.*, **11** (*A Coleopterist's Handbook*): 99-104).

No. 7. 1951. *Some Improved Devices for Rearing Hymenoptera.* By G. S. Kloet (477). 7 pp., 3 figs. (Adapted from *Ent. mon. Mag.*, **77**: 241-244; *ibid.*, **78**: 58-63; reprinted from *Amat. Ent.*, **7** (*Hymenopterist's Handbook*): 94-101).

No. 8. 1946. *Collecting Ants.* By H. Donisthorpe. 12 pp., 5 figs. (Adapted from Donisthorpe H., *British Ants—Their Life History and Classification.* 1927. London (Geo. Routledge). Abridged reprint from *Amat. Ent.*, **7** (*Hymenopterist's Handbook*): 42-55).

No. 9. 1951. *Collecting Caddises.* By H. Whitehead (810). [W. Whitehead on cover, in error]. 5 pp., 4 plates. (Reprinted from *Amat. Ent.*, **10**: 35-39).

No. 10. 1947. *Experiments with Bees.* By W. Hamilton and M. Hertz. 12 pp., 3 figs. (Abridged reprint from *Amat. Ent.*, **7** (*Hymenopterist's Handbook*): 107-119).

No. 11. 1945. *Collecting Mosquitoes.* By E. W. Classey (41). 7 pp., 7 figs. (Reprinted from *Amat. Ent.*, **8**: 9-14).

No. 12. 1945. *Collecting Dragonflies.* By A. F. O'Farrell (58). 12 pp. (including 2 plates), 12 figs. (Reprinted from *Amat. Ent.*, **8**: 1-9).

No. 13. 1945, reprinted 1955. *Collecting Microlepidoptera.* By L. T. Ford. 4 pp., 1 fig. (Reprinted from *Amat. Ent.*, **8**: 26-29).

No. 14. 1945, reprinted 1955. *Setting Microlepidoptera.* By S. Charlson (520), A. Smith (23), S. C. Brown (532), 4 pp., 5 figs. Reprinted from *Amat. Ent.*, **8**: 29-32).

No. 15. 1946. *Collecting Het-Bugs (Hemiptera-Heteroptera).* By E. C. Bedwell, E. T. Daniels (53), G. B. Walsh (24), H. K. Airy Shaw (545), E. E. Syms (406). 12 pp. (including 2 plates), 5 figs. (Reprinted from *Amat. Ent.*, **8**: 14-21).

No. 16. 1945. *Making a Sweepnet.* By L. G. F. Waddington (169), B. A. Cooper (19). 5 pp., 8 figs. (Reprinted from *Amat. Ent.*, **8**: 22-26).

No. 17. 1945. *Making a Garden Pond for the Study of Aquatic Insects.* By E. A. J. Duffy (200). 4 pp., 3 figs., 1 plate.

No. 18. 1946. *Collecting Clearwings.* By E. W. Classey (41), E. A. Cockayne (238), W. Fassnidge (293), T. Bainbrigge Fletcher (52), R. W. Parfitt (525), W. H. T. Tams (201), 12 pp. (including 2 plates), 4 figs. (Compiled from notes in *Amat. Ent.*, **5**, and *Bull. amat. Ent. Soc.*, **6**, Nos. 67-72).

No. 19. 1947. *Carded Beetles with Balsam-mounted Genitalia.* By B. A. Cooper (19). 2 pp., 1 fig. (Reprinted from *Bull. amat. Ent. Soc.*, **7**: 90-91).

No. 20. 1948. *Preserving Caterpillars.* By H. E. Hammond (423). 14 pp. (including 6 plates), 9 figs. (Independent publication; the note on p. 14 that it is a reprint from *Amat. Ent.*, **9**, is an error.)

No. 21. 1950. *Collecting Psocoptera.* By E. Broadhead. 4 pp., 10 figs. (Reprinted from *Bull. amat. Ent. Soc.*, **8**: 90, 92; *ibid.*, **9**: 4-6.)

No. 22. 1951. *Collecting Lacewings.* By F. C. Fraser (890). 9 pp., 8 figs., 5 plates. (Reprinted from *Amat. Ent.*, **10**: 3-11).

No. [23] (unnumbered). 1952. *Collecting Centipedes and Millipedes.* By J. Cloudsley-Thompson. 4 pp., 2 figs. (Reprinted from *Bull. amat. Ent. Soc.*, **11**: 5-8).

No. 24. 1952. *The Entomology of Bird Pellets.* By P. M. Miles. 8 pp., 4 plates, 1 map.

No. 25. 1953. *Collecting Bumble Bees.* By T. B. Poole (1681), 20 pp., 83 figs. (Reprinted from *Bull. amat. Ent. Soc.*, **11**: 9-10, 19-20, 27-29, 38-40, 45-47, 78-79, 87-90, 96-98, 104-105, 111-114).

No. 26. 1953. *Collecting Collembola.* By P. R. Barratt. 6 pp., 4 figs. (Reprinted from *Bull. amat. Ent. Soc.*, **12**: 17-20, 27-28, 36-37.

No. 27. 1955. *A Study of the Insects Living on the Wayfaring Tree.* By K. C. Side (2140). 20 pp., 4 figs., 1 diagram. (Reprinted from *Bull. amat. Ent. Soc.*, **14**: 3-5, 11-14, 19-22, 28-31, 42-43, 47-50).

No. 28. 1956. *Killing, Setting and Storing Butterflies and Moths.* By L. W. Sims (943). 12 pp., 10 figs.

PAMPHLETS

(*Pamphl. amat. Ent. Soc.*)

Demy 8vo; printed; irregular.

No. [1] (unnumbered). 1943. *A Topic for Immediate Discussion—A New System of English Naming for British Macrolepidoptera.* By B. A. Cooper (19), A. F. O'Farrell (58). 23 pp.

No. 2. 1945. *The Amateur's Library.* By various authors, ed. B. A. Cooper (19). 11 pp. (Reprinted from *Amat. Ent.*, **8**: 37-47).

No. 3. 1946. *Constitution and Byelaws of the Society.* iv pp.

No. 4. 1946. *A Label List of British Macrolepidoptera.* Compiled by B. A. Cooper (19), A. F. O'Farrell (58). 32 pp. (Printed one side only.)

No. 5. 1946. *A Check-List of British Macrolepidoptera.* 32 pp. (Text identical with No. 4).

No. 6. 1947. *Label List of British Butterflies.* 2 pp. (Printed one side only. Reprinted from *Pamphl. amat. Ent. Soc.*, **4**: 4-6).

No. 7. 1948. *Directory of Natural History Societies.* By H. K. Airy Shaw (545). 155 pp.

No. 7a. 1949. *ibid., First Supplement.* By H. K. Airy Shaw (545). 44 pp.

No. 8. } Numbers not used.
No. 9. }

No. 10. 1951. *A Glossary for the Young Lepidopterist.* By W. J. B. Crotch (1181). 6 pp., 2 figs.

Series discontinued.

MEETING(S) NOTICE

Size variable; printed or duplicated; irregular.

Nos. 1-8. 1944(?)-1948.

Series discontinued.

WANTS AND EXCHANGES LIST

8 × 6½ ins., some numbers foolscap; duplicated; March, May, July, October.

Nos. 1- . 1948- . Numbers individually paged.

JUNIOR MEMBERS' NEWS SHEET

Foolscap; duplicated; monthly.

Nos. 1-35. 1956-58. Ed. F. C. Brown (2414). 69 pp. No page numbers.

Series discontinued.

Note.—Any corrections to this provisional bibliography would be welcome. It has not been possible to work from a complete set of these publications, especially some of the earlier numbers. Composite figures have in some instances been counted as one figure; in others as several. The compilers have consoled themselves with the quotation from an unidentified source that "consistency is the bugbear of petty minds".

Editorial Note

Owing to unavoidable circumstances it has been found impossible to publish a twelve-page *Bulletin* this month. A twelve-page *Bulletin* will appear in November and thereafter. W. N. L.

Printed by T. Buncle & Co. Ltd., Arbroath, and published by the Amateur Entomologist' Society, 4 West Ham Lane, London, E.15. 1960

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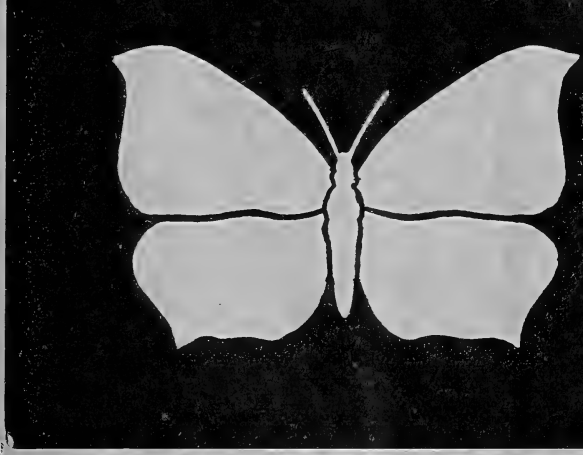

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc*

EDITED by W. N. LAWFIELD

AES NOTICE
WHERE TO WRITE

Membership applications, offers of help to: D. OLLEVANT, *3 Salcombe Drive, Morden, Surrey.*

Advertisers to: R. D. HILLIARD, *51 Gyles Park, Stanmore, Middlesex.*

Changes of address and non-arrival of Bulletins *to:* B. L. J. BYERLEY, *3 Courtfield Crescent, Harrow-on-the-Hill, Middlesex.*

Offers to lead Field Meetings, exhibit etc., to: F. C. BROWN, *6 Osmond Gdns., Wallington, Surrey.*

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Youth matters to: T. S. ROBERTSON, *38 Repton Way, Croxley Green, Herts.*

AES BULLETIN No. 239 NOVEMBER 1960

TREASURER'S LETTER

On behalf of the Council, I would like to thank all members who so generously supported the appeal for donations towards the August Special Bulletin. At the time of writing donations received amount to £9 15s 0d.

G. D. Trebilcock (Hon. Treasurer).

THE ANNUAL REPORT OF THE SOCIETY'S REPRESENTATIVE ON THE NATURE CONSERVANCY'S ENTOMOLOGICAL LIAISON COMMITTEE FOR 1959-1960

The Committee has met twice during the last year at the Nature Conservancy's headquarters in Belgrave Square and your representative attended both of these meetings.

Amongst the more important matters discussed were the progress with Nature Reserves and Sites of Special Scientific Interest (S.S.S.I.s), entomological and biological surveys, assistance of entomologists in the management of reserves, scrub clearance in some nature reserves in the S.E. and requests for entomological information on two reserves in the S.E., protection of all the rarer Lycaenid butterflies and associated insects of Chalk Grassland, and the use of toxic sprays.

Dealing with some of these matters in a little more detail during the early part of the year the public and particularly entomologists and naturalists generally were interested and no doubt concerned about the outcome of the public enquiry that had been held a few months previously on the proposed erection of a nuclear power station at Dungeness. We all know now that in spite of a great deal of hard work and a very strong case put forward by the Conservancy and a number of other interested bodies, approval by the Minister concerned was given for the commencement of work on the power station. What is not generally known is that a warden naturalist has now been appointed, with the approval and backing of the Central Electricity Authority, who will be on the spot to see that the fauna is disturbed as little as possible and at the same time a small committee has been set up to keep in touch with all concerned.

The use of toxic sprays on wayside verges by local authorities has been a matter for a great deal of discussion at several of the past meetings and it is pleasing to report that the Conservancy is now setting up a special research unit led by Dr. N. W. Moore, to study the effects of toxic chemicals on wild life. AES members can help with this project by giving information about well substantiated cases of damage to invertebrate populations due to spraying either to their representative or direct to the Conservancy.

Members could also help in several other ways. The Conservancy revises its lists of reserves and S.S.S.I.s periodically and it deals with them county by county. It is most anxious to know of any area of outstanding entomological interest that might have been overlooked. It is now dealing with the following counties:—Bedfordshire, Cheshire, Dorset, Kent, Lincolnshire, Warwickshire, Worcestershire, Yorkshire, The West Riding, Westmorland, and Anglesey, and members who know these counties well and who have any information are once again asked to contact their representative so that something can be done before it is too late.

Another matter which needs the support of our members is the Conservation Corps of the Council for Nature, 41 Queens Gate, S.W.7, and those of them who are willing to give some practical help in clearance on some of the sites and reserves during their holidays or week-ends are asked to get in touch with the Council asking for further details. It would not be out of place here to say that food, fares and accommodation are found for those willing to participate in this exceedingly practical scheme.

T. G. Howarth.

COLLECTING HINTS—November

The Smaller Moths

There are still some leaf miners to be found during this month, although most of the moths mentioned are local ones. In some cases the leaves will have to be looked for under the tree or plant.

There are a few local species of *Stigmella*—or *Nepticula* as some authorities name them—and these are:—

S. agrimoniella H.-S. which makes irregular galleries in the leaves of *Agrimonia eupatoria* L. (Agrimony), and pupates within the mine,
S. angulifasciella Stt. which makes a spiral blotch in the leaves of rose,
S. quinquella Bed. which makes slender galleries in the leaves of oak, and
S. argyropeza Zell. which makes blotches in leaves of aspen.

The leaves of *Plantago lanceolata* L. (Ribwort Plantain) may be searched for blotches caused by *Gracillaria tringipennella* Zell., and the crown of the roots for the larva of *Homoeosoma sinuella* Fabr.

Oidaematophorus monodactylus Linn. may be found on fences or hedges where convolvulus grows, before it finally hibernates for the winter.

D. Ollevant.

The Coleoptera

With the onset of winter the Coleopterist will give up the collecting-methods appropriate to summer time and will have more time to devote to searching haystack bottoms, heaps of cut grass and other vegetable refuse.

Among the many Staphylinidae to be found in such habitats species of the genus *Megarthrus* frequently occur. They are easily known by the notched hind angles of the thorax. The only other genus with this character is *Metopsia* but there need be no confusion as the head is of quite a different shape. Notes on the British representatives of both these genera are given below.

Megarthrus depressus (Paykull) is the commonest species of the genus and is found throughout the British Isles. In addition to the habitats already mentioned, dung-heaps sometimes harbour it and I have taken it myself in fresh horse-dung. I have also found this species along with the next among the many small beetles which settle on the outside of my tent on fine evenings. Camper collectors should never neglect an examination of the outside of the tent before dark, and I see no reason why non-campers should not lay out a white sheet for the same purpose.

M. denticollis (Beck) is not quite so common and perhaps less widespread. Tottenham in *Handbooks for the Identification of British Insects*, IV, Part 8 (a), gives only England and Ireland for its distribution but it undoubtedly occurs also in Scotland as I have a specimen taken there this summer.

M. affinis Miller is also fairly common. Tottenham again (*loc. cit.*) gives only England but Joy (*Practical Handbook of British Beetles*) mentions Scotland and Ireland among its localities. Another recorded habitat for this species is under a dead pheasant.

M. sinuatocollis (Lacordaire) is another widely distributed and fairly common species.

M. hemipterus (Illiger) is by far the rarest of the genus in this country. It lives in rotten fungi rather than in the habitats favoured by its relatives and it appears to be confined to the southern parts of England, Leicestershire being the most northerly locality recorded.

Metopsia gallica (Koch) is common in moss, cut grass and heaps of vegetable refuse and is widely distributed. In the past it was recorded as *M. clypeata* (Müller) but Tottenham in the work already mentioned states that the true *clypeata* probably does not occur here. However, it would be well for collectors to examine all specimens carefully as there is the possibility that we have both species.

K. C. Side.

Diptera

The weather may not encourage outdoor work, but in November the winter-gnats, Trichoceridae, commence their dancing swarms. The species *saltator* (Harris) has been reared from cow pats but others of the genus *Trichocera* have larvae living in decaying vegetable matter. The males of *hiemalis* (Deg.), *saltator* (Harris) and *regelationis* (L.) are to be seen throughout the British Isles on calm winter afternoons; the other species appear to be less widespread. The adults occur in light traps but relatively little is known of their habits; for example, on what do they feed? A little time spent observ-

ing and less on collecting, would be well rewarded by interesting discoveries.

Fungi will still repay attention. Try gathering a small pile of several specimens of the same fungus. If left for a time the smell af the bruised fungi will attract the flies. Several families of flies are attracted to fungi and as with cow pats—many interesting species can be reared. When rearing flies try and retain the empty pupal case if this can definitely be associated with the adult fly. Very many species have not been described in the immature stages. Comparative drawings of related species would be of great interest to other dipterists. Colour photographs might be attempted. There is still the chance of being the first to donate colour photographs to commence a national collection.

Another source of rarely collected species is birds' nests. Each nest should be kept separate, identified as to its maker if possible, and data kept of the emergences. One AES member has found species of flies previously unknown to science by rearing from such material.

L. Parmenter.

The Macrolepidoptera

The notes on macrolepidoptera will be resumed in the spring. During the winter months there is practically no outdoor work to be done, and the setting of specimens, and arrangement of collections occupies most of the time.

B. Skinner.

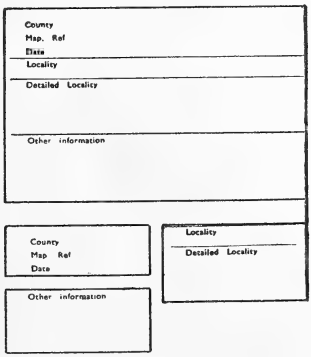
FIELD DATA LABELS

It is usual to see the locality and date of capture attached to a set specimen and in some cases a specimen number referring to either a notebook or a card index system will also be found.

If, however, the specimens should become parted from the notebook due to the collection being broken up or the notebook being lost, the value of the two separate components can be considerably reduced. For this reason I prefer to attach as much information to the specimen as possible and to ensure absolute accuracy I write all the information down at the time of capture.

Until recently, it had been my practice with the microlepidoptera to write the capture notes on a scrap of paper, attach it to the tube or box containing the specimen and retain it with the specimen right through the killing and setting stage. Immediately prior to pinning the specimen in the store box I made out a proper label and discarded the original note.

During the early part of this year Mr. E. Bradford sent me a number of labels specifically for use in the field with the suggestion that they would be superior to my pieces of scrap paper and from our continued correspondence we developed the label illustrated below.



As it is difficult when in the field to write on the labels without a firm surface behind them they can be made up in pads or gummed in one corner and secured in a stiff backed notebook.

With the exception of the map reference which should be recorded as soon as possible and in full, all the relevant information concerned with a specimen is filled in at the time of capture. The label is then detached from pad or note-

book and kept intact with the specimen right through to the cabinet stage.

When the specimen is removed from the setting board the label is cut up into three or more pieces and staged with the specimen. Neatly laid out labels are made during the slacker winter months.

Part one of the label gives in precise form the normal date and locality, part two details the locality again but provides in addition the type of habitat currently found and part three records other observations that may be of interest, especially from the ecological viewpoint.

By providing locality details in two forms a person can visit the exact spot years later even though it has changed out of all recognition. For instance, when a collection is looked upon as an old collection the haunts of any species thought to be extinct in the area can be revisited and a proper check made, thus assisting in the establishment of an accurate case history.

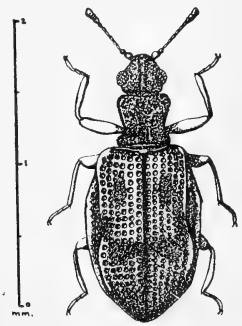
In my opinion, the small amount of time spent making out the labels is well worth the slight reduction in the number of specimens taken and fewer specimens accurately labelled are always to be preferred to a host of specimens carrying suspect data.

M. E. Castle.

THE SPREAD OF *LATHRIDIUS BIFASCIATUS* REITTER (COLEOPTERA, LATHRIDIIDAE): A NEW STUDY GROUP

This Australian beetle was added to the British list in 1951 by Mr. A. A. Allen (*Ent. mon. Mag.*, **87**: 114-115). Since then, it has been discovered increasingly commonly in south-east England. It is most frequently found in heaps of dead vegetation of all kinds, but can also be taken by general sweeping, beating, in fungi, and at grass roots in winter. It presumably feeds on microfungi, and any habitat where these grow can be suspected of supporting a colony of *L. bifasciatus*. Now, ten years after its first capture, almost any suitable habitat seems to support at least a few specimens.

Evidently it is an insect which has readily adapted itself to conditions in this country, and as it has established itself so completely within a decade, it seems likely that it will spread over at least the southern half of England in a relatively short time. It would be an undertaking of considerable interest to attempt to trace its progress year by year. At present it is recorded from Surrey, Kent, Essex, Middlesex, and West Sussex, most commonly from the first two counties.



Lathridius bifasciatus Reitter

As the beetle is a recent introduction to Britain, it is not included in Fowler (1890), Joy (1932) or Dibb (1948) and it is not mentioned by Linssen (1959), so that collectors who missed the note introducing it may be taking it without knowing what it is. The accompanying figure gives an indication of its general appearance. It is the size and shape of the familiar *L. nodifer*, but is yellowish in colour, with variable black marks on the elytra. No native species can be confused with it.

The recording of the spread of this species would be an excellent study for an AES Group, and I should be glad if the coleopterists in the society, and indeed anybody interested in the spread of introduced species, would get Group. A point which must be emphasised is that the reports of collectors

in touch with me, with the aim of founding a *Lathridius bifasciatus* Study all over the country who look in the right places *without* finding the species are as important as the records of those who do find it. Only numerous negative records can map the spread of the species accurately, so lists of captures of all species of *Lathridius* are needed in abundance. I hope, therefore, that members remote from south-east England will write to me, as well as those within the known area of distribution of *L. bifasciatus*. What are wanted are records of captures already made, and promises to look for *Lathridius* species whenever opportunity offers. The records will be kept on cards, showing the date, locality, habitat, and collector's name, and an annual report on the work of the group will be published in the *Bulletin*.

E. Lewis.

●

SCARCITY OF LARGE WHITE (*PIERIS BRASSICAE L.*)

While agreeing with Mr. T. S. Robertson (*antea*, p. 77) that the large white has been all but exterminated, I do not support his theory that this is due to its parasites, but believe it is due to disease.

For many years research workers had tried to infect the caterpillars with a virus which could be used in the control of this economic pest in preference to poisonous insecticides, but without success. However, in 1955 a granulosis virus disease broke out amongst the population at large and mortality of the caterpillars was as high as 99%. This virus is presumed to be the same as one which was reported, rather as a curiosity, from France in 1926, when it did not assume any epidemic proportions. Most likely it was carried over by migrants. Why it should suddenly have assumed such drastic epidemic proportions is unknown, but its effect on the large white may perhaps be compared with that of myxomatosis on rabbits. Most of the population is anihilated and I have heard that the large white has not been of economic importance over the last few years. Significantly, last year no immigration was reported.

The virus disease also attacks *Pieris rapae* L. (The Small White), and many of the larvae I have found over the last two years have succumbed to it. Significantly, too, no parasites *Apanteles glomeratus* have been seen or bred from wild larvae, at least from the Cambridge area.

The symptoms are obvious. First the caterpillar, at any stage of growth, turns a sickly yellow and then, in a matter of hours, turns brown and liquifies. Other caterpillars coming into contact with this fluid corpse are in turn infected.

It is possible that in time a strain of large white resistant to this virus will arise naturally. Indeed, by intensive breeding this has already been achieved in the laboratory.

It is interesting to conjecture whether the extinction of former species, such as the *Aporia crataegi* L. (Blackveined White), in this country could have been due to an epidemic of virus disease. It seems possible that the large white may suffer the same fate unless some degree of resistance is built up in time. Unless it also becomes extinct in Europe, however, it would soon be re-introduced, for unlike the blackveined the large white is a migrant to which the Channel offers no obstacle.

Brian O. C. Gardiner.

[●]

ASSEMBLING

While walking on a cliff in North Cornwall during August, I happened to see a newly-emerged female *Lasiocampa quercus* L. (Oak Eggar) on a wall. I boxed her and continued on my way. About 20 minutes later I saw a male flying about near me, so I opened the box and within 15 seconds there were seven males all pushing and shoving to get at their prospective mate, where there had only been one apparently disinterested male before. Five seconds later one of them had succeeded in mating. I have heard many stories about the speed with which this species assembles, but none of them beats this. Have any members experienced any quicker assembly in this or any other species?

J. B. Salmon.

MOTHS OF THE LANCING AREA

During the last eleven weeks (1st May-16th July) a study has been made of the moths at Lancing (Sussex), the main purpose being to find the number of species to be found there and the relative frequency of each.

By far the best method of obtaining a fair representation of the moths in the district is by using a M.V. light trap, two of which were used. The other main methods of collecting ("sugaring" and searching) are unsatisfactory because (a) one can hope to obtain only a very limited number of species by both methods, and (b) those species that are found will be found in smaller numbers than would otherwise be obtained in the light trap, and in consequence any record made would be less accurate.

It has not been a good summer as far as weather goes; however, 125 different species were obtained. I should imagine that there should be, therefore, at least 200 different species to be obtained throughout the year. Of course, plenty of these will not yet be on the wing, and no record has been taken of those on the wing from the end of July to the following March.

In the table I have tried to demonstrate the relative frequency of all the moths that have been obtained in the light trap. The number against any species represents the number obtained of that species during the first week, second week, etc.

The results obtained are fairly conclusive. By far the commonest moth in the district is *A. exclamationis* L. (Heart and Dart), of which well over 20,000 specimens were counted (that includes recurrences of individuals which came to the trap on several nights). Other abundant species include *A. monoglypha* Hufn. (Dark Arches), over 1,000; *H. lupulina* L. (Common Swift), over 700; *L. pallens* L. (Common Wainscot), over 600; *P. gamma* L. (Silver Y), over 500; and *T. pronuba* L. (Large Yellow Underwing), about 500.

The method I have of determining how advanced or backward a season is, is by finding when the moth is generally on the wing; when one knows when it actually is on the wing, one can determine how previous or late it is—the results obtained, however, do not have much degree of accuracy unless upwards of 100 moths are taken into consideration. By my calculation, which may be completely wrong and is certainly not very accurate, I estimate that the season is approximately a fortnight or even three weeks in advance. There are, of course, instances which raise my doubts over my previous statement; I can find absolutely no reason why not one specimen of *A. caja* L. (Garden Tiger) had been obtained. Last year one was obtained as early as 3rd July. Also no specimens of *P. fuliginosa* L. (Ruby Tiger) were obtained, although they were obtained first on July 10th last year.

There have also been quite a number of good "finds". Firstly, a rather worn specimen of *H. convolvuli* L. (Convolvulus Hawk) was obtained as early as 17th May. I have never heard of such an early record before; in fact, as far as I have been able to find, the earliest previous record is 6th June. I would be glad if any member could either verify or dispute that point. A second specimen of *H. convolvuli* L. was obtained on 27th June. I presume from this that it must be quite a good year for *H. convolvuli* L. Also a much worn specimen of *H. pinastri* L. (Pine Hawk) was obtained on 18th June. Apparently the species is resident only in Suffolk and Dorset; is a record from Sussex very unusual? Another point of interest is that what must have been a migration (200) of *P. gamma* L. was obtained on 15th May, a night in which not more than twenty other moths were obtained altogether.

In the following tables, the scientific name, common name, and the number of each species caught during each week are given. The first date when each appeared is also given. The weeks were as follows:—

1.	1st- 7th May.	2.	8th-14th May.
3.	15th-21st May.	4.	22nd-28th May.
5.	29th- 4th June.	6.	5th-11th June.
7.	12th-18th June.	8.	19th-25th June.
9.	26th- 2nd July.	10.	3rd- 9th July.
11.	10th-16th July.		

No records were obtained in week 10 due to unsuitable weather conditions. The trap was used twice between July 16th and 22nd, but no record for a twelfth week could be obtained from two records only.

Scientific Name	Common Name	No.
L. populi (L.)	Poplar Hawk	1
S. ocellata (L.)	Eyed Hawk	2
H. convolvuli (L.)	Convolvulus Hawk	3
S. ligustri (L.)	Privet Hawk	4
M. tiliae (L.)	Lime Hawk	5
D. elpenor (L.)	Large Elephant Hawk	6
D. porcellus (L.)	Small Elephant Hawk	7
H. pinastri (L.)	Pine Hawk	8
P. gnoma (Fab.)	Lesser Swallow Prominent	9
P. tremula (Clerck)	Swallow Prominent	10
C. curtula (L.)	Chocolate-tip	11
P. palpina (L.)	Pale Prominent	12
D. ruficornis (Huf.)	Lunar Marbled Brown	13
C. furcula (Clerck)	Sallow Kitten	14
C. vinula (L.)	Puss Moth	15
P. bucephala (L.)	Buff-tip	16
L. capucina (L.)	Coxcomb Prominent	17
N. ziczac (L.)	Pebble Prominent	18
H. derasa (L.)	Buff Arches	19
D. pudibunda (L.)	Pale Tussock	20
M. neustria (L.)	Lackey	21
P. potatoria (L.)	Drinker	22
S. pavonia (L.)	Emperor	23
C. glaucata (Scop.)	Chinese Character	24
C. mendica (Clerck).	Muslin	25
C. jacobaeae (L.)	Cinnabar	26
A. villica (L.)	Cream-spot Tiger	27
S. lubricipeda (L.)	White Ermine	28
S. lutea (Hufn.)	Buff Ermine	29
A. rumicis (L.)	Knot Grass	30
A. tridens (Schiff.)	Dark Dagger	31
A. psi (L.)	Grey Dagger	32
A. aceris (L.)	Sycamore	33
S. albovenosa (Goeze)	Powdered Wainscot	34
O. gracilis (Schiff.)	Powdered Quaker	35
O. stabilis (Schiff.)	Common Quaker	36
O. gothica (L.)	Hebrew Character	37
X. areola (Esp.)	Early Grey	38
P. meticulosa (L.)	Large Angle Shades	39
C. chamomillae (Schiff.)	Chamomile Shark	40
A. puta (Hb.)	Shuttle-shaped Dart	41
A. tripartita (Hufn.)	Spectacle	42
S. libatrix (L.)	Herald	43
O. cruda (Schiff.)	Small Quaker	44
H. chenopodii (Schiff.)	Nutmeg	45
H. lepida (Esp.)	Tawny Shears	46
P. gamma (L.)	Silver Y	47
P. flammea (Hb.)	Pine Beauty	48
O. plecta (L.)	Flame Shoulder	49
H. cucubali (Schiff.)	Campion	50
H. genistae (Borkh.)	Light Brocade	51
A. c-nigrum (L.)	Setaceous Hebrew Character	52
H. bicruris (Hufn.)	Lychnis	53
T. pronuba (L.)	Large Yellow Underwing	54
A. segetum (Schiff.)	Turnip Moth	55
A. exclamationis (L.)	Heart and Dart	56
P. saucia (Hb.)	Pearly Underwing	57
A. cinerea (Hb.)	Light Feathered Rustic	58
A. sordens (Hufn.)	Rustic Shoulder-knot	59
M. triorammica (Hufn.)	Treble Lines	60
L. pallens (L.)	Common Wainscot	61
D. oleracea (L.)	Bright-line Brown-eye	62
A. baja (Schiff.)	Dotted Clay	63
P. strigilis (Clerck)	Marbled Minor	64
E. adusta (Esp.)	Dark Brocade	65

Scientific Name	Common Name	No.
A. xanthographa (Schiff.)	Square-spot Rustic	66
C. umbratica (L.)	Shark	67
P. chrysitis (L.)	Burnished Brass	68
G. augur (Fab.)	Double Dart	69
L. conigera (Schiff.)	Brown-line Bright-eye	70
A. secalis (L.)	Common Rustic	71
C. pisi (L.)	Broom Moth	72
D. brunnea (Schiff.)	Purple Clay	73
H. nana (Hufn.)	Shears	74
H. conspersa (Schiff.)	Marbled Coronet	75
A. clavis (Hufn.)	Heart and Club	76
D. rubi (Vieweg.)	Small Square-spot	77
E. tritici (L.)	White-line Dart	78
A. monoglypha (Hufn.)	Dark Arches	79
H. suasa (Schiff.)	Dog's Tooth	80
M. brassicae (L.)	Cabbage Moth	81
E. glyphica (L.)	Burnet Companion	82
H. thalassina (Hufn.)	Pale-shouldered Brocade	83
O. incerta (Hufn.)	Clouded Drab	84
E. lucipara (L.)	Small Angle Shades	85
A. ipsilon (Rott.)	Dark Sword Grass	86
H. sordidus (Borkh.)	Bordered Gothic	87
A. putris (L.)	Flame	88
M. persicariae (L.)	Dot Moth	89
A. lithoxylea (Schiff.)	Light Arches	90
P. festucae (L.)	Gold Spot	91
A. triangulum (Hufn.)	Double Square-spot	92
T. comes (Hb.)	Lesser Yellow Underwing	93
H. oculea (L.)	Ear Moth	94
D. festiva (Schiff.)	Ingrailed Clay	95
C. morpheus (Hufn.)	Mottled Rustic	96
Z. tarsipennalis (Treit.)	Fan Foot	97
H. immaculata (Thunb.)	Small Emerald	98
S. immutata (L.)	Lesser Cream Wave	99
C. punctaria (L.)	Maiden's Blush	100
C. trilinearia (Borkh.)	Clay Triple Lines	101
C. amata (L.)	Blood Vein	102
X. spadicearia (Schiff.)	Red Twin-spot Carpet	103
C. derivata (Schiff.)	Streamer	104
X. fluctuata (L.)	Garden Carpet	105
H. vitalbata	Small Waved Umber	106
C. pectinataria (Knoch)	Green Carpet	107
C. didymata (L.)	Twin-spot Carpet	108
O. vittata (Barnk)	Oblique Carpet	109
X. ferrugata (Clerck)	Dark-barred Twin-spot Carpet	110
D. truncata (Hufn.)	Common Marbled Carpet	111
X. montanata (Schiff.)	Silver Ground Carpet	112
O. luteolata (L.)	Brimstone	113
L. hirtaria (Clerck)	Brindled Beauty	114
B. betularia (L.)	Peppered Moth	115
B. bimaculata (Fab.)	White-spotted Pinion	116
C. clathrata (L.)	Latticed Heath	117
G. bidentata (Clerck)	Scalloped Hazel	118
B. punctata (Fab.)	Clouded Silver	119
B. punctinalis (Scop.)	Pale Oak Beauty	120
H. abruptaria (Thunb.)	Waved Umber	121
C. repandata (L.)	Mottled Beauty	122
E. crepuscularia (Hb.)	Small Engrailed	123
H. lupulinus (L.)	Common Swift	124
H. humuli (L.)	Ghost Swift	125

Moth no.	1	2	3	4	5	6	7	8	9	11	1st record
1	—	1	10	4	5	—	—	—	—	7	13.5.60
2	—	1	—	3	1	—	4	—	—	—	15.5.

Moth no.	1	2	3	4	5	6	7	8	9	11	1st record
3	—	—	1	—	—	—	—	—	1	—	17.5.
4	—	—	—	2	2	—	5	2	7	14	25.5.
5	—	—	1	3	3	—	—	—	—	—	26.5.
6	—	—	—	—	1	—	5	—	5	—	18.6.
7	—	—	—	2	3	—	5	5	—	—	28.5.
8	—	—	—	—	—	—	1	—	—	—	18.6.
9	4	1	—	—	2	—	—	—	—	—	6.5.
10	—	10	7	—	—	—	—	—	—	—	9.5.
11	—	3	—	—	—	—	—	—	—	—	10.5.
12	—	2	1	—	—	—	—	—	—	—	12.5.
13	—	1	—	—	—	—	—	—	—	—	15.5.
14	—	2	—	—	—	—	—	—	—	—	15.5.
15	—	—	1	—	1	—	—	—	—	—	17.5.
16	—	—	—	3	2	—	2	—	—	14	27.5.
17	—	1	—	—	—	—	—	—	—	—	13.5.
18	—	—	—	—	1	—	—	—	—	—	2.6.
19	—	—	—	—	—	—	—	—	—	10	15.7.
20	—	2	1	3	3	—	—	—	—	—	9.5.
21	—	—	—	—	—	—	—	—	—	15	13.7.
22	—	—	—	—	—	—	—	—	—	5	13.7.
23	—	1	—	—	—	—	—	—	—	—	10.5.
24	—	—	2	2	6	—	—	—	3	—	16.5.
25	8	12	9	7	—	—	—	—	—	—	3.5.
26	—	1	5	7	3	1	4	4	—	—	9.5.
27	—	—	—	1	1	1	—	—	—	—	1.6.
28	1	5	11	10	38	11	17	3	0	7	7.5.
29	—	—	—	—	—	—	2	17	7	—	23.6.
30	13	29	5	6	7	—	—	—	—	—	5.5.
31	3	—	—	—	—	—	—	—	—	—	8.5.
32	—	4	3	2	9	—	—	3	—	3	10.5.
33	—	—	—	—	2	—	2	10	—	—	2.6.
34	—	—	—	—	—	1	—	—	—	—	3.6.
35	26	7	—	—	—	—	—	—	—	—	2.5.
36	77	58	10	2	5	—	4	—	9	—	2.5.
37	69	33	9	3	—	—	—	4	—	2	2.5.
38	4	—	—	—	—	—	—	—	—	—	2.5.
39	12	31	90	43	15	—	—	24	21	—	3.5.
40	5	—	—	—	—	—	—	—	—	—	4.5.
41	60	90	108	64	72	6	14	28	—	—	4.5.
42	1	3	9	3	7	—	2	10	—	3	8.5.
43	1	—	—	—	—	—	—	—	—	—	8.5.
44	1	—	—	—	—	—	—	—	—	—	8.5.
45	14	34	76	36	13	2	4	—	—	7	4.5.
46	1	8	—	2	7	7	—	—	—	—	8.5.
47	—	71	365	37	67	2	6	35	14	40	10.5.
48	—	2	—	—	—	—	—	—	—	—	12.5.
49	2	13	8	9	6	1	4	—	—	—	11.5.
50	—	1	2	—	6	—	—	—	—	—	13.5.
51	—	3	—	3	3	—	2	—	—	—	13.5.
52	—	2	13	29	72	10	6	21	—	—	15.5.
53	—	3	2	1	11	—	—	3	—	—	15.5.
54	—	—	6	4	10	9	110	147	91	140	17.5.
55	—	1	1	4	11	—	—	2	7	—	19.5.
56	—	1	34	88	1330	1117	11500	6150	3000	309	18.5.
57	—	2	5	—	—	—	—	—	—	8	19.5.
58	—	—	2	7	3	1	7	—	—	—	19.5.
59	—	—	15	45	68	10	—	10	—	—	21.5.
60	—	—	3	30	66	10	7	3	—	—	21.5.
61	—	—	5	62	231	10	255	90	84	111	21.5.
62	—	—	2	1	—	—	—	7	—	3	21.5.
63	—	—	2	3	—	3	—	—	—	—	21.5.
64	—	—	1	4	61	7	125	49	—	7	21.5.
65	—	—	1	10	—	—	7	21	—	—	22.5.

Moth no.	1	2	3	4	5	6	7	8	9	11	1st record
66	—	—	—	2	12	7	—	14	—	—	23.5.
67	—	—	—	1	1	1	—	3	—	—	25.5.
68	—	—	—	3	7	—	—	50	14	3	26.5.
69	—	—	—	1	—	—	—	—	—	—	26.5.
70	—	—	—	1	—	—	—	—	—	—	26.5.
71	—	—	—	1	—	—	—	—	7	3	27.5.
72	—	—	—	2	—	—	—	—	—	—	27.5.
73	—	—	—	6	2	—	—	—	—	—	27.5.
74	—	—	—	1	1	—	—	—	—	—	24.5.
75	—	—	—	1	6	—	—	7	—	—	27.5.
76	—	—	—	—	53	4	—	3	7	3	30.5.
77	—	—	—	—	1	—	—	—	7	—	30.5.
78	—	—	—	—	9	1	—	—	—	—	31.5.
79	—	—	—	1	13	1	161	490	320	279	31.5.
80	—	—	—	—	1						
81	—	—	—	—	3	—	—	—	—	7	2.6.
82	—	—	—	—	1	—	—	—	—	—	4.6.
83	—	—	—	—	1	—	—	—	—	—	5.6.
84	26	6	4	—	—	—	—	—	—	—	2.5.
85	—	1	—	—	—	—	—	—	—	—	10.5.
86	—	1	—	2	—	—	2	—	—	3	10.5.
87	—	—	—	—	1	—	1	—	—	7	2.6.
88	—	—	—	—	—	—	6	25	42	21	14.6.
89	—	—	—	—	—	—	—	10	7	6	22.6.
90	—	—	—	—	—	—	—	3	14	—	22.6.
91	—	—	—	—	—	—	—	1	—	—	23.6.
92	—	—	—	—	—	—	—	—	—	3	15.7.
93	—	—	—	—	—	—	—	—	—	10	15.7.
94	—	—	—	—	—	—	—	—	—	27	15.7.
95	—	—	—	—	—	11	—	—	—	6	7.6.
96	—	—	—	—	—	—	—	—	50	36	28.6.
97	—	—	1	2	—	—	—	—	—	—	28.5.
98	—	—	—	—	—	—	—	—	—	3	12.7.
99	—	1	—	—	—	—	—	—	—	—	11.5.
100	—	5	2	—	3	—	—	—	—	—	14.5.
101	—	2	1	—	—	—	—	—	—	—	12.5.
102	—	2	3	7	7	—	6	3	—	—	14.5.
103	1	—	—	1	—	—	—	—	—	—	7.5.
104	3	—	—	—	—	—	—	—	—	—	7.5.
105	3	2	1	—	—	—	2	—	—	—	7.5.
106	1	2	—	—	4	—	14	—	—	—	7.5.
107	—	4	2	—	—	—	—	—	—	—	14.5.
108	—	3	3	2	1	—	—	—	—	—	11.5.
109	—	—	—	2	1	—	—	—	—	—	25.5.
110	—	—	—	5	—	—	—	—	—	—	26.5.
111	—	—	—	1	—	—	—	—	—	—	28.5.
112	—	—	—	—	1	—	—	—	—	—	1.6.
113	17	40	35	19	4	—	—	—	—	—	4.5.
114	1	—	—	—	—	—	—	—	—	—	6.5.
115	1	2	1	8	6	7	22	7	—	3	8.5.
116	—	1	1	—	—	—	—	—	—	—	11.5.
117	—	5	3	2	—	—	—	—	—	—	12.5.
118	—	—	1	4	—	—	—	—	—	—	21.5.
119	—	—	—	—	1	—	—	—	—	—	3.6.
120	—	—	—	—	1	—	—	—	—	—	3.6.
121	—	1	1	—	—	—	1	—	—	—	10.5.
122	—	—	—	—	—	—	1	—	—	—	14.6.
123	—	—	—	—	—	—	2	—	—	—	14.6.
124	—	6	36	168	483	68	37	3	—	—	12.5.
125	—	—	—	—	—	—	—	—	—	7	15.7.

R. A. Cramp.

NOTES AND OBSERVATIONS

OBSERVATIONS ON *SAPPAPHIS DEVECTA* (WLK.)

It has been apparent that *Sappaphis devecta* attacks one certain apple in the near vicinity (Worcester Pearmain). The most interesting feature of these attacks is the apparent lack of fruit drop.

I have studied a certain tree in my area for the past five years. This has been subjected to mild chronic attacks each year. A good crop of fruit has been borne, except for last year, when the owner cut down all infested branches. The lack of fruit could, however, have been due to chlorosis; the owner, no doubt due to exasperation, left all fruit on the tree. Those not falling developed frutifications of brown-rot on the mummified apples, causing a threat not only of aphids but also of brown rot. A nearby pear, 10 feet away, and Cox's Orange Pippin, 15 yards away, are not as yet subjected to attacks of *Sappaphis*.

Details of attacks, years:—1. Very slight. 2. Minor. 3. Minor. 4. Acute. 5. Chronic. This year the tree has developed the appearance of scorching, the leaves on appearing are turning brown, due to the *Sappaphis* invasion over the past years.

C. Janes.

•

BLACK LARVAE OF *GONODONTIS BIDENTATA* CL.

Mr. H. E. Hammond includes the Scalloped Hazel in his list of melanic larvae (*antea*, p. 44). Black larvae of this species are not genetic melanics, being produced by environmental colour influencing the individual larvae. This was demonstrated by Poulton (*Trans. ent. Soc. Lond.*, 1903: 311-374), who reared forms varying from black (reposing on black twigs) to green-and-brown lichen-mimics (reposing on lichen-covered bark) from eggs laid by one female. Similar visual response produces the black Acridid grasshoppers on burnt heaths. In my own garden larvae of *bidentata* are black on sooty-barked privet and pale brown on bramble.

It would be interesting to rear this incredibly variable larva on variously-coloured backgrounds of simple geometrical pattern, providing for the larva to move off the food on to the unobstructed background during the day. Unfortunately, this creature insists on feeding throughout the holiday season, which makes it a most inconvenient experimental animal.

R. W. J. Uffen.

•

"BELSEN IN MY GARDEN"

It seems a pity that Mr. F. C. Fraser should go to so much trouble to condemn a method of collecting and recording moths that he has evidently never seen put into practice. If he had, he would know quite well that no "Belsen" rages in a moth trap such as the one which I describe in my article "Moth Trapping Without M.V.". The moths are attracted in small numbers at a time and almost as soon as they enter the trap they settle down quietly underneath the egg boxes inside. In this way the trap can accommodate well over a thousand specimens if need be, but the 650 specimens which I recorded were partly spread out on the walls of a building adjacent to the trap.

The counting, marking and "carting away" of the specimens requires no technique at all and if anyone thinks it sounds difficult I shall be very glad to tell them exactly how I used to do it.

The point that Mr. Fraser seems to miss is that I am advocating the use of a moth trap as a means of getting to know our British moths, and how to recognise them. Even if one is a collector, it very soon becomes unnecessary to keep all that one catches and the surplus, having been recorded, can then be set free. The specimens are in perfect condition and no harm comes to them at all. A mercury vapour trap in the wrong hands can perhaps be harmful to the local fauna, but not a 100 watt bulb in a cheese tub!

I am very glad, however, that some people have taken a less short-sighted attitude and have shown enough interest to write to me for more details about this method. It is surely a means of education—not destruction.

Robert C. Goodden.

SOME OBSERVATIONS ON THE WOOD ANT (*FORMICA RUFA* L.)

Near my home at Crowthorne there are extensive pinewoods in which there are many nests of the Wood Ant (*Formica rufa* L.). During the summer I have observed these nests at regular intervals, and at each visit I have studied more of the behaviour of this interesting insect.

My first experiment was a simple one. I had always wondered what stimulated the ants in the nest to defend it so ably on the approach of an enemy. One need only walk up to a nest for many of the inhabitants to stand erect and spray formic acid. I experimented to see what sense told them of an approaching enemy. When I clapped my hands nothing happened: there was no response to any sound that I made. Similarly sight did little to alarm them and one could shine a bright lamp on the nest at dusk with little response from the inhabitants. If, however, I beat the ground the ants would instantly begin to defend their home, and even at eight feet away my beating would cause alarm in the nest. If I walked up to the nest normally the ants would again become alarmed whereas if I approached softly I could sing or whistle without any response at all. It seems obvious that it is vibration that stimulates the defence attitude. I repeated the experiments many times, all with the same result.

The next observations were made partly by chance. I was watching some worker ants on their foraging expeditions when my attention was drawn to an ant which had a somewhat flattened abdomen. It persisted in walking around in a circle of about four inches in diameter, wandering round aimlessly in this area apparently doing no useful work. When moved elsewhere it ran round in circles for approximately a minute before continuing its seemingly aimless activity. It persisted in this behaviour wherever I placed it, while three other ants similarly afflicted behaved in the same way. Healthy ants when disturbed would quickly get their bearings. Was this a mere coincidence, or had these ants with the flattened abdomens been injured?

On another occasion I observed a wounded ant; this one I found writhing about ten feet from the nest. There were many other ants running to and from the nest, and these did not take the slightest notice, although some passed less than an inch away. Eventually two ants appeared and carried off the injured one in the direction of the nest.

I should be interested to hear from other members concerning the behaviour of the Wood Ant and its habits. J. E. Cooper.

●

A TRAP FOR WATER BEETLES

Having been studying the ecology of a pond it occurred to me to use a trap for sampling the carnivorous wild life. A trap would allow localised sampling and make it possible to calculate approximate population ratios.

Accordingly I used an old minnow trap about 5 ins. × 4 ins. × 9 ins. with perforated zinc sides and bottom, and a solid zinc top with a hinged lid. In one of the shorter sides there was a hole with a truncated cone pointing inwards with a piece of red wool on a wire at the end to serve as bait.

I dropped the trap to the bottom of the pond and left it there for a week. At the end of that time I found two *Dytiscus marginalis* L. and one *D. semisulcatus* Muell., both first records for this pond. Other captures included several *Colymbetes fuscus* (L.), two *Notonecta* spp. and on *Ilyocoris cimicoides* (L.) and one Zygopterous larva. After the trap had been set for two weeks I found over a score of *C. fuscus* (L.).

The trap is useful for the larger and more voracious predators, as it is fairly large and has a large bait (the smallest beetle I have found in it is *Agabus bipustulatus* L.); a smaller version might catch more of the smaller species.

I would be very interested to hear of any other attempts made to trap aquatic insects, with details of trap and specimens caught. J. Vincent.

●

LETTER TO THE EDITOR

Dear Sir,

I found a larva of *Herse convolvuli* on July 31 near Corfe Castle, Dorset. It was fully grown and about 3 inches long, moving along in a rough grass track. The description in South enabled me to identify this green form of *H. convolvuli*. J. L. Chudley.

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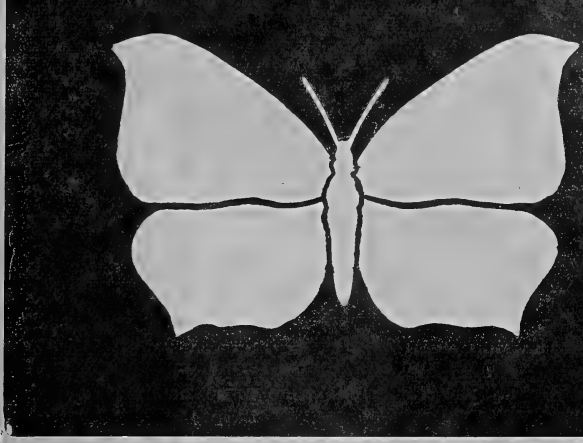

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EDITED by W. N. LAWFIELD

A E S BULLETIN

No. 240

DECEMBER 1960

SECRETARY'S LETTER

Whilst the attendance at the Annual Exhibition on 1st October was well up to the average, the numbers of exhibitors were very few. The AES Council are well aware of this and are concerned about it, and by the time this letter has appeared in print, they will have discussed it. However, it would greatly assist all concerned if the members who attended, and those who could have attended, and did not exhibit, would write to me and give their reasons for not exhibiting. I would prefer their real reasons and not a polite excuse! If this could be done then the Council would be able to take suitable action to ensure that the 1961 Exhibition is a success.

Members, other than those joining since 1st September 1960, are reminded that their 1961 subscriptions become due on 1st January, and prompt payment will greatly assist the Hon. Treasurer, who is a very busy man. Please remember that the subscription is now 15/- for full and affiliate members, and 10/- for Juniors.

May I take this opportunity of wishing all members a Merry Christmas and a Happy New Year?

D. Ollevant.

•

COLLECTING HINTS—December

The Smaller Moths

The stems of wormwood, *Artemisia absinthium* L. may be collected for the larvae of *Euzophera cinerosella* Zell. The larva works its way up the stem until it reaches near to the end of the shoot; the moth emerges in May. However, this moth is restricted to the southern coastal counties (including Norfolk).

For members in, or likely to visit, the north-west of England, collecting the stems of the balsam, touch-me-not, *Impatiens noli-tangere* L. may produce the larvae of the local Tortricid, *Argyoploce penthinana* Guen.

Again in Southern coastal areas, the stems of wild cabbage, *Brassica oleracea* L. (and also Brussels Sprouts) may be examined for signs of frass, revealing the presence of the larvae of *Ernarnmonia leplastriana* Curt. within the stems.

The stems of thistles, *Carduus* spp., may be examined for the larvae of *Myelois cribrumella* Hubn., *Phalonia cnicana* Dubld., and *Eucosma pflugiana* Fab. Make sure that you wear a pair of tough gloves for this operation; a sharp knife or a pair of side-cutters may be used for cutting off the stems and carefully splitting them open.

Do not forget to keep an eye open for moss, and to examine it for signs of lepidopterous larvae, also to collect oak galls, birds' nests, etc.

D. Ollevant.

Diptera

Although several families of flies have species flying during this month, the dipterist collector might well devote some attention to the family Borboridae (also known as Sphaeroceridae and Cypselidae). Fresh horse dung and the fresh excreta of other animals attract a number of species. They are active at night and appear in light traps. Some species are to be found in the nests of wasps, ants and small mammals, found in the earth. Several visit carrion, others heaps of garden refuse. cut grass, etc. Decaying seaweed should be searched for several of the coastal species.

The month of December, however, provides long spells of weather unsuitable for field work. It is the time for looking over the work achieved during the year, noting where insufficient data was gathered, planning future trips and overhauling the collection and collecting gear generally. It is most useful to plan a 12 months' outdoor programme. One can never complete the task in a year but progress is quicker and enjoyment can be increased by even the most elementary planning.

Now is the time to consider to what family to pay more attention next year, to decide on some special aspect of fly behaviour such as oviposition, feeding or courtship and mating, to try and study during the year. Examine the field note book and select items worth recording in the *Bulletin* or other entomological journal. Above all, endeavour to identify all your captures correctly and if possible compare them with another collection for verification. There are diptera collections in several museums in this country and there are dipterists in many counties.

L. Parmenter.

The Coleoptera

This month I am discussing the family Endomychidae because some of the species can be found during the winter. There are only six British species and they all feed on fungi, but their requirements are rather specialised and their habitats are all different except for the two of the genus *Lycoperdina*.

Sphaerosoma piliferum (Müll.) is locally common in Southern England but becomes scarcer further north. It can be found in fungi, dead leaves, moss, etc. My own specimens were collected from grass-tufts.

Mycetaea hirta (Marsh.) is perhaps the commonest and most widespread member of the family in Britain. It is often abundant in heaps of decaying vegetable matter, haystacks which have been standing for some considerable time, manure heaps and sometimes in rotten wood. The important factor seems to be that the material should support a growth of mould.

Symbiotes latus Redt. is a rare beetle of the southern half of England. It always seems to be associated with decaying tree-stumps and is usually found in the rotten wood but it may also occur in the fungi which grow in such situations.

Lycoperdina bovistae (Fab.) and *L. succincta* (L.) are both to be sought in or on puff-balls. The former occurs in many parts of Southern England but is very local although it is sometimes abundant where it is found. I cannot find much information about the latter species except that it is very rare and is recorded from the Suffolk Breckland.

Endomychus coccineus (L.) is not uncommon in the south but becomes rarer northwards. It is found under bark of decaying trees, usually beech and elm. Birch has also been recorded and it probably occurs on other trees also. The important thing is that fungus is present. I once found in October a group of about twenty of these beetles huddled closely together under a piece of bark on a beech stump where it is to be supposed they were going to hibernate.

K. C. Side.

JUNIOR NEWS SECTION

Editorial

As a result of a mis-calculation on dates, I failed to get my Junior News in the November *Bulletin*. I apologise to the Junior Members for this neglect. I should also apologise to the considerable number of people who have written to me and have had to wait rather a long time for individual replies. By the time this notice appears I should have cleared off all this back correspondence which piles up while I am away in the summer.

News from Members

By coincidence, I had within the space of days two letters from Juniors writing about ants:

"Several days ago a large number of Common Black Ants invaded the box in which my wasp nest was housed—the nest was being kept for observation purposes. Although I did not see the battle I know the ants did not have a lot of difficulty, because only a few were dead, whereas every single wasp was dead and all the larvae half eaten. Perhaps you could inform me of how the ants killed the wasps, and secondly if this similar occurrence happens in the wild".

This from Christopher Brown presents quite a problem. He does not say whether the wasps had a flourishing active colony—I should imagine not, since I assume that the nest had been removed from its natural situation and placed in the box. I have seen black ants attack caterpillars under natural conditions, and destroy captive butterflies in breeding cages placed out-of-

doors. The technique is one of smothering by sheer weight of numbers—each ant obtaining a firm grip by means of its jaws, so that the cumulative effect is to weaken and finally kill the prey, despite its struggles. If a wasp were attacked in the normal course of events it would just fly off, but if in a sluggish condition on the nest—or perhaps defending the young—it would no doubt succumb to such an attack. Its sting would, I imagine, be useless against such tiny enemies, since the wasp would be unable to grip and thrust. It would therefore have to fight with its jaws—probably killing some of its attackers before finally being overwhelmed.

The observation is full of interest—as to whether like events would occur in nature I just don't know. I doubt whether an ant's nest would have the numbers to defeat a strong wasp colony—but some colonies in their early stages might be wiped out in this way. The letter links up in several ways with points raised by J. M. Porter:—

"I have just been for two weeks' holiday at Overy Staithe on the north coast of Norfolk. The coast there is very interesting, being of salt marsh separated by sand dunes from the sea. Amongst the interesting animals, I found a ladybird, which I took to be the 10-spot ladybird, which was very common; (I hope this is right, I know little about Coleoptera. I would describe it as having orange elytrae with five complete spots on each and another black spot formed when the elytra are together).

"This is very interesting to me as I have never found this species in Dorset, the common ladybird only occurring. Could anyone explain the reason for this? I might suggest that its presence was due to (a) the saltmarshes, (b) the sand dunes. It cannot be due to the sea alone, as I live near the sea and have never seen it.

"I would very much like to have news from anyone interested in ants through a letter in the *Bulletin*, because these are my special interest, and I would be pleased to get in touch with anyone similarly interested. There is great scope for a widespread group on this subject. For instance, the dates of swarming of different species all over the country could perhaps be correlated with the weather and atmospheric conditions.

"By the way, if I remember correctly, many people were forecasting an excess of wasps this summer. We killed many queens in the spring. I have seen hardly any wasps since. Is it too early (6th August) to say if this prediction was wrong?"

J. M. Porter's address is Knapp Cottage, Morcombelake, Nr. Bridport, Dorset.

I should say that wasps have not been unusually common this year—but I think their strength depends not so much on the numbers of queens surviving the winter as on favourable conditions for establishing colonies. Certainly queens were very plentiful this Spring. In June 1948 at Dalkeith, Midlothian, I saw some 10 or 12 nests in a length of about 150 yards of roadside bank. Some were well established, others with only very few workers. At the end of June a very heavy storm destroyed all but two of these colonies both of which suffered quite a setback in numbers. A week or so later both were dug out and destroyed—but whether by the roadman or by animal predator I do not know. I think it is the absence of natural catastrophe, and abundance of suitable food, which determine the strength of the autumn numbers.

T. S. Robertson, *Youth Secretary.*

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BUTTERFLIES OF THE RHEINDAHLEN FOREST

The following paper is a short account of the butterflies on the British List that I observed or captured during a summer spent in the Rheindahlen Forest, West Germany. This woodland area is situated about twelve miles due west of Dusseldorf, near to the Dutch border. The forest is a mixed one though the trees seemed to be grouped into areas of conifers and deciduous trees of which the latter predominate. The woods as a whole were situated on a fairly flat region of land, covering about 30 square miles. The western region of the woods was lower than the rest and formed a marshy area with numerous small streams running through it. The eastern region was the highest and was of a heathy nature; most of the conifer trees were to be found here.

Family Satyridae

Speckled Wood (*Pararge aegeria* L.): was common throughout the woods. Specimens were much smaller than any that I have seen in this country.
Wall (*Pararge megera* L.): was again quite common. The specimens of this species were slightly larger than British ones and were definitely brighter in colour.
Ringlet (*Aphantopus hyperantus* L.): was also common. Only found in the drier areas.
Meadow Brown (*Maniola jurtina* L.): very common in all areas.
Hedge Brown (*M. tithonus* L.): very common in all areas. Some very large specimens seen.

Family Nymphalidae

White Admiral (*Limenitis camilla* L.): a few seen in sunny rides in several parts of the woods. Specimens were all very small in comparison with the British specimens.
Small Tortoiseshell (*Aglais urticae* L.): very common.
Comma (*Polygonia c-album* L.): a few were seen in all parts of the forest.
Peacock (*Nymphalis io* L.): very common.
Large Tortoiseshell (*N. polychloros* L.): only one specimen seen in the marshy area. The summer being a poor one may have accounted for this.
Heath Fritillary (*Melitaea athalia* Rott.): fairly common in one open, grassy area in the middle of the heathy region.
Small Pearl-Bordered Fritillary (*Argynnis selene* Schiff.): fairly common in the marshy area.
Red Admiral (*Vanessa atalanta* L.) and Painted Lady (*V. cardui* L.): both migrant species were widespread but not common.

Family Lycaenidae

Green Hairstreak (*Callophrys rubi* L.): a few specimens were seen in the hedgerows.
Holly Blue (*Celastrina argiolus* L.): common in all areas (both broods).
Small Copper (*Lycaena phlaeas* L.): very common.

Family Pieridae

Large, Small and Greenveined Whites (*Pieris brassicae* L.), (*P. rapae* L.) and (*P. napi* L.): were all very common.
Brimstone (*Gonepteryx rhamni* L.): again very common in all areas.
Orange Tip (*Anthocharis cardamines* L.): very small specimens seen and captured. More common in the marshy area.

Family Hesperiidae

Large Skipper (*Ochlodes venata* Br. & Grey): very common in dry areas and open spaces.
Small Skipper (*Thymelicus sylvestris* Poda): very common.

Of the twenty-five resident species, and the two migrant visitors seen in the forest area, twenty-two are to be found on the British List. Of the other three species only found on the Continent one was a Nymphalid, and the other two were Lycaenids. The season I must point out was not a particularly good one, probably due to a severe cold snap in the middle of May which probably accounted for the low numbers of some of the species observed and also the absence of a number of species that one would usually see in a similar habitat in this country. For example, no Common Blues (*Polyommatus icarus* Rott.) were seen though their foodplant abounded. Also a general tendency towards species having small specimens. This may be due to the environmental conditions but obviously a great deal more study would have to be done to prove this conclusively.

T. R. L. Bigger.

CORRECTION

Antea: 73, third paragraph: for Wicken Fen please read Wood Walton Fen.

OBSERVATIONS ON *SATURNIA PYRI* SCHIFF. Part II

These observations are in conclusion to those published in the May 1959 *Bulletin* and are, I am afraid, a little overdue since the actual time of the year with which these notes are concerned is March 1959. The outcome of just a dozen ova was four male pupae and four females, all over-wintering in 1958-59. I began forcing the pupae on March 4th and did not bother to inspect them for some time as I did not expect the moths to come until after mid-April at the earliest. However, I had occasion to look in on March the twentieth and was surprised to see that the largest female pupa was fully extended and another female quite soft and advanced in development. I examined all the males and was disappointed to see that they were all hard. I cooled the females to retard them and heated up the males. On the twenty-second the males were still hard but the first female looked ready to hatch at any minute. I expected her out on the twenty-third, but when the day came she was still damp and indeed she did not emerge. Perhaps there was a chance for the males yet if they hurried. I sprayed them generously with water to prevent them from drying up and hoped that they would react quickly to the extra heat. By the twenty-fourth the first female was still not out, but by now a third female was soft, yet the males remained as hard as ever, seemingly defiant and obstinate. The next day one male appeared to be developing, though I could not be sure. The first female was at last drying out and when I made my tour of inspection on the evening of the twenty-sixth I saw that she had emerged and was developing. A large drop of fluid glistened on her nose. It had evidently issued forth from the rudimentary proboscis which often shows open just after emergence. Hers was short, beak like, and greenish-white in colour. I applied a test with a piece of litmus paper from an old chemistry set by soaking up the globule. The liquid was undoubtedly alkaline, thus settling the argument as to the nature of the fluid which unlocks the cocoon with finality.

She was an enormous moth, and very dark of wing, though the colours lightened a little with development. Her antennae were the frailest I have seen on a silk moth, even thinner than those of a *Telea polyphemus* L. female. Her abdomen was so huge and distended that the segments between the fur showed through in shining translucent green.

It is usual for moths to rest a few minutes before the wings begin to expand, but Pyri have such a long struggle to get out of their tough hard cocoons that the pulse must be beating very fast and blood is pumped in almost straight away after the escape. She was rather a nervous moth, for she would open her wings slightly at my approach or any small sudden movement, even though they were still soft. I soon discovered that this waving of wings was the typical reaction of Pyri at my approach, though this species does not do it to such a great degree as *Sarnia cecropia* L.

The only developing male pupa was softening up sufficiently quickly now, but two of the remaining females were already far in advance. When her wings were hardened and not before, I took the female on my finger and immediately felt that she had extremely long claws at the end of her feet. They looked sharp enough to puncture the skin. In a normal resting position the wings were spread flat out in a five and one half inch wing span, and drooping at slightly less than 180 degrees. The antennae were pressed against the side of the thorax, out of sight, like those of a hawk moth.

The second female was out on the twenty-seventh. She was smaller than the first and her markings were not so clear and bright. Both moths began calling that night, and continued to do so for three consecutive nights. By the thirtieth the solitary male had caught up and was drying out in the pupa. Next morning I rose early to see if he was out. I lifted the lid and was pleased to see the form of a moth hanging up on the muslin. I raised the lid higher and was most surprised to see a male *Samia cecropia* Linn. sitting there with absolute aplomb. I was so taken aback by this unforeseen emergence that it was some time before I noticed the male Pyri ensconced quietly in the corner. He was fully developed, but very slightly smaller than the females in wing expanse. His colouring was of a more pinky brown tinge in comparison with the purer charcoal and silver greys of the females, and his fur was very much thicker than theirs. There seemed to be no marked difference in the shape of wing, however. I decided to keep him separated from the females until the evening.

Later in the day I made an attempt at drawing the larger of the two females, but as soon as I commenced work she began to fidget more and more. Ordinarily they were very docile but this one just would not keep still. She continued to behave in a most peculiar manner and began to quiver and fly so crazily that I decided there was something wrong with her. By lunch time she had quietened down, thankfully enough without so far having deposited any eggs. After lunch I went to resume drawing her likeness and as I studied her I saw that she had a large drop of clear liquid on her face. I hurried to soak it up with litmus paper and it showed the liquid to be alkaline, the same as that produced when she emerged. But this was several days after emergence, so what was the reason for it? Maybe she had an excess of emergence fluid and had not been able to rid herself of it all earlier. Soon after the first drop had been absorbed another globule appeared from under her proboscis. I repeated the draining off process three times in all before she remained dry. During most of this time she had been walking and flapping about, and in her agitation had laid about half a dozen eggs. Henceforth she stayed tranquil and on seeing her resume calling in the evening I yet hoped for a pairing from her.

According to Fabre, the males assemble to the females between eight and ten in the evening, so at seven o'clock I introduced the fresh male into my largest cage containing the latest emerged of the females. I used the large cage as Pyri are supposed to require plenty of space for the assembling flight. The weather was colder than I would have liked but that could not be helped. I opened the window for a few minutes to let in a breeze of fresh air and everything was ready.

The male began flying at seven thirty; it was already dark. Almost continuously until ten o'clock he careered over the muslin, only occasionally approaching the female. He had not paired by past ten and my hopes were sinking. As a last resort I took him out of the cage and put him in with the other female who was at the top of my one foot cube pointed roofed cage. No sooner was he in the cage than he flew straight to the top and paired up. Recollect now that the paired female had laid a number of sterile eggs the same morning, so here was proof positive that females that have begun sterile egg laying can still pair, a theory that did not seem to be held by some of the earlier entomologists. They were parted by seven thirty the following evening and the same night she began depositing eggs in profusion.

Her eggs were large and off-white in colour, but I remembered that the eggs from which these moths had resulted had been speckled with green and brown, so it seems that they may vary a little. She laid them neatly in rows, like beads strung together; some rows were placed together in two, three or more adjacent lines.

During the previous night a third female Pyri had emerged, and so for the second night I prepared for the male Pyri to pair with a fresh female. This time they were in the small cage at the start. But something was wrong. He seemed to get caught up in the muslin and could not walk. I coaxed him on to my finger only to see that some of his claws were missing, which explained his difficulty in securing a footing. Doubtless the claws were broken when he was ranging over the net the night before. Although he was still flying fitfully he was now useless for pairing and so the females remained virgin, since the other males had decided to lay over in the pupa until the following spring. However, as Pyri is considered by some to be difficult to pair in captivity, with one pairing assured I reckoned that I had been lucky.

Meantime the paired female was laying eggs in abundance; at the rate of eighty or ninety a night. Her total of over three hundred was a good output for an indoor bred moth, especially as the eggs are by no means small in this species. On April the fifteenth I cut open one of the Pyri eggs to see if the larvae were developing, but the green fluid was quite clear and showed no indication of likely cell formation. The moth having deposited them on the second of the month, it now seemed certain that the wretched things were all sterile. On the other hand, not one egg had yet dented in thus showing sterility. Came April sixteenth and several Pyri larvae hatched! But in fact only eight larvae resulted from the three hundred odd ova. It finally dawned on me that the brood had been rendered partially sterile through interbreeding. Nevertheless, the larvae that had hatched looked fine and lively, so much so that they walked everywhere round the tin except on the

leaves. Not one iota of leaf was eaten during the first thirty-six hours and I was getting most exasperated. After all, they were in the same conditions as those of the previous year I reasoned; yet not one bite did they eat. Finally before they starved I turned them loose on some cut hawthorn, hardly caring now whether they lived or died, and of course they lived; that is up to the fourth instar when they stopped eating, this time for good and all.

JOHN H. DRAKE (2976).

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THE ANNUAL EXHIBITION, 1960

It was hoped that the Exhibition in our Silver Jubilee year would be a memorable one. The weather was kind, and the hall was thronged with friends and members from all parts of the country; eight of our Dealer friends provided a display of entomological apparatus, books and specimens. Individual exhibits from members were sadly lacking. For many of us the "Annual" is the day of the year, when we meet old friends and contact members who otherwise would remain only names and numbers, and it would give the finishing touch to a great day if the enthusiasm of the audience could be matched by their exhibits.

For our lecturer we were fortunate in having Mr. M. V. Labern, Assistant Regional Officer for the S.E. Region of the Nature Conservancy. In a most interesting talk he stressed the part that amateur entomologists could play in this essential work. The object of the Board is to maintain typical areas of our countryside complete with wild life, special attention being paid to unique areas in danger of destruction and rare species in danger of extinction. With limited resources, in view of the many demands for land in this country, an effort was made to keep to one area of each type with a minimum of overlapping. Once an area was scheduled for conservation, a plan of 'positive management' was drawn up. An example well known to the entomologist is Wood Walton Fen. Here the water level is controlled, scrub cleared, and supplies of food-plant provided for an imported colony of Large Copper butterflies.

There is great urgency for furthering the work of the Nature Conservancy if a fair sample of our natural heritage is to be preserved for future generations.

Among the exhibits some of the most outstanding were:—

Coleoptera

CRIBB, J. Beetles from the Digne district of the south of France.
FORMAN, M. J. The complete travelling case of a coleopterist.
KNOWLES, N. *Carabus clathratus* Linn. from Eire.
LEWIS, E. A surprisingly large number of beetles found breeding in a garden compost heap.
SIDE, K. C. Local beetles taken this year.

Lepidoptera

ARCHER, N. W. Life cycle of the Jersey Tiger (*Euplagia quadripunctaria* Poda).
BRITTON, R. Additions to his collection during the past season.
BRUCE, C. T. Normal and dark specimens of many British moths to illustrate the spread of melanism in recent years.
COLERIDGE, W. L. British and foreign examples of the Long Tailed Blue (*Lampides boeticus* Linn.).
CRIBB, P. W. A long series of British and foreign Blues and Fritillaries.
FRIEND, M. J. Larvae of Purple Emperor (*Aptura iris* Linn.).
GENT, P. J. Typical lepidoptera of the seashore.
HOSKINS. Coloured slides and large-scale drawings to illustrate the pupation cycle of the Privet Hawk (*Sphinx ligustri* Linn.).
JARMAN, R. A. Heated breeding cage and large broods of Clouded Yellow (*Colias croceus* Fourcr).
OLLEVANT, D. A complete series of British Hawk moths.
SKINNER, B. F. A series of local lepidoptera.

Other Groups

CHRISTIE, L. Damage to collections by Psocid and other larvae.
EDWARDS, S. (MISS). British species of Bees.

LONDON ZOOLOGICAL GARDENS. As in past years, by courtesy of the Governors, a large display of foreign insects and other orders was displayed by G. J. Ashby. The large size and variation of these exotic types made the British representatives seem very insignificant and ordinary. A useful innovation was the clear marking of the queen in the observation hive.

ST. IVES SCHOOL ENTOMOLOGICAL SOCIETY. We were pleased to welcome the biology master and students. They showed a large collection of living insects and other orders, both British and foreign. During the past year many AES members have received surplus breeding material from them, including such alarming subjects as young Black Widow spiders.

Junior Table

Although the exhibits were fewer in number than in previous years, partly due to a poor collecting season, some nice things were shown.

CORITE, D. Selected larvae of the Lappet moth (*Gastropacha quercifolia* Linn.), showing the large variation in one brood.
MESSERVY-WHITING, G. Drawings of British insects.
SHIRLEY, P. Representative collection of butterflies from Malta.
WHAPSHOTT, I. G. Varieties of British Lepidoptera, including a fine specimen of the Comma (*Polygonia c-album* Linn.).
COOTE, R. C. British moths.
DARITES, J. A. Silkmoths from Beirut.

A most popular feature has always been the setting demonstrations, this year three were arranged: Wicher, L. S., on Coleoptera; Robertson, T. S., on macro-lepidoptera, and Castle, M. E., on micro-lepidoptera. All were enthusiastically attended, but time only permitted me to see the last. The speaker said that the two main requirements were perfectly relaxed specimens and a good light to work by. Insects should be kept alive in tubes until wanted, and then killed in ammonia fumes. Setting boards should be covered with Bristol board and, once pinned on the board, the wings of the insect should be manouvered into position with a very fine needle or camel hair brush. The board is moistened before use, and this is sufficient to hold the wings in position. After several insects have been arranged, strips of setting tape are stretched down the board to give a firmer hold. Finally, the difficulty of working under a lens was stressed and, if possible, other methods should be adopted.

R. D. Hilliard.

LETTER TO THE EDITOR

SOME OBSERVATIONS ON THE 1960 EXHIBITION

I have been a member of the AES for over twenty years, and have exhibited at every exhibition since the war, so that these observations are not unmindful of things past.

First of all, with regard to the number of people in attendance, this might well be up to expectations, as conditions became really crowded by the middle of the afternoon with good numbers of young people. However, let us look a little closer, the traders had multiplied, that was very evident, but the middle rows of empty tables told a sad story. St. Ives School and the Zoo produced extensive and very interesting exhibits, and after that a mere handful of individual members had anything on show.

There were talks, of course, and a very welcome cup of tea and cakes; but where were the micro-lepidopterist's exhibits. Where was the Wainscot study group, they stated in January that they would stage an exhibit.

The silk moth rearers were also missing and, for that matter, representatives of most of the other orders too. Something must be done to redress this balance by next year, or instead of an exhibition we shall have to re-name it "The Entomological Traders' Fair" with all due respect to the traders.

P. J. Gent.

FURTHER OBSERVATIONS ON THE BUTTERFLIES OF SOUTHERN FRANCE AND THE FRENCH ALPS, 1960

Following our trip to the Basses and Hautes Alpes in 1959, we undertook a second expedition in 1960 covering the same period as in the previous year, i.e. the last week in June and the first in July. On this occasion we again went to Lyons by train and then drove by car for the remainder of the journey until we returned to Lyons at the end of the fortnight. Instead of making for the French Alps we travelled down the Rhone Valley through Valence and into the heart of Provence. At a stop by the Rhone just south of Valence we caught our first Bath White (*Pontia daplidice* L.) resting amongst the grasses beside the river. On the fennel growing amongst this grass we found two full-fed *P. machaon* L. larvae. We experienced rain showers during the journey, but once we had made our headquarters in the little town of Isle sur la Sorgue (east of Arles) the weather improved and we were able to collect both in the Mountains of Vaucluse and in the territory lying to the south, from Carpentras to Salon, and into the Natural History Reserve of the Camargue.

Generally the season was later than in 1959 due to late frosts in April and subsequent drying winds. Much of the countryside was quite arid and in the areas where moisture existed there was extensive cultivation. This resulted in pockets of insects in the areas fringing the cultivation and the arid areas. One such pocket near the village of Fontaine de Vaucluse consisted of two small meadows below the cemetry and here we found a feast of fauna. The Pale Clouded Yellow (*Colias hyale* L.) was very common and in perfect condition. They appeared to be flying north down the valley and presumably into the Plateau de Vaucluse. There were several *machaon* also, while the slopes swarmed with Holly Blues (*C. argiolus*), freshly emerged, together with a sprinkling of Purple Hairstreaks (*T. quercus*). These latter were flying around the Holm Oaks (*Quercus ilex*) and must have been feeding on these as they were the only oaks in the area. The Scarce Swallowtail (*P. podalirius*) was very common here and sailed down the slopes to hover around the peach and cherry trees in the garden in the corner of the meadows. I netted our first specimen of the Long-tailed Blue (*L. boeticus* L.) sitting on some lucerne flowers. It was a female and we eventually found that almost every group of the Everlasting Pea in this valley and elsewhere in Provence had a few of this butterfly in the vicinity and we were able to collect many ova. These are deposited on the buds of the Pea in ones and twos and are pale blue. I disturbed a specimen of *Catocala electa* from its resting place on the flint wall. Several Painted Ladies (*P. cardui* L.) were also on the wing, one or two Large Tortoiseshells (*V. polychloros* L.) and the Wood White (*L. sinapis* L.) were also observed. Amongst the many continental species were some of the primitive butterfly, the Nettle-tree (*Lybythea celtis*). The palpi of this species are very long and it looks rather like a Snout.

My father had considerable success with beetles, particularly the Chafers and Longhorns, for every head of the dwarf elders growing along the field edges was full of these insects. We found that the Marbled Whites (*M. galathea*) were very large and odd specimens were the female aberration *leucomelas* which has the underside hindwings a creamy white without the black markings.

On the banks of the Sorgue we found colonies of the larvae of *Melitaea cinxia* L. (Glanville Fritillary). These were quite large and emerged in August on our return to England. The webs were on *Plantago lanceolata* L. and within a foot or so of the deep fast-flowing river. In the hotel garden I found larvae of the Gypsy (*L. dispar* L.) feeding on bramble and we netted several males flying near Aix en Provence. The Camargue, a wonderland of birds, gave me my first glimpse of the Hoopoe, but butterflies were few and far between in this world of tall reeds, brackish lakes and marsh. We saw a few migrating Pieridae and several interesting beetles were taken, including the Tiger Beetle, *littoralis*. There is almost a complete absence of flowers in this area and one finds that these are essential to a butterfly population. Despite clear skies and hot sun, collecting was at all times made difficult because of the perpetual wind from the North West which blows in this part of France. Migrating species, particularly *P. daplidice*, seemed to be always flying into the teeth of this wind and areas protected by the mountains always gave the best results. In the water meadows around the village of Isle sur la Sorgue we found the Mazarine Blue (*P. semiargus*) to be very common where the Tufted Vetch occurred. In these meadows, parts of which were subject to

river flooding, there was much Wild Carrot and here I observed *P. machaon* depositing her eggs. The Carrot is at this season very small and almost hidden by the grass. Of the ova collected I bred out some specimens on my return and these were in colour and markings undistinguishable from our Norfolk form.

Wherever there were flowers we found insects and, as in 1959, the lavender fields proved most fruitful. Both the Clouded and Pale Clouded Yellow were here with the Bath White, and we also saw one Camberwell Beauty (*V. antiopa*). I chased this across a potato field and saw it disappear into a willow thicket. This butterfly was newly emerged. In this field we heard the Golden Oriole calling a wonderful flute-like note. Humming Bird Hawks (*M. stellatarum* L.) and the Broad-bordered Bee Hawk (*H. fuciformis* L.) whizzed up and down the rows of lavender bushes and the moths, the Spotted Clover (*H. scutosa*) and the Marbled Clover (*H. dipsacea*) were also quite common. We found the butterflies and moths of the areas south and west of Arles to be fairly representative of the whole lowland area. After five days we drove eastwards through Apt and Forcalquier, stopping to collect in the lavender fields beside the road. The absence of the Black-veined White in Provence was very noticeable, but as soon as we arrived at Digne we found it, though in poor condition. In the meadows above the Thermal Springs we found the Short-tailed Blue (*E. argiades* Pall.) just emerging and several perfect specimens of the Large Blue (*M. arion* L.). The form here is very dark, having a large black border and large spots. The meadows are a breeding area for the Feathered Footman (*C. striata*), a rare insect in Britain. The moth flutters amongst the tall grasses and is easy to net. The tributary of the Durance, which flows past the Thermal and on to Digne, is a centre of butterfly activity at high noon and our best collecting area was on the mud flats beside the stream where the Blues swarm. I was having a bathe in the stream when a flash of purple caught my eye and there alighted on the rocks a Purple Emperor. Draped only with my net I made a vain rush at it, but Mr. Coleridge was more fortunate for as it flashed past him further up the stream he netted it. It proved to be a male Southern Purple Emperor (*A. ilia* L.), a beautiful insect. On these mud flats we also saw the Camberwell Beauty again and took another species of Tiger Beetle. It is here that the rare *Papilio alexanor* breeds and before we left Digne we were able to collect a fine series of this insect. I took one specimen of the Queen of Spain Fritillary (*A. lathonia* L.) and several females of the Heath Fritillary (*M. athalia* L.) for breeding purposes. This area is a fine one for the *Melitaea* and *didyma* and *phoebe* are very common. By taking the road to Bedejun, a road that winds up 3,000 ft. into the mountains over almost un-motorable surfaces, we were able to add other species to our list and found the Black-veined Whites here to be newly emerged. The butterfly *M. alcon*, which has a life history very similar to that of *M. arion*, occurs here in the mountains and flies with *arion*. The Colorado beetle is common on all the potato fields in the vicinity of Digne and some plants have dozens of larvae upon them. Spraying is carried out by the peasant farmers (from shoulder sprays) but seems far from successful. I was interested to find the larvae feeding on the woody nightshade (*Solanum dulcamara* L.) which may be acting as a host plant.

Leaving Digne we took the road through Sisteron and over the Col de la Croix Haute towards Grenoble. By the roadside we stopped at a meadow covered with the everlasting pea and again found the Long-tailed Blue. I think this is the quickest flying of the blues and it is like quicksilver among the flower heads, seldom settling and ranging up and down the fields so that one's eyes ache trying to follow its flight. This may account for the few records there are of this butterfly in England. Specimens netted were all rubbed badly and without tails in most cases. It is easily recognised when compared with its companion, *telecanus*, as it has a paler and less marbled underside and the male has very distinct spots on the upperwings at the anal corners.

We spent the final days of our time in France in the Hautes Alpes at La Grave. We made one journey to the Italian border at the Col du Galibier and here I climbed up the slopes amongst the remains of the winter snows to a height of more than 8,000 ft. The ground was carpeted with the blue of the Gentian (*G. kochiana*) and the Alpine forget-me-not (*M. alpestris* L.) and there were patches of the Alpine Rhododendron with their crimson flowers making a vivid contrast. At this altitude I saw several *P. machaon* and one Large Tortoiseshell butterfly. This is also the home of the Glacier Butterfly (*Oeneis aello*), a sandy-coloured insect marked rather like our Grayling *semele*. Running

at this altitude is hard work and one quickly feels dizzy. There were several of the alpine form of the Marsh Fritillary (*E. aurinea*—form *merope*), which is a diminutive pale form of our species, and also some Glanville Fritillary on the wing. These latter are again smaller than the lowland form and the background is of a greenish tinge. The form of the Large Blue here is smaller than ours and has only the discoidal spot apparent on the upperside while the underside spots are reduced in size.

While at La Grave my father and I climbed up to the foot of the Glacier of La Meije and ran into a terrific rain storm. We sheltered in the mountain refuge for about two hours. The rain stopped and the hot sun soon filled the valleys with steam which rushed up the slopes and vanished over the mountains. It was a wonderful sight to see the speed with which the convection currents moved. As the mist cleared the butterflies came out and we were kept busy. For the first time we took all three species of the Apollo family (*Parnassius*) and the mountain cousin of the Bath White, *P. callidice*. The slopes of the mountains in this area are alive with different species of the *Erebia* group of Satyridae and each altitude seems to support its own species. On the rocks below the Glacier we took *glacialis* and in the meadows opposite the Hotel we took *epiphron* and *stygne* and between these two levels six other species. Rain interrupted us a lot in the mountains but did not prevent us from collecting on any day. When the sun was not out we searched for larvae of the Spurge Hawk or turned over stones for beetles or dug out ants' nests in search of hosts.

On our way back to Lyons we made a stop north of Grenoble for lunch and explored a downland wood that was reminiscent of our Southdown copses. In the ride going up through the wood there were several Silver-washed Fritillaries (*A. paphia*) and I netted a var. *valezina*. This variety occurs fairly commonly and I took specimens at Fontaine de Vaucluse and Digne. There were several of the Continental White Admiral, *L. camilla*, flying among the trees and some of the giant Satyrs, *H. circe*, which looks so like a female Purple Emperor on the wing. On the far side of the wood there was a sloping meadow covered with Thyme and plantain. Here was a lepidopterist's feast, for as soon as the sun came out the meadow became alive with butterflies, and the Large Blue, *M. arion*, was everywhere. We netted a nice series and found them to be very large and, in colour, similar to those of the North Devon and Cornish coasts. The Narrow-bordered Bee Hawk (*H. tityus*) was also here and many webs of the *Glanville fritillary* and *Melitaea didyma*. Mr. Coleridge caught a large black field cricket. When the sun went in I searched under the stones scattered here and there for colonies of the red ant, *Myrmica* species, the host of *arion*. As in all the other areas in France where I have searched, I was unable to find any *Myrmica*. There were four different kinds of ants present. A very small species, two species of black ant and a small species of *Formica* were all that I could find, yet the Large Blue was so common here that it seemed impossible that I should overlook the host ant. There is still a mystery here and it would need a visit early in the season to establish the real host. One clue was the finding of two *Lycaenid* pupae on the underside of a stone covering the nest of one of the black species. When touched, both pupa fell to the ground. I brought these home but neither emerged so that I am not certain that they were the pupae of *arion*.

During the trip we had taken or recorded 147 species of butterfly and several dozen moths. In addition we took specimens of the Ant Lion, a huge dragonfly-like insect with wings as fragile as gossamer; several common and mid-wife toads; a mixed bag of crickets and grass-hoppers and cicadas and innumerable bugs (Hemiptera). In Provence, if the cicadas lull you to sleep by day, the frogs and toads will as certainly prevent you enjoying your rest at night. I expect they still talk in the Hotel Bechard at Isle sur la Sorgue of those mad English who searched the grounds after dark with a hand torch looking for those ventriloquial toads and tree frogs.

Envoi: On our return to England, Mr. Coleridge searched in the Torquay area for some Everlasting Pea on which to feed the two *boeticus* larvae which he had raised from the French eggs. On the plants he discovered he procured four half-fed larvae which looked similar to those he already had. These he bred out and they produced 3 female and one male imagines of *Lampides boeticus*. Perhaps the lesson to be drawn from this is "Search and you shall find". Perhaps the Long-tailed Blue is not such a rare visitor as we have been led to believe.

P. W. Cribb.

LEPIDOPTERA IN CENTRAL CORNWALL, 1960

This year I spent from the beginning of March until the second week in July in central Cornwall. During this period I was able to devote a considerable time to the study of the local Lepidoptera and I would like to record my observations on the butterflies taken. Most of the species were taken between Wadebridge and Camelford, in the Allen Valley, which combines wooded areas with open meadows and country lanes.

PIERIDAE

Pieris brassicae Linn. (Large White), *P. rapae* Linn. (Small White), and *P. napi* Linn. (Green-veined White) were all common. *Euchloë cardamines* Linn. (Orange-Tip) was first taken on 1st May, and from then until the beginning of June was the commonest species in the locality. *Gonepteryx rhamni* Linn. (Brimstone) was the first butterfly taken this season, on 26th April. It was fairly common during my stay in the locality.

NYMPHALIDAE

Argynnis paphia Linn. (Silver-washed Fritillary) was fairly common, as were *Argynnis euphrosyne* Linn. (Pearl-bordered Fritillary), and *Argynnis selene* Schiff. (Small Pearl-bordered Fritillary); *Polygonia c-album* Linn. (Comma) was fairly common, and several specimens of var. *hutchisoni* were taken. Only one specimen of *Nymphalis io* Linn. (The Peacock) was taken, but *Aglais urticae* Linn. (Small Tortoiseshell) and *Vanessa atalanta* Linn. (Red Admiral) were both common.

SATYRIDAE

Members of this family were on the wing from 1st May, and *Pararge aegeria* Linn. (Speckled Wood), *P. megera* Linn. (Wall Brown), *Maniola jurtina* Linn. (Meadow Brown), *M. tithonus* Linn. (Gatekeeper), and *Aphantopus hyperanthus* Linn. (Common Ringlet) were all very common. Less common was *Coenonympha pamphilus* Linn. (The Small Heath).

LYCAENIDAE

Callophrys rubi Linn. (Green Hairstreak) and *Polyommatus icarus* Rott. (Common Blue) were both common.

HESPERIDAE

The only member of this family taken was *Ochlodes venata* Br. & Grey (Large Skipper) which was fairly common.

Altogether 21 species were taken. M. J. Tobin (2743*) (*Bull. amat. Ent. Soc.*, **16**: 92) found *Eumenis semele* Linn. (Grayling) and *Lycaena phlaeas* Linn. (Small Copper) in the same area of the county which makes altogether 23 species which one could expect to find during the course of a season.

A. E. ANDREW.

NOTES AND OBSERVATIONS

Dr. Kettlewell is still urgently in need of records of numbers of black, white, and intermediate forms of different species of Lepidoptera from different districts. It is expected that these results will be compiled and published in the next two years, and for this reason it is urgent to obtain as many figures (not percentages only) as possible. He would be most grateful if you could help him in this work.

A list of species about which further details are required, and a recording sheet, can be obtained from:— Dr. H. D. B. Kettlewell, Genetics Laboratory, Department of Zoology, University Museum, Oxford.

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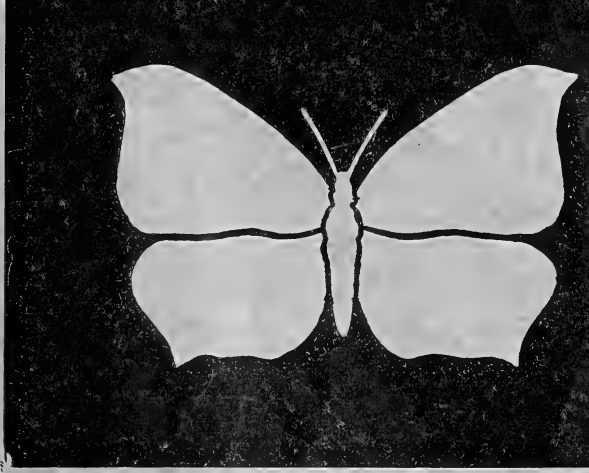

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by W. N LAWFIELD

AES NOTICE
WHERE TO WRITE

Membership applications, offers of help to: D. OLLEVANT, *3 Salcombe Drive, Morden, Surrey.*

Advertisers to: R. D. HILLIARD, *54 Gyles Park, Stanmore, Middlesex.*

Changes of address and non-arrival of Bulletins *to*: B. L. J. BYERLEY, *3 Courtfield Crescent, Harrow-on-the-Hill, Middlesex.*

Offers to lead Field Meetings, exhibit etc., to: F. C. BROWN, *6 Osmond Gdns., Wallington, Surrey.*

Manuscripts, drawings and books for review to: W. N. LAWFIELD, *17 Quarry Rise, Cheam, Surrey.*

Subscriptions (15/- per annum, 10/- for Juniors) to: K. H. BOBE, *50 Winn Road, Lee, London, S.E.12.*

Youth matters to: T. S. ROBERTSON, *38 Repton Way, Croxley Green, Herts.*

THE UNIVERSITY OF OXFORD

A VACANCY exists for an ASSISTANT in the HOPE DEPT. of ENTOMOLOGY, UNIVERSITY MUSEUM. Applicants should be interested in Insects or Spiders. Salary on University Technical Scale according to age (£500 at 21 × £20 to £600 × £25 to £675).—Apply in writing, stating age and qualifications, to: Professor G. C. VARLEY, at the above address.

AES BULLETIN No. 241 JANUARY 1961

SECRETARY'S LETTER

I shall keep on mentioning the Annual Exhibition because I think that it is one of the weaknesses of the Society at the moment, and therefore something must be done about it.

The exhibition, as I see it, serves four main purposes. The first is for members to meet each other, the second is to advertise the Society to visitors, the third is for members to show each other their more interesting specimens, and the fourth is for members to see what the Entomological Dealers are offering for sale.

Members are therefore urged to bring up exhibits for two reasons, firstly to interest other members, and secondly to advertise the Society. Obviously the more members there are in the Society, the greater the benefits to all. Therefore an interesting exhibit will help to bring benefits to the exhibitor.

There will be an AES Exhibition either in late September or early October in the Central London area. The details will be announced as soon as is possible, but this should not prevent members from preparing something for it now. Unless one possesses a car, it is a weary task carrying up a great weight of stuff, but if each of the 200 members who attended the 1960 Exhibition brought something to the 1961 one, then there would be a successful display.

One surprise at the last exhibition was Mr. C. G. Bruce's 'snout', *Plathypena scabra* Fab., a North American moth taken at Lee, and a 'first' for this country. Mr. E. W. Classey, I believe, quickly spotted that the moth was something unusual although Mr. Bruce seemed to be well aware that he had an interesting moth.

In the Council for Nature Intelligence Unit's monthly Press bulletin for November there is a report that Mr. W. M. Condry, the well-known Welsh naturalist, advocates in the *Guardian* that conservationists should not forget country churchyards when seeking sanctuaries for wild life. Although he has birds chiefly in mind, some insects must already use them, and one of these, I suspect, is the holly blue butterfly.

Another item in the same report is of Mr. D. W. Mackie (11 Ashmore Avenue, Cheadle Heath, Stockport, Cheshire) of the Flat Mill Spider Group who reports that *Ostearius melanopygius*, a linyphiid spider thought to have originated in New Zealand, now turns up in all sorts of unexpected places in England. He finds it under damp cast-iron manhole covers in the Trafford Park area of Manchester, and it is also reported from the base of old concrete tank-traps in Essex. The spider also occurs in rubbish or compost heaps and sandhills.

D. Ollevant (1514).

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JUNIOR NEWS SECTION

Editorial

I have had quite a lot of requests for advice and information recently. Although I try to answer these promptly by post, I cannot always do so—because of other demands on my time. However, when possible, I give the information asked for, though often somewhat delayed. Here are some answers that may be of interest to other Juniors besides those who asked the questions.

News from Members

A. Milne Gaskell asks for advice on relaxing specimens which have been stored in papers for 2 to 4 years.

I have had quite a lot of experience of relaxing and setting specimens

Like everything else, results improve with practice, so I would advise anyone doing this to practice on unimportant specimens. Different species give varying results. In general, small specimens are least satisfactory; large, robust specimens can be set almost as well as fresh specimens. I find invariably there is some alteration in the colours—greatest in the blues, which get badly discoloured; least in the hawk moths. Another disadvantage of the smaller specimens is that the wings, instead of moving forward at the "hinge" with the thorax, tend to soften and bend from near the base of the costa—springing out of position after a few weeks of storage.

My relaxing tin is a shallow biscuit tin with a piece of sheet cork bolted into the bottom. This is soaked, when required, with boiling water, and a few drops of "Dettol" are added. The excess water is drained off. Pinned specimens are pinned into the cork. Papered specimens (in the papers if desired) are placed on a low framework of netting to keep them clear of the cork. Some are ready to set after 12 hours, others take longer.

It is important to take out one specimen at a time and set it immediately, as relaxed specimens begin to stiffen within 3 to 4 minutes of removal from the relaxing tin. If a specimen proves to be too difficult to set, it should be replaced and left to relax for several more hours.

Unfortunately, it is best to do relaxing in warm humid summer weather when, of course, one tends to have a lot of fresh specimens to set. However, I do my relaxing in winter—despite the disadvantage that steam tends to condense on the wings, and this is the main cause of discolouration.

Miss Cathrine Neill (3215*) writes from North Berwick: "Could you please tell me who could help me with the identification of a Bumble Bee (*Bombus*)?" I think the best thing to do would be to take or send the specimen to the Royal Scottish Museum in Edinburgh. During the time I worked at this museum, and also when at Leicester Museum, I was always pleased to see and identify specimens. The great bulk of specimens one gets for identification are common ones, but now and again the museum curator is thrilled to find something unusual—often brought in by a junior. Moreover, museums are often interested in the fauna and flora of their own districts and are particularly pleased to have contacts with people in their area who are collecting and observing, particularly among the less common orders of animals. Of course, the one thing they insist upon—the observations *must* be genuine and reliable!

Miss Louise Bennett (3200*) has a problem which emphasises this point: "I am writing to you because I would like some help over a very odd Essex Skipper I caught while on holiday. The Essex Skipper is like all other Essex Skippers, but it has light patches of scales in the inside of all four wings. Please could you tell me if this is a common or a rare variation or if it is another type of butterfly?" Louise also enclosed a very good drawing of the specimen. This drawing and her letter I showed to Mr. A. Goodson, who is curator of the National Collection of British Lepidoptera in the Tring Museum. His comment was that it seemed an interesting variation, possibly a "pathological" specimen, i.e. one with some fault in development of the scales. He could not say precisely without seeing the specimen, and would very much like Louise to call and show him it if she were in the Tring neighbourhood at any time.

T. H. Walsh, among other people, asks how to rear the Fox Moth (*Macrothalacia rubi*). A technique was described in May 1958 by L. G. F. Waddington (169) (*Bull. amat. Ent. Soc.*, **209**: 33). Briefly, the specimens are kept in an outdoor, partly-buried cylindrical cage and fed on bramble or sallow, then allowed to bury themselves in 3 to 4 inches of moss. They are brought indoors in late December or January and placed in a wooden box in an airing cupboard—and sprayed with water twice daily to maintain moist conditions.

Brian Sheen (2596*), who writes me many interesting letters, has just hatched a large black parasitic fly, one inch long, from a pupa of the Elephant Hawk Moth. The fly has a white spot on the thorax—and, Brian says, if anybody is interested they can have a look at it. We have, of course, an AES adviser on Ichneumons, who could give a definite identification. However, I should say this is almost certainly a specimen of *Amblyjoppa laminatoria* a common parasite of the Elephant Hawk.

T. S. Robertson (2417), *Youth Secretary.*

COLLECTING HINTS—January

The Smaller Moths

Writing this in early November makes it impossible to predict what kind of weather there will be in January, and it may be that it will not be fit to do any collecting at all. Certainly October was enough to put grey hairs on the youngest of collectors. If there is deep snow, stems can still be collected for the larvae or pupae there may be inside and, incidently, collectors of other orders should look inside the hollow stems, especially Umbelliferous plants, for I have found many other insects (and spiders) inside them.

If the weather is more reasonable, as I hope that it will be, a search could be made for the flattish larval cases of *Nemotois fasciella* Fabr. The larva feeds on black horehound (*Ballota nigra* L.) but easily falls off when the plant is disturbed, and so should be also looked for underneath the plant. As far as I know, it may only be found in the south-eastern part of England, as far north as Cambridgeshire.

Search for the larvae of those species of the genus *Crambus*, which are grass-feeders, may be pursued throughout the winter. Much is yet to be discovered about their life-histories. Some of the larvae (e.g., *C. perlellus* Scop., *C. pratellus* Linn., *C. geniculeus* Haw., *C. tristellus* Schiff., *C. culmellus* Linn.) feed in a vertical silken tube just above ground level. They may be found by carefully parting the grass stems, or by cutting the grass just above ground level with a very sharp blade. I believe that it was J. C. Tutt who also suggested looking under stones lying in grassy places. Mr. L. Christie and I are working on this group and would always appreciate any correspondence on it. So far, we have found *Festuca* the most productive grass. The life histories of almost all the mountain species are unknown and, as we sit by our firesides, we would enjoy reading of anyone searching for the larvae in the Scottish Highlands during this month.

D. Ollevant (1514).

The Coleoptera

Although this is the least favourable month of the year for the beetle collector, there is nevertheless plenty that can be done whenever the weather allows. By searching under bark the coleopterist can find a great number of different species, among which may be *Rhinosimus planirostris* (Fab.), *R. ruficollis* (L.), and *Vincenzellus viridipennis* (Latr.).

These three somewhat resemble weevils at first sight as they have the head prolonged into a rostrum, but on closer examination it will be seen that their jaws are larger than in any weevil. They belong in fact to the Salpingidae, one of the Heteromerous families, and if the joints of the tarsi are counted it will be noted that the hind legs have only four tarsal joints while the front and middle legs have five.

The three species are found under bark, not only of large trunks but also of smaller branches and twigs. They can also be beaten out of old hedges and trees with plenty of dead wood, although probably not at this time of the year. *R. planirostris* is the commonest and is found throughout the British Isles. The other two are more local and become rarer in Scotland. *V. viridipennis*, in fact, does not extend beyond the south of that country.

None of them seem to be confined to any particular trees. My own records in this respect are:—*R. planirostris*, sycamore, hawthorn and beech; *R. ruficollis*, sycamore, beech and oak; *V. viridipennis*, birch, a dead tree-stump which was not identified, and a fence-post which appeared to have been in position for a long time but which still had some loose bark attached to it.

K. C. Side (2140).

The Diptera

Searching tufts of grass under bracken litter and heaps of leaves will enable a variety of species to be collected. The tidal flotsam of the saltings should be productive too. Mild calm days find such Chironomidae as *Metriocnemus brumalis* (Edw.) and *Hydrobaenus aterrimus* (Mg.) on the wing. *Lonchoptera lutea* Panz., *L. furcata* (Fln.) and *nigrociliata* (Duda) can be found this month running jerkily on the woodland carpet of leaves and in the long grass by streams. The first two species have several colour varieties. It is a good idea to tackle at least one fresh family every year. A small family such as the Lonchopteridae with but seven British species, keyed by Mr. J. E. Collin in 1938—*Entomologist's Monthly Magazine*—should be tackled by every dipterist.

Phaonia signata (Mg.) and *Dasyphora cyanella* (Mg.) are the first Muscidae of the year to show themselves. The latter often hibernates in churches and houses in large numbers. *Heteromyza rotundicornis* (Zett.) and *Scoliocentra villosa* (Mg.), the latter in caves, are Helomyzidae to be found this month. The Sciomyzid *Hydromya dorsalis* (F.) and the Trypetid *Tephritis conjuncta* (Lw.) I have found sheltering in clumps of heather. The Empid *Stilpon graminum* (Fln.) should be sought in grass tufts where one may also find *Collinellula cryptochaeta* (Duda), one of several Sphaeroceridae or Borboridae active in January. In the house *Culex pipiens* L. still flies at dusk.

L. Parmenter (895).

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FOUR WEEKS COLLECTING IN NIGERIA

For the whole of July 1959 the numerous specimens of *Triphaena pronuba* and *Apamea monoglypha* of Brigg, in North Lincolnshire, did not find themselves enchanted by a compelling, fascinating violet light in a back garden. No, their would-be captor was equally fascinated by the possible wonders of the tropics, and by some strange works of fate, was rapidly heading towards the equator! Indeed, my destination was Lagos in Nigeria, and the purpose was to enrich my somewhat motley collection with tropical specimens.

My first stop in Nigeria was Kano, largest city of the Northern Provinces. The first impression on landing was a hot, humid atmosphere, even in the early hours of the morning: my clothes felt clammy and my hands sticky. Vultures flew around the airport, for—as far as I could see—no apparent reason; and camels and traders cluttered up the customs area so that goods could be bargained for. I took a taxi to the railway station, keeping a careful eye on my luggage, which consisted mainly of collecting equipment.

The train compartment was very hot and stuffy, and to make matters worse the fan did not work. Thus to prevent being stewed, I was obliged to stand the grit and dust blowing in through the open window. I did not read but was determined to absorb everything I could from the new scenery. The train passed through 200 miles of dry scrubland, dotted with a sparse scattering of haggard-looking trees. There were large red-brown termite hills here and there, and occasionally, over some stagnant pool several large dragonflies wheeled and circled in the warm breeze. It was the rainy season: this accounted for the presence of these pools, where there would otherwise be dry, cracked patches of reddish soil. Groups of butterflies seemed to follow the train. Judging by their undulating, somewhat regular flight, they may have been danaids, acraeids or Papilionids. The sight of these brown, white and black airborne blobs made me want to pull the communication cord! But one must be patient: I had four weeks ahead of me. The 700 mile train journey had, in fact, provided an excellent introduction to my stay in Nigeria: a few glances out of the window would reveal an entomologist's paradise.

I saw large yellow and black *Papilios*, which were later found to be *Papilio demodocus*. These insects fly at deceptive speeds with a slight touch of grace in their flapping movements: they are really a wonderful sight. There were whites and yellows galore, and sometimes literally clouds of these butterflies could be seen out of the train window. Indeed, this was one of the few occasions when one blesses a slow train! This train also stopped frequently, and when I looked along the railway track I saw hundreds of small brown satyrids, seemingly hopping on the embankment and sleepers. The surprisingly sparse groups of flowers were covered by masses of flapping colours; in fact, one flower head had about a dozen butterflies on it. I noticed that butterflies were very numerous around the native mud huts and villages, rotting fruit and human waste probably being the attraction.

As the train went south, the bushland gradually became dense, and occasional oil and coconut palms could be seen silhouetted by the sinking sun. Night, preceded by a glorious tropical sunset, prevented my seeing any further change in scenery for 300 miles.

The next day presented dull clouds and rain. The vegetation was much more luxuriant, palm trees were numerous, and the bushland revealed thick, muddy streams caused by the heavy rains during the night. I was amazed to see that even in pouring rain one or two hardy lepidoptera were busy drinking juices from dripping leaves (why aren't butterflies in the all too damp climate of Britain as venturesome?) After several hours of gazing at vegetation, lepidoptera, and village huts, I arrived in Lagos. At dusk, I came into Suru Lere,

a suburb of Lagos. I was to live at my parents' flat, surrounded mainly by palm trees and hardly any flowering shrubs. Flowers are apparently uncommon in the rainy season.

Mr. John Boorman, a research worker on tropical diseases carried by mosquitoes, is also a lepidopterist in his spare time in Lagos; he is now co-author of several illustrated volumes of the Nigerian butterflies. He provided me with some very useful advice on how and where to collect and what equipment to use, and gave me some idea of the fantastic variety of Nigerian lepidoptera. I was soon convinced that the best plan was to concentrate on a certain group and I decided to collect Rhopalocera and Sphingidae, a vast field in itself.

Killing butterflies and Sphingidae is best accomplished by using a hypodermic needle containing oxalic acid solution, the liquid being injected into the thorax. At first I used the "pinching" method for butterflies, but the soft, leathery-bodied acraeids and danaids often survived this treatment (killing bottles and jars are usually too "sweaty" in tropical climates) so oxalic acid injection gradually became universal even for small lycaenids and satyrids. Death is almost instantaneous by this method.

In the heat of collecting, there was no time to do any papering on the spot. Thus freshly killed lepidoptera were placed in a metal tin containing insect and mould repellants, such as paradichlorbenzene and thymol. At the end of the day's collecting butterflies were folded separately in sheets of newspaper, because it appears that printing ink is a good insect and also mould repellant (intensly printed paper, such as that of the Nigerian gossip columns, is ideal!) The absorbent qualities of newspaper also help to provide ideal pre-setting conditions, especially in a hot and humid climate.

Hawk moths, or sphingids, may be kept in the same way, but I found that the eyes become flattened and the thoraxes squashed—not a good state of affairs for those particular about setting aesthetics. I kept my moths in a large metal tin, each specimen being surrounded by cotton wool: again using thymol and paradichlorbenzene as preservatives. This method was disastrous because some turned out greasy and others disintegrated. The use of a lauryl mixture had the same effect and caused green shades to turn to brown.

From this experience I infer that moths, especially the large ones, are best set there and then and the setting boards should be kept in a large air-tight setting board travelling case containing silica gel, thymol or creosote and paradichlorbenzine. This method prevents damage of loose insects in transit and saves the trouble of trying to dissolve stiffened wing and leg joints with ammonia or naphtha once the specimens have been taken home. However, carrying setting boards may be a luggage problem.

Some ways in which insects defend themselves from their natural enemies could clearly be seen in Nigeria. Many lepidoptera are inedible, even as far as to be repulsive, and thus characteristic colour patterns enable predators, such as birds, to distinguish them from other edible butterflies. Now birds have very little intelligence, so that throughout the course of evolution these inedible insects have developed similar basic patterns, consisting of not more than three colours, arranged in a striking manner. Inedible butterflies in Nigeria consist mainly of Acraeidae and Danaidae, and nearly all these that I have seen are brown, black and white or just a combination of any two of these colours. The patterns are more or less similar no matter what the genus, so that these insects really mimic one another. This phenomenon is known as Mullerian Mimicry. Batesian Mimicy involves a protected, inedible, or model group, and an edible mimicing group, comprising mainly *papilios* and nymphalids. The most commonly quoted examples are in the mimicry of *Amauris niavius domicans* (a black and white danaid "model") by *Papilio dardanus*, normally a tasty-looking cream, with black markings. Moreover, almost exclusively only the female is the mimic (she may then lay her eggs in peace!). I have taken *domicans*, which is quite common round the forests, and have taken one of its mimics which happens to be a nymphalid (probably *hypolimnas* species). Crytic coloration provides another form of protection. Our Green Hairstreak is a good example because it is hard to distinguish from the leaves it settles amongst. In Nigeria many butterflies are camouflaged in the same way, notable examples being those of the *Charaxes* genus of the Nymphalidae. Sometimes the undersides are cryptically coloured, but a startled specimen may reveal the bright colour of its uppersides, so that it momentarily

startles the intruder, and gives itself the chance to escape. The bright red *Cymothoe sangario* and some of the *Precis* genus of Nymphalidae are outstanding examples presenting this form of protection.

Hence it seems that many tropical butterflies are protected from their predators. But what about the safety of the eager collector, wandering through snake-ridden jungles? In retrospect, I really did not realise how fortunate I was not to have been bitten by one of these deadly poisonous monsters. Apparently I had been wandering for hours on a particular spot where deadly poisonous snakes were abundant. I was making no noise to scare snakes away, and I wasn't wearing any Wellingtons. Moreover, strangely, I saw only one snake throughout the whole of my stay in Nigeria; goodness knows how many saw me! Eventually, I did acquire the habit of stamping my feet and singing when walking through jungle paths. Paying not the slightest attention to this strange behaviour, however, thousands of ants, flies and stinging bugs were always there to make collecting in the tropics a little less romantic.

In spite of difficulties and, perhaps, a few gambles with life, collecting tropical insects is a strange novelty to me. This is a novelty of bewilderment in a field of the unknown. In England, collecting insects is accomplished by knowledge of district, haunts, time of emergence, and foodplant; collecting British insects so precise. In Nigeria I felt like a young child looking at its first butterfly. I found myself giving various butterflies simple but long names such as "Black and Blue Papilio" (only to find later that there were several species of black and blue *Papilios*), the Brimstone-type, "yellows" and the "flashy skipper". Means of identification were very limited, but with help from John Boorman and scanty references from books on tropical insects, I made a rough classification of my captures and later arranged them thus in my collection. (Perhaps, it might have been better to ignore identification and just leave some specimens in the collection as potential rarities or entirely new species!) Even so, their colour and beauty is fantastic, and named or unnamed, each specimen has a tale to tell.

J. P. Kruys (2896).

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OBSERVATIONS ON *ROTHSCHILDIA JACOBAEAE* (WALKER)

Two years ago I successfully reared twelve of these decorative moths from exactly twelve ova—quite a rare achievement, I think, even for the most meticulous of breeders since quite a small brood will almost invariably carry a few fatalities. However, I do not propose to go into the actual method of rearing; instructions adequate for this species are already set down in the *Silkmoth Rearer's Handbook*, though I may mention with emphasis that all larvae must always be kept scrupulously clean. I shall not attempt to describe in detail the stages of their metamorphosis either, for many will already be familiar with the appearance of the species, and I trust that it would make tedious reading anyway for those who are not. It is my intention to set down a few unusual observations which are picked at random from my notes, and of which there is no mention in the Handbook.

Now when observing insect life, one does not only use the eyes, but also the ears and nose. For instance, few people mention that many silkmoths carry a definite scent, discernable by humans, but indescribable in subtlety. To name two species, *Samia cecropia* Linn. and *Attacus edwardsi* White are amongst the strongest scent carriers. Some larvae may also emit a scent singular to the species, and the larva of *Rothschildia jacobaeae* is one of these. But whereas, for example in *cecropia* larvae the scent is always present, in *jacobaeae* larvae the scent is only noticeably given off in the last instar, and then only on being touched. There is, however, no violent reaction of movement to molestation as in the larvae of *Actias selene* Hübner, and yet though sluggish by comparison to the latter, *jacobaeae* are not altogether indifferent to disturbance, for in addition to emitting the strong odour, which may be likened to distilled privet leaves, they invariably hunch themselves up hard and fat with their tiny retractile heads withdrawn and pressed face downwards to the twig. While spinning is in progress a different scent fills the air. To me it resembles a sweet inky smell which fades when the cocoons are complete and dry, but whenever they are sprayed with water the smell is again diffused.

I have found it possible to force *jacobaeae* moths to emerge from the pupa during the winter months. At a temperature of about 70 degrees Fahrenheit they will emerge approximately a month after pupation. This period compares similarly with the pupal period of *Actias selene* Hübner and *Antheraea pernyi*

Guérin-Ménéville kept at a like temperature. *Jacobaeae* will also adapt themselves to numerous other foodplants beside the usual privet. This discovery was made purely by accident when one morning I found that a large *jacobaeae* larva had moved over from its privet twig to a hawthorn branch on which some small larvae of *Saturnia pyri* Schiff. were feeding. The *jacobaeae* was stripping the hawthorn leaf by leaf with obvious relish. Subsequently I added various other leaves to their food box and the results of these tests I include in the table below.

Leaves Offered	Leaves Accepted	Remarks on Accepted Pabula
1. Apple	1. Apple	1. Half of one large leaf eaten
2. Plum	2. Plum	2. About the same as Apple
3. Hawthorn	3. Hawthorn	3. Will thrive on this if privet is not available
4. Oak	4. Pyracantha	4. A substantial amount eaten—should thrive on it.
5. Birch	5. Wallflower	5. Many leaves were eaten, should certainly thrive on it throughout life
6. Sycamore	6. Cherry	6. Only a little eaten
7. Elm	7. Lauristinus	7. Several leaves eaten
8. Pyracantha	8. Forsythia	8. As for 5
9. Wallflower	9. Ash	9. As for 5
10. Willow	10. Lilac	10. As for 1
11. Poplar	11. Laburnum	11. Only a little eaten
12. Ivy	12. Almond	12. As for 5, one of the most popular leaves
13. Cherry	13. Antirrhinum	13. As for 6
14. Lauristinus	14. Sunflower	14. Quite well liked
15. Forsythia		
16. Rose		
17. Ash		
18. Lilac		
19. Laburnum		
20. Almond		
21. Antirrhinum		
22. Dahlia		
23. Phlox		
24. One unknown leaf of a sunflower-type plant.		

From the above list, pyracantha and wallflower might be considered the most useful leaves if privet is not available since they are common and green throughout the winter months.

Out of the twelve pupae, seven were females and five were males. Now this species is reputed to be quite hardy in all stages, and this fact was certainly put to the test when near emergence time, at the stage when the pupa cases were quite soft I foolishly dropped the pupa box on the floor. Several pupae on subsequent inspection bore the marks of the horrible jarring. Three had a white waxy mark on the tip of the abdomen, and two of the softer ones had juices oozing out where they had broken at the bottom. Although at the time they wriggled all the more furiously, I accepted the accident as being ultimately fatal. However, the lacerations dried and healed eventually and, surprisingly, all the moths emerged perfectly. Out of seven possible pairings, six were secured. I found that these moths are far more easy to pair artificially than naturally—artificially they are as easy as *pernyi*. To induce a pairing, the procedure is simply to pick up the male on the finger while he is warming up for flight, and make him walk on to the underside of the pendent

female's abdomen. In this way a pairing is achieved nine times out of ten, even in the daytime. The only other species which will respond in any degree to this treatment are *Actias selene* Hübn. and *Antheraea pernyi* Guérin-Mén.

In my experience *jacobaeae* is the only species in which the male has a definitely different scent from the female. The male seems to diffuse a slight bitter sweet scent like wine, while the female is rather strong and nutty. Naturally the scent of moths disappears with death and dehydration.

The females seem to be rather slow egg layers, and very erratic in the method and time of oviposition. Sometimes eggs are laid without provocation during the daytime, and usually they are dropped in balls of seven, eight, or nine, all stuck hard with a dark-brown musky smelling glue. Only very occasionally do these moths lay their eggs in regular lines.

While securing pairings artificially, I attempted to induce a male to pair with a freshly killed female, and to my astonishment he kindly obliged. There was no doubt that the moths were coupled, for I held the female by the wings between thumb and forefinger and the male dangled by his claspers. After about a minute he separated but almost immediately after he was able to repeat the process, this time the pairing was witnessed by another observer besides myself. Later I tried a male with a female *jacobaeae* that had been dead for some months. He made several attempts at copulation but finally gave up perplexed; although she was dried and brittle he did not seem to realise that she was dead. Not only this, but males have even attempted to copulate with dead females of other species! The first experiment seems to prove that it is up to the female to accept the male in pairing, for a live female may rebuff the advances of her suitor but a dead one cannot. Moreover, there is no substance to the argument that a dead female cannot co-operate in pairing either, since in this case it seems reasonable to suppose that being freshly killed, she was still pliable, and the male was able to manipulate her into position.

As a complete anticlimax, every egg that the six paired females laid was sterile. So the lesson to be learned is never to pair moths of the same generation since the resulting ova hardly ever hatch, and this is the rule with most species, even though they may be willing to pair. Therefore, if one intends to perpetuate the race, one must, of necessity, begin with ova laid by at least two different brooded females. The only exceptions I have recorded where breeding has been fertile is with *Actias selene* and *Antheraea pernyi*, and then only to the second generation when larvae and imagines are greatly debilitated, if they indeed hatch at all.

J. H. Drake (2967).

ACHERONTIA ATROPOS LINN. (DEATH'S HEAD HAWK)

The possession of a living, healthy pupa of *Acherontia atropos* Linn. must be a mixture of excitement and severe apprehension for any of us, so that when I was offered three fine fat ones I could not resist, however expensive.

I received them by post right at the turn of the year, 29th December. What to do with them? That was a problem. I knew that the normal procedure was to force them out as soon as possible and that seemed the safest thing to do.

Nevertheless, three fine wriggly ones held a chance (however small) of a pairing, and that would be the greatest of calamities if no foodplant was available, so I decided to keep them cool and risk losing all three.

Each had come packed in a small airtight Oxo tin which years ago used to come with six Oxo cubes. This, I thought, was about the nearest thing to a cocoon I could hope to get so, one in each bare tin, they were placed in a box, in a cupboard, in a cold unused room away from windows, so that cold, freezing air did not circulate around them in mid winter.

I decided to look carefully at each once a week and whenever I opened each tin I breathed into it just as I shut it again. This, I hoped, kept a moist atmosphere, and I must say they were always very perky as though they were pleased to see me. Most gratifying!

My one fear now was that they might emerge in the tin, so about mid March I removed the tins and set the three pupae on peat and covered over with moss, in a cage on top of the kitchen cabinet, where it was usually quite warm. I took to spraying the moss every two days with water at room temperature, which I kept handy, and hoped for the best.

At the beginning of April, the largest pupa went darker to almost black, and on 11th April parasitic maggots emerged underneath and bedded down into the peat.

The other two were most active and amused me the way they would turn completely over when I lifted the moss to peep at them. Time went on and they got their shower bath every two days. Very clean lot!

About mid May another one darkened considerably and softened, too, which did not look too good. By this time, I had urgent need of the cage for some Silk Moths, so the box containing the two pupae was temporarily placed on top of the cage.

At about 6.45 p.m. on 23rd May 1959 there was great consternation as an *atropos* emerged and fell off the top of the kitchen cabinet. All the family were in the kitchen but I (of course!) and, with its wings unexpanded and its orange and black striped body, it is a wonder nobody fainted. I rescued it, and once in the cage it proceeded to expand its wings with dignity. By 7.45 p.m. the wings were laid back, exposing the well-known Death's Head on the thorax and the very striking forewing markings. It really was a gent.—short white-tipped antennae, very pronounced eyes, and as smart as new paint. As darkness gathered, the insect began to move, and I made my great decision. I did not have the heart to push him in the killing jar, neither did I fancy gutting and stuffing it. I switched off the light and it flew round the room a few times. It was like owning a private fighter plane.

Then I took it on my hand and opened the window, where it combed each antenna once with a foreleg like a soldier stroking his moustache, then quivered a second or two and took off right round a tall apple tree and into the fading light.

A. E. Curran (2657).

LETTERS TO THE EDITOR

PIERIS BRASSICAE

I have been very interested to read in the *AES Bulletin* of the scarcity of this insect in 1960. I brought a dozen larvae back from Ireland in 1959 and of these only three, all females, hatched in May. Since then I have seen hardly any although in August and September I travelled all over the west of England, as far as Penzance. I also spent a week in Eire, in Co. Kildare, and there I found that the larvae were almost a plague on cabbages.

I have reason to believe that the scarcity of this insect was mainly confined to the South of England, and that in other parts it was quite common. Perhaps other readers would like to comment on this.

Another insect which seemed to me to be very scarce this year was *Colias croceus*. I only saw one at Taunton on 5th September.

H. N. E. Alston (2609).

A LATE CLOUDED YELLOW

Although my personal entomological interests are principally concerned first and foremost with the Coleoptera, I made a capture this morning which I think is unusual and unexpected enough to interest the other members of the society who concentrate their attention on the Lepidoptera. While dismantling my bean poles, I caught a flash of bright yellow out of the corner of my eye. It was a Clouded Yellow (*Colias croceus* Fourcr.) fluttering rather unsteadily on a cold north wind. As she (I believe it is a female) settled in the shelter of the goldenrod stems, I secured her, and she has subsequently, I fear, perished in my killing bottle. I imagine that she was unlikely to survive more than a few hours of this inclement weather in any case. I feel that a flying Clouded Yellow at this time of year, 5th November 1960, is a latecomer indeed. Is this not so?

W. J. Eeles (3127).

FURTHER REMARKS ON MELANISM

The fact that I reply to the Youth Secretary does not mean that I claim to be one of "the learned members" but I would like to comment on the remarks about melanism and the evolution theory to which he refers.

Could I say that the Junior Member, Brian Sheen, does not correctly grasp the theory concerning the dark background and its effect on natural selection. No doubt, Dr. Kettlewell will answer for himself, but as one who has been

privileged to be directly connected with some of his work I can say that the theory is not that dark background has necessitated the return to dark forms. The theory of this and all similar protective devices is that mutations are always taking place—all the time and whatever the circumstances. In other words, melanism took place long before there was smoke pollution and will, presumably, continue long after it ends. The effect of the smoke polluted walls, trees, etc., is that the dark mutant has a better chance of survival, be it ever so slight, and it is this fact which continues the process of evolution through the operation of natural selection. Dark backgrounds, therefore, are not the cause of melanic forms having appeared, but they do probably provide the reason for their continuance and increase.

Mr. Sheen may also be interested to learn that at the present time a true recessive melanic form of the Northern Eggar (*L. quercus* var. *callunae*) is spreading through the wild population of the Yorkshire moors and other places. This is the only known example, but it does show that it can happen very successfully. It may well be that dominance will be built up over the generations but to my mind it is by no means necessary. Every student of genetics will appreciate that in the laboratory getting rid of a dominant form is child's play, but what can we do with a recessive?

Finally, might one say how refreshing it is to find junior members taking a real interest in scientific matters, something which surely will help them and benefit their work. Just a word of warning—don't get so bogged down on evolutionary problems that you become like so many of the experts—unable to distinguish between facts and pure conjecture. As a learned man remarked the other day: "Nobody really knows—they only think they do".

W. E. Collinson (247).

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NOTES AND OBSERVATIONS

EUXANTHIS AENEANA (Hüb.)

I caught two specimens of this species microlepidoptera on 26th May and 5th July 1960 at places in Warwickshire 10 miles apart. Charles Barrett states that "so far as is known it only appears in Kent, Surrey, Middlesex and Essex, while Meyrick's 1928 Revised Edition adds only one other county to that list, namely, Sussex. The species does not appear on the Warwickshire county list, and I wondered if any other readers had other records of its appearance outside of the five counties named.

Whilst my captures endorsed Barrett's statement of their liking for railway embankments, his remarks about the species hiding during the day, and not easily disturbed, did not coincide with my experience: both specimens were taken flying in bright sunlight, one at mid-day, the other mid-afternoon, and both were extremely active when caught. I would welcome other readers' observations and records of this species.

A. N. Thomas (2687).

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BREEDING ATTACUS ATLAS

I had heard that to breed the Atlas moth was a rather tricky business, and as a comparatively new junior amateur entomologist this presented a challenge to me, so I sent away for some ova.

When I received the ova I placed them in a transparent plastic box on a blotting paper bed, slightly damp, using four thicknesses of blotting paper. I then placed the box in a heated glass cage, keeping the temperature at a steady 80°F.

When the larvae hatched out, I placed some of the foodplants in the box—privet, rhododendron, willow and fruit tree leaves. If possible, put as many varieties in the box and let the larvae browse over them and make their own choice of the foodplant. In my case, the larvae were fed on privet.

From the time of hatching out until their second change of skin, they were kept in a temperature of 75°-80°F.

After the second change of skin I transferred them to a glass cage, using one of the old fashioned glass domes which our Victorian forbears used to cover their artificial flowers, fruit and stuffed birds. These domes can usually be found if one goes raking around secondhand shops. To keep the necessary

temperature, I found it best to keep a 25 watt bulb burning constantly in the dome, protected by a gauze mesh case. I also kept a pan of water in the cage in order to give the humid atmosphere that they require—even to the point of water evaporating and hanging in droplets on the side of the cage.

When the larvae had spun their cocoons, I left these in the same hot steamy atmosphere for about four weeks, after which I transferred them to another cage with a temperature still of 70°F., but the atmosphere less moist and sprayed them occasionally with a fine mist spray, using luke-warm water. I found one of the small plastic bottle sprayers admirable for this purpose. This ensures that the cocoon does not become too hard and rigid for the moth to escape. If, however, as I found in about three cases, the moth still could not escape, I very carefully cut the top off the cocoon with a razor blade, being very careful not to touch the pupa. I would only recommend this in extreme emergency, but in my case I had success each time, whereas had I left the moth to struggle out on its own I should have lost it.

Mating the moths is a tricky business, and again they require the hot steamy atmosphere and as much space as possible for flight. For this purpose I transferred the moths to a breeding cage 2′ × 4′ × 3′. If several couples are confined together, mating is much more likely to take place.

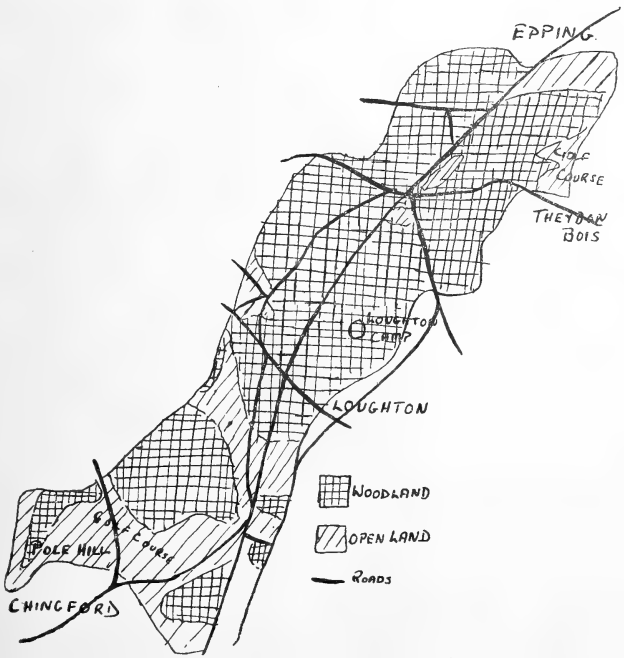
I have some fine specimens of the moths which I set. For this purpose I used a 12″ setting board (home made). I shall certainly try breeding more of this species using the method described.

ANTHONY BROWN (3231).

SOME NOTES ON THE BUTTERFLIES IN EPPING FOREST

Epping Forest is one of the few large wooded areas near North London that is open to the public. The following notes on the butterfly fauna are compiled from records made by R. P. Chapman and myself. All the places mentioned will be found on the sketch-map of the forest.

Pararge aegeria Linn. (Speckled Wood). A single specimen was seen in Hawks Wood in 1956. (A number of live butterflies from Sussex were released near Pole Hill in September 1958 but did not breed.)



Pararge megra Linn. (Wall). This species is common every year in dry open spaces in the forest. It can usually be seen on *buddlia* bushes near the forest in company with large numbers of Vanessids.

Maniola tithonus Linn. (Gatekeeper). It was common at the golf course near Theydon Bois in 1959, but it is completely absent from other parts of the forest.

Maniola jurtina Linn. (Meadow Brown). Abundant every year, in open spaces, in all parts of the forest. (Several specimens have been taken, by myself, on Pole Hill with one or both of the hindwings a creamy colour.)

Coenonympha pamphilus Linn. (Small Heath). Abundant in the same areas as *M. jurtina.*

Vanessa alalanta Linn. (Red Admiral). Common every year. In late summer the patrol "beats" in all parts of the forest, and can also be found feeding on *buddlia* and thistle flowers, in large numbers.

Vanessa cardui Linn. (Painted Lady). Nearly as common as the Red Admiral, in similar situations, in 1958. Very scarce in all other years.

Aglais urticae Linn. (Small Tortoiseshell). Common every year near places where nettles grow.

Nymphalis io Linn. (Peacock). Fairly common most years in the same places as *A. urticae.* This year it was very common near Loughton camp on thistle bloom in August.

Polygonia c-album Linn. (Comma). Common in 1953 in the Hawkswood Area, but it was not seen again until 1959 when two specimens were seen at Loughton. This year (1960) several specimens were seen on thistle flowers near Loughton Camp in August.

Polyommatus icarus Rott. (Common Blue). Fairly common in most years in dry open spaces in the forest, but this year only one specimen was seen in the Hawkswood Area.

Celastrina argiolus Linn. (Holly Blue). This species was first seen, in the forest, in 1959 when a few second-brood specimens were seen at Lippits Hill. This year they became quite common in many parts of the forest, especially in the second brood.

Lycaena phlaeas Linn. (Small Copper). Fairly common in open situations every year.

Thecla quercus Linn. (Purple Hairstreak). Eight larvae were beanten from oak trees in May on the edge of the Chingford Golf Course.

Pieris brassicae Linn. (Large White). Usually common in gardens near the forest and sometimes wanders on to forest land. It was notably scarce this year.

Pieris rapae Linn. (Small White). Abundant in the same situations as *P. brassicae.*

Pieris napi Linn. (Green-veined White). Common in most open parts of the forest.

Euchloë cardamines Linn. (Orange-tip). One or two specimens are usually seen annually in the forest. (It is common near the forest at Broxbourne.).

Gonepteryx rhamni Linn. (Brimstone). Very uncommon. I have seen only 3 specimens: one female in Hawkswood in the spring of 1958, one male on the 28th February 1960 in Hawkswood, one male seen at Epping in August 1960. (I have yet to find a buckthorn bush in the vicinity of the forest).

Erynis tages Linn. (Dingy Skipper). One specimen taken in the Hawkswood Area in 1956.

Pyrgus malvae Linn. (Grizzled Skipper). Not very common but about fifteen specimens are usually seen annually.

Thymolecus sylvestris Pod., *T. lineola* Ochs., *Augiodes sylvanus* Esp. (Small, Essex and Large Skippers), *T. sylvestris* and *T. lineola* are almost equally common in grassy parts of the forest. *A. sylvanus* lives in similar places and is slightly less common.

Fourteen species never seen by myself in the forest were recorded about the turn of the centuries, including *Apatura iris* Linn., *Leptidea sinapis* Linn. and *Lysandra corydon* Poda, as well as several Fritillaries.

I have heard of much more recent records of *Limenitis camilla* Linn., *Aricia agestis* Schiff., *Thecla betulae* (Loughton, 1960), *Argynnis euphrosyne* (Loughton Camp), and *Callophrys rubi* Linn. (Loughton, 1960) in the forest.

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Brazil. No. 5. Morpho violacens, Papilio stenodesmus, Victorina traja, Papilio hectoridae, Smyrna blomfildia, Papilio nephalion, Taygetis tenebrosue, Zaretes strigosa, Anaea stheno, ageronia, fallax—the foregoing ten specimens for $3.00. Post paid.

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VOL. 20

No. 242

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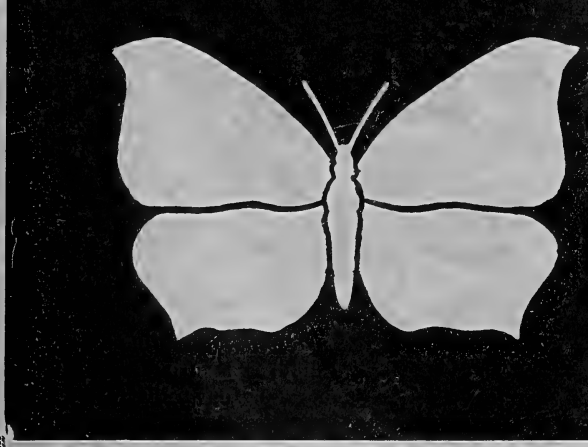
EBRUARY 1961



THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc*

EDITED by W. N LAWFIELD

AES NOTICE
WHERE TO WRITE

Membership applications, offers of help to: D. Ollevant, *3 Salcombe Drive, Morden, Surrey.*

Advertisers to: R. D. Hilliard, *54 Gyles Park, Stanmore, Middlesex.*

Changes of address and non-arrival of Bulletins *to*: B. L. J. Byerley, *3 Courtfield Crescent, Harrow-on-the-Hill, Middlesex.*

Offers to lead Field Meetings, exhibit etc., to: F. C. Brown, *6 Osmond Gdns., Wallington, Surrey.*

Manuscripts, drawings and books for review to: W. N. Lawfield, *17 Quarry Rise, Cheam, Surrey.*

Subscriptions (15/- per annum, 10/- for Juniors) to: K. H. Bobe, *50 Winn Road, Lee, London, S.E.12.*

Youth matters to: T. S. Robertson, *38 Repton Way, Croxley Green, Herts.*

AES

Members can help the Society in several ways:—

(a) By dealing with advertisers and mentioning the *Bulletin*.

(b) By bringing in new members. (Subscription, 12/- per annum. Juniors, 9/- per annum.)

(c) By buying AES publications and suggesting Public Libraries should buy them.

(d) By friendly co-operation with other members.

(e) By taking just that extra bit of trouble required to record happenings of note for the *Bulletin*.

AES BULLETIN

No. 242

FEBRUARY 1961

AN APPEAL

I am very sorry to say that, due to ill-health, I am compelled to give up the duties of Honorary General Secretary.

The vacancy urgently requires filling and any member who thinks that he would like to be proposed for the duty is urged to write to me as soon as possible.

As this Society is for the most part a publications one, the greater part of the work can be done in the home, the exceptions being attendance at the Council's meetings which are held in Victoria (London) about every other month, and the A.G.M. and Annual Exhibition which are held in Spring and Autumn respectively.

The work is chiefly clerical, and advisors on entomological subjects are readily available. I shall be on hand to give advice and assistance, if needed.

The work is valuable experience and there is the opportunity to meet people. The postal and stationery expenses are met by the Society.

I shall be only too pleased to supply any further information that is required. So please write to

D. Ollevant,
3 Salcombe Drive,
Morden, Surrey.

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EDITOR'S LETTER

First of all, I must thank members for the articles and notes that have come to hand as the result of my appeal in the September *Bulletin*. I must however stress the fact that I need many more in order to keep up our twelve page issues, and to provide variety. It would be most helpful if members would write or type on one side of the paper only, and to allow plenty of space between the lines; typed articles need to be double spaced. It takes time to type an article that has been closely written, but one that is properly spaced although written is much more simple to edit and prepare for the printers.

It has been brought to my notice that no report of the 1960 Annual General Meeting, nor the Council Report for 1959, has appeared; for this omission I tender my apologies to members, and include in this number both of these in slightly abbreviated form in order to continue the sequence. They should have appeared last summer.

W. N. Lawfield (2971).

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SECRETARY'S LETTER

Members interested in spending a holiday in Iceland this year should write for information to the Iceland Tourist Bureau, 161 Piccadilly, London, W.1. The holidays are organised for naturalists, and are for a fortnight. The first departure (by air) is on June 2nd and the last on July 28th. The cost, which covers the return air fare, all transportation in Iceland, hotel accommodation and meals and is based on sharing a double room, is from £90 2s to £94 2s (approximately) from London, depending on the type of programme. Single rooms and extra trips are, of course, 'extras'.

The programmes for the Field Study Council's Field Centres are now available. Members are reminded that membership of the AES excuses them from paying the F.S.C. membership fee, if their AES membership number is quoted when writing to the Warden concerned. The normal fee at most centres is £8 a week, but Carnegie Bursaries reducing this amount by £3 may be applied for from the Warden. (This reduction does not apply to school courses.)

The Centres are:—

Juniper Hall F.C., Dorking, Surrey.
Malham Tarn F.C., Nr. Settle, Yorkshire.
Flatford Mill F.C., East Bergholt, Nr. Colchester, Essex.
Dale Fort F.C., Haverfordwest, Pembrokeshire.
Skokholm Bird Observatory—reached from Dale Fort.
Preston Mountford F.C., Nr. Shrewsbury, Shropshire.
Slapton Ley F.C., Slapton, Kingsbridge, Devonshire.

D. Ollevant (1514).

ANNUAL GENERAL MEETING, 1960

The Annual General Meeting, 1960, was held on Saturday, March 26th, at the rooms of the Linnean Society, Burlington House, Piccadilly, London. The meeting was preceded by the showing of two films, one "The Ruthless One" on locusts, and the other "Sardinian Project" on the drive against the mosquito in Sardinia.

As a result of the elections the AES Council is as follows:—

President: R. W. J. Uffen (1660).
General Secretary: D. Ollevant (1514).
Assistant General Secretary: B. F. Skinner (2470).
Treasurer: G. D. Trebilcock (2976).
Assistant Treasurer: K. H. Bobe (912).
General Editor: J. C. Hobbs (2339).
Bulletin Editor: W. N. Lawfield (2971).
Assistant Bulletin Editor: D. Ollevant.
Publications Secretary: C. B. Pratt (784).
Meetings Secretary: F. C. Brown (2414).
Advertising Secretary: R. D. Hilliard (99).
Youth Secretary: T. S. Robertson (2417).
Registrar: B. L. J. Byerley (788).

Councillors: N. Wilding (2528J), N. C. Miller (3189J), K. C. Side (2140), G. B. White (1749), E. Lewis (952), L. S. Whicher (1345).

D. Ollevant (1514).

COUNCIL REPORT FOR 1959

The number of subscriptions paid for 1959 was 719, and adding those members joining from the 1st September, whose subscriptions cover 1960, the final membership for the year was 786, made up of 575 ordinary and affiliate, 205 junior and 6 honorary members.

It will be seen from these figures that the membership has risen by 49 since 1958, this rise taking place in the last three months of the year, and this is most probably due to increased publicity given by the Council for Nature and to exchange advertising arranged by the Society's Advertising Secretary.

The *Bulletin* was published ten times, it being necessary to combine the August-September issue with the October one due to the printers' strike. However, a total of 92 pages was achieved and an improvement was made in the quality of the material. The Council considers that a firm basis has been made on which to build a better *Bulletin*.

The Annual General Meeting was held on the 14th March. It was preceded by the demonstration by Mr. B. L. J. Byerley, F.R.E.S., of some of his fine collection of colour slides of insects.

The Annual Exhibition was held in Buckingham Gate Schools on Saturday, October 3rd. Although this was at a later date than is usual, the number of exhibits was quite good, and the attendance was about average. Over 400 signed the attendance book, but this figure does not represent the total attendance. A number of dealers were present, each being chosen to represent the different aspects of collectors' requirements.

By kind invitation of Mr. D. G. Hall, many members took the opportunity of attending the Field Meetings held by the Entomological Section of the London Natural History Society.

The Society was represented at the London Exhibition held by the Association of School Natural History Societies in October.

Under the chairmanship for the first quarter of Mr. L. S. Whicher, and for the rest of the year of Mr. J. C. Hobbs, the Council met six times.

The sales of publications continued steadily; most of the leaflets, with a few exceptions, averaged about twenty copies for the year. One of the exceptions was No. 28, 'Killing, Setting and Storing Butterflies and Moths', which sold 61 copies; 51 copies of the 'Coleopterist's Handbook' were sold; and 74 copies of the 'Silkmoth Rearer's Handbook'.

The Council feels that the planning which it did in 1958 is beginning to give results, and is determined that before the next Council's Report there will be further improvements to report.

D. Ollevant (1514).

COLLECTING HINTS—February

The Smaller Moths

If there is a mild spell during this month, one of the first of the spring moths will be on the wing in oak woods. This is the day-flying *Tortricodes tortricella* Hubn., the males fly readily about mid-day in the weak spring sunshine, the females are usually to be found by disturbing the bushes.

The heads of wild teasel (*Dipsacus fullonum* L.) are worth collecting for there is a chance of breeding three species out of them, these being: *Endothenia gentianaeana* Hubn., *E. marginana* Haw., and *Phalonia roseana* Haw. The seedheads should be kept out of doors until April and then put into a breeding cage or other suitable place.

Catkins brought indoors for decorating the house may be kept for breeding out any larvae which may be in them. *Eucosma penkleriana* F.R. is to be found in the catkins of hazel (and alder), and there are several species in birch catkins, including *E. ramella* Linn., *E. bilunana* Haw., and *E. nisella* Clerck.

D. Ollevant (1514).

The Diptera

The sun gains in strength and sandy heaths, woodland floors and seaside flotsam are warmed, attracting activity amongst a variety of species, increasing as the month ages. Grass tufts, clumps of rushes (*Juncus*) about pools and in marshes and in woods—squirrel dreys, and draped dead climbing plants such as Travellers' Joy (Old Man's Beard—*Clematis*) should be examined. Shake over a piece of white plastic sheet or newspaper. These habitats shelter Chloropidae such as *Elachiptera tuberculifera* Corti, *E. cornuta* Fln. and *E. diastema* Collin, *Aphanotrigonum trilineatum* Mg. and the Sphaerocerid *Pteremis nivalis* Hal.

About the pools are the Sciomyzidae—*Elgiva sunderwalli* Fries., *Pherbina communis* R.D., *Pherbellia schoenherri* Fln., The Dolicopodidae *Campsicnemus curvipes* Fln. and *C. scambus* Fln. and the Ephydridae *Coenia fumosa* Sten., *C. palustris* Fln. and *C. curvicauda* Mg. Among the flies that have been reared and emerged in February are: *Ceratitis capitata* Wied., a very handsome Trypetid bred from oranges, *Neottiophilum praeustum* Mg., the only British fly in the family, and bred from a Blackbird's nest, and the two Muscids *Fannia canicularis* L. and *manicata* Mg. both bred from a wasp's nest. Possibly these indoor emergences may be earlier than if the flies had been reared outdoors exposed to the weather throughout the winter.

Of the Chironomidae, species of *Hydrobaenus* are still about and newly appeared are *Metriocnemus tristellus* Edw., *Tanytarsus subviridis* Goet. and *T. atrofasciatus* Kieff. The Empid *Clinocera stagnalis* Hal. has been found in this month on rocks of running streams and of Dolichopodidae to be seen are

Hydrophorus litoreus Fln. and *Syntormon denticulatus* Zett. The Drosophilidae such as *Parascaptomyza disticha* Duda and *Drosophila subobscura*

Collin suggest another family which one can start collecting this month. It is often unwise to attempt to identify single specimens and a series of both males and females should be taken. As most keys and descriptions are based on comparisons, it is as well to gather specimens of several species of a family before endeavouring to identify them.

L. Parmenter (895).

The Coleoptera

Leptinus testaceus Müll. is a rare beetle which most collectors do not seem to encounter very often although it occurs in most parts of Great Britain. I mention it this month because the two dates on which I have found it are February 23rd and March 2nd. This may have no significance but it does show that the beetle can be taken at this time of the year.

Its habitat is in the nests of mice and other rodents where it probably acts as a scavenger. It has also been recorded from the nests of bumblebees. Rodents' nests may be found sometimes in heaps of cut grass and weeds which have been lying on the ground since last autumn. A nest is easily recognised as it is made of much finer material than the rest of the heap and it has been pressed tightly together to form a roundish structure about as big as a coconut. If the nest is pulled to pieces over a sheet the insect inhabitants can be taken in specimen tubes. Even if *Leptinus* is not present other interesting beetles may be. Fleas also will usually be present and if the weather is not too mild they will be quite sluggish and can be captured. There are many gaps in our knowledge of the distribution of British fleas and if the collector cannot deal with this order of insects he should send the specimens to somebody who is interested. The records will be much more valuable if the mammal which occupied the nest can be identified.

Other good places to look for mouse nests are at ground level in thick matted grass, in very decayed moss-covered tree-stumps, in holes in banks and in holes under tree roots.

K. C. Side (2140).

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JUNIOR NEWS SECTION

Editorial

My suggestion in September that the Large White butterfly (*Pieris brassicae* L.) appeared to have been almost exterminated by its parasites brought a rejoinder from B. O. C. Gardiner that he thought its comparative rarity this year was due to virus disease rather than parasites (*antea*, p. 99). I am inclined to agree that this is probably so. I saw some half dozen specimens this summer from 24th July onwards, and later in the year my son found a batch of ova on tropaeolum in our garden. These have all pupated and seem to be free from parasites or virus. If any Junior Members (or others) have definite records of this species for 1960 and particularly of larvae, parasites and infection, I should very much like to receive them.

I do not think the species will become rare—its natural resilience and vigour, with migratory tendencies make this seem unlikely in my opinion. However, if it did diminish permanently, think how satisfying it would be to be able to look back and say: "I helped to record the decline in numbers, and observed an important change in the history of an insect under its natural conditions". For myself, I should hate to see such an attractive, even though common species, succumb—but, then, I don't eat cabbage!

News from Members

H. Whitehead (3128*), 20 Siebert Road, Blackheath, London, S.E.3, aged sixteen, wishes to correspond with a pen-friend abroad who is interested in the Saturniidae, with perhaps also exchange of specimens.

J. Muggleton (3253*), asks about the occurrence of the Pine Hawk Moth (*Hyloicus pinastri* L.) in his area—Staines, Middlesex. "On the 8th September 1960 I found a Pine Hawk larva under a pine tree. On the 9th September it had burrowed into the earth to pupate. By the 15th September it had [illegible] I wonder if it has been recorded in this area before?"

The nearest record I can vouch for personally is in Surrey—5 miles from Staines, where this year I took a pair. At the present time I have several pupae reared from ova laid by the female. (If I have any success in breeding from these, I shall be glad to send ova to anyone interested later in the year.) No doubt the species is widespread on the Surrey heaths where pine is common, and extends to the surrounding districts such as Staines—perhaps establishing itself for several seasons, or even more permanently.

T. S. Robertson (2417), *Youth Secretary.*

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LETTER FROM AVIEMORE, INVERNESS-SHIRE

Once more the time has arrived for me to write my annual letter and I fear it will not give a very cheerful picture of lepidoptera in the Highlands during the last season.

After a rather mild winter, with only the minimum of snow in the village, we resumed the interminable drought of last fall. This unseasonable dryness, in addition to delaying the germination of seeds, seemed to retard the emergence of spring moths. There was also a noticeable dearth of the night-feeding larvae, after hibernation.

The first of my bred *Orthosia gothica* Linn. emerged late in March. The rest of the large brood emerged during April but no particularly aberrant forms were reared, although the wild parent was a fine *gothicina* form.

On 21st April I was pleased to see that my ova of *Itame fulvaria* Vill., laid the previous July, were hatching. I later succeeded in rearing eight moths, after having given away eight larvae for figuring and description. I found the larvae very easy to rear, the only losses being in the very early stage when they were left to their own devices, on a patch of bilberry in my garden. Early in May I recovered 16 small larvae from the bilberry patch and thereafter reared them in a small cage. They fed quite openly on the bilberry but if disturbed they fold up and drop into the undergrowth. Early in June they were full fed and pupated in moss, without any apparent cocoon, the first moth emerging on 24th June. On 2nd June, in company with Mr. Wightman, I visited the Glenmore locality to search for larvae. Mr. Wightman, with a specially designed tray, for low foliage, obtained some 25 larvae. I searched the bilberry and found about 18 larvae, all feeding quite openly. We spent about two hours in the locality. This moth's life history consists of 10 months as an ovum, 6 weeks as a larva and 3 weeks as a pupa.

On 24th April, the first of my *Endromis versicolora* Linn. started to emerge. In 1958, 36 larvae were reared to the pupa stage but none of them emerged in 1959. Eventually, by May 5th this year, all had successfully emerged. Several females were paired with wild males, assembled locally, and I am pleased to say their offspring have helped to supplement the local race. It seems to be fairly widespread in Badenoch but is nowhere common.

It was not until 6th May that *Aparta cordigera* Thunb. was first seen on the local fence posts. It was found to be easy to obtain ova by placing a female in a roomy cage with blossoms of bearberry on the floor. The cage was placed in sunshine, and between short flights ova were laid on the bearberry. The moth fed on the blossoms quite happily. Some ova were laid on the stems but most of them were laid on the leaves, both upper and lower surfaces.

I visited Loch an Eilein, a nearby habitat of *Callophrys rubi* Linn. on 16th May. After patiently watching several females, I at last noticed that cowberry blossoms were chosen for oviposition. At that date, the blossoms are not fully developed, and consequently the butterfly is unable to detect them by smell. The female settles on a sprig of cowberry, head upwards, and explores the foliage with the tip of her abdomen. If she finds no blossom she flies off elsewhere, until a spray of blossom is found, she then lays one egg inside the spray. While searching for likely sites, she appears to be ovipositing on the leaves, etc., and these actions had deceived me for some time.

Further to last year's discovery of *Tiliacea citrago* Linn. near Feshiebridge, I decided to search for the larvae in late May. The larvae feed only at night on the foliage of lime trees, descending the trunk before daylight and concealing themselves among the rubbish and young shoots at the base. A very small minority spin two leaves together and remain hidden among the foliage during the day. Possibly a greater proportion do this where the trees do not

provide much cover at the base. The trees I searched, however, were well developed and had numerous crannies at the base, filled with dead leaves and young lime shoots. I had no difficulty in rearing a fine series. Pupation took place in cocoons spun up among moss.

Early in June, a further addition was made to our local list, *Callimorpha jacobaeae* Linn. I regret to say, however, that a local bat found it first. The trap in the garden contained one hindwing and nearby, on the grass, was a forewing. Both were in good condition, so undoubtedly a fresh specimen visited Aviemore. I hope, in due course, to find the larvae on the local ragwort, although so far there has been no trace.

On 20th June, I journeyed to Findhorn, on the Moray Firth, with Commander Harper. There were two objects in view: one, to obtain *Pyrrhia umbra* Hufn., which we knew occurred there, having found larvae in some numbers there the previous August; two, to search for *Arenostola elymi* Treits., whose foodplant we had seen there previously. We searched for larvae or pupae in the roots of lyme grass but failed to find any evidence of its presence. Eventually it became dark enough to try dusking for *P. umbra* (10.30 p.m. B.S.T.). After about 20 minutes searching, I caught a freshly emerged female flying low over the ground. Later, Commander Harper captured another, under similar conditions. The wind was blowing very strongly from the sea and conditions seemed hopeless but we decided to try one m.v. lamp in some sheltered spot. In spite of the gale, another *P. umbra* soon visited the lamp and thereafter, at about 10-minute intervals, others arrived. At about 12.30 a.m., the gale died away and Commander Harper strolled away to search for *P. umbra* among the rest harrow. While he was away, I was surprised to see a fine specimen of *A. elymi* sitting on the sheet. We later searched the lyme grass and found several others. This is the furthest north record for the species. I intend, subsequently, to search for pupae in the bases of the lyme grass.

In August, I again visited Findhorn for larvae of *P. umbra* and now I have six pupae which I hope will produce moths next June. There are many difficulties in rearing it, even from nearly full grown larvae, for me. I have no supply of rest harrow or knotgrass available, except for a small patch of the former, which I planted in the garden, last fall. I thought a quantity, kept in a closed tin, from Findhorn would suffice but, although it remains fresh, the leaves become detached from the stems and are useless. Furthermore, the larvae seem to prefer, and thrive better on, the seed pods which are not present on my garden patch. The greatest drawback, however, is that *P. umbra* larvae are cannibals.

From late June onwards, the weather was most unfriendly with incessant rain and dull weather. Trap records were poor and moths were noticeably scarce, some of our usually common local species were hardly seen at all. *Apamea assimilis* Doubl. was found in a fresh locality near here, which promises good results in future years and will, I hope, oust Dalwhinnie from its proud place as the centre for positive results.

A rare migrant, not previously recorded from Inverness-shire, *Heliothis scutosa*, Schiff. was taken by Mr. Skinner, in his trap in my garden early in August. A few days later, a female *Celerio livornica* Esp. was found near Kingussie and taken to Commander Harper. I have had various moths brought to me, but it never seems to be my good fortune to receive anything of interest, the most intriguing moth being one described to me over the telephone as having "pinkish wings with green spots and green eyes". I drove off in great haste to see the lady who had this rare specimen. I brought away the prize—a Grey Chi, *Antitype chi* Linn., a species that, for some peculiar reason, has not, until this year, been very common around Aviemore, although common elsewhere in Badenoch.

The months of July, August and September were notable for rain and cold nights, with only the occasional fine day. Trap records were sparse, and late in August I had the misfortune to burn out the choke and consequently had to do without my trap for about a week. I doubt very much whether this was any great loss, as the weather was particularly foul at that time.

Late in September it did seem as though sunshine was going to come back with more settled weather. Choosing a suitable time, when business was quiet, I decided to investigate Braeriach, the second highest in the Cairngorms (4,246 feet). Having driven as far as possible in the car, I set off up lonely Glen Einich. The first part of the tramp is through the remains of old

Caledonian Pines, with a carpet of bilberry, where one of our colonies of *Itame fulvaria* Vill. is to be found. The rough road rises gradually and, after passing between the massive mounds of Carn Eilrig and Cadha Mor, towering 1,000 feet above it, leaves the trees behind and wends its way over open moorland. The huge mass of Braeriach, with its impressive corries, looked down on my pygmy form trudging along beside the Beanaidh river, towards Loch Einich at the head of the glen. The huge moraine heaps on the west side of the Beanaidh, bear silent witness to glacial action in the distant past, Loch Einich being the last remains of the glacier which scoured out the hollow between Sgoran Dubh Mor and the western slopes of Braeriach. Steadily the rough road rises to 1,700 feet and ends by the remains of a bothy just north of the loch. I set off up the deer stalkers' path into Coire Dhondail, a grim hollow in the side of Braeriach, surmounted by precipitous crags at 3,250 feet. The views down Glen Einich were superb, when I stopped—as I often do for breath—and looked back the way I had come. I found the last few yards of this path a little frightening, where it passed diagonally across a rather steep face of the crag, overlooking a drop of a few hundred feet. The path was not well defined here, and I temporarily lost it among some mossy wet boulders which were by no means firmly anchored. However, I breasted the cliff and emerged on to a more gentle rise to the summit plateau. The first of the summit cairns, of which there are four, was just over a mile away and about 900 feet higher. Soon after entering on the last mile, the weather played a scurvy trick. The clouds descended all around me and a cruel wind stung my face. There is no track at this stage, just an incline of detritus, boulders, moss and a straggly growth of grasses. I could see nothing beyond about 20 yards. I plodded on upwards, hoping the cloud level would rise in what I hoped was the right direction. Having arrived on what seemed a flat area, I presumed I had reached the summit plateau but could see no cairn. After a few minutes, a slight thinning of the mist revealed a cairn, some distance to my left. I soon reached it and could see down into Glen Einich, which meant I had missed the first cairn but had reached the Einich Cairn (4,061 feet). I decided to rest on the lee side of the cairn and partake of a dram to protect myself from the arctic wind. The rest had to be of short duration. I just had to get out of that biting wind, so I plodded on to the north cairn and looked down over Speyside, finally descending, after many vicissitudes, once more into Glen Einich. Very much to my regret, I was unable to appreciate the views to the east, from the summit. Everything was hidden in mist, but it will all still be there for longer than I shall be able to see it.

The season is drawing to a close and we shall soon be left with the Highlands to ourselves. The frosts have come, the leaves are all changing colour, the stags are roaring, and very few moths are about. Slainte mhath, and Good Hunting.

PHIL LE MASURIER (978).

THE JERSEY TIGER AT PAIGNTON

Although living so near the haunts of *Euplagia quadripunctaria* Poda (Jersey Tiger), this insect has been pretty successful in eluding me. On many day visits to Paignton and district I searched for it in areas where it was known to occur, without success. Possibly I was a little early. I eventually found a male and female sitting on ivy leaves in the grounds of the Roundham Hotel on August 24th, 1957. Although these produced eggs and most of the larva survived the winter, none reached pupation.

I was all the more keen, therefore, to discover the Jersey Tiger while on a fortnight's holiday at Paignton in August 1959. On this holiday most of our time was spent on the beach at Goodrington, a district of Paignton, swimming and a restful holiday being our main objective.

The Jersey Tiger, however, was never far from our minds, and walking to the beach in the mornings and strolling through the public gardens in the evenings, our combined gaze was concentrated on every possible daytime resting place. Having found my only two on ivy, resting in plain sight, I had a theory that the leaves of this plant formed their favourite sleeping quarters.

On my second day, August 9th, a single female was found, on an ivy-covered bank on our way to Goodrington beach. And the next day three were

found on the same bank. Thereafter, specimens were found every day. No special efforts were made, as all were perched in plain sight, on the upper surface of the leaf, with no attempt at concealment, and once one became familiar with their appearance, were easily found. Nevertheless, the cream markings on the black forewings break up the outline effectually.

Many people have told me that *E. quadripunctaria* Poda is a day flier and often seen in flight on sunny days, particularly in the Preston Down, Cockington Lane areas. However, during our fortnight's stay, of which eleven days were sunny, no *E. quadripunctaria* Poda were seen in flight. I feel sure this insect is not a day flier by nature. The few I have seen in flight have obviously been disturbed and invariably they sought a new resting place, often selecting an unsuitable one and taking further flight. The reasons for disturbance are probably twofold. Firstly, disturbance by passers by, or by cars, from their favourite perch on ivy growing on the tops of walls and gateposts. Secondly, and probably more commonly, disturbance by the sun as it reaches them in their exposed resting places. This is constantly taking place as the sun moves. Although they have been found sitting in sunlight, it is plain that they prefer shade or partial shade. Partial shade, that is light filtering through foliage, is a great help to their particular form of camouflage.

Even taking into account the fact that ivy is easy to search and that I concentrated on it, I feel that it has been proved the favourite roosting place, and always in the middle of a leaf, fully exposed and no effort made at concealment. It clearly relies on its camouflage, effective enough in its breaking up of form and its resemblance to the highlights and shade of the shiny ivy leaf, and, in the last resort, to its warning colours. Hence its quickness to take flight and thus display its underwings. Actually it is not so quick to take flight as some text books inform us. One has to have the box or net practically on its back before it is off, except after resettling, when it is, of course, already wary.

Of the thirty-five seen during the fortnight at Paignton, twenty-two were on ivy, three on stone walls, three in flight, one on elm, one on palm, one on fig, one on box, one on tamarisk, two on grass. Which, to my mind, proves a considerable preference for ivy. Towards the end of the period. August 22nd, *E. quadripunctaria* Poda was getting decidedly scarcer. In the lovely weather of 1959, this was probably earlier than their usual season. It is certainly not a rarity here, particularly in the Roundham-Goodrington district, my principal search area, where it is obviously an urban moth, preferring the vicinity of houses and gardens. Although the female lays eggs generously in captivity, I find the rearing of the larva a difficult feat. Of the many eggs laid, only one reached the pupa stage, though many survived the winter.

R. G. Haynes (1545).

DIPTERA TAKEN FROM A FLOATING TRAP

I was most interested to read J. Vincent's article in the November bulletin regarding the insects taken in a minnow trap. It is a method which I will most certainly be trying out myself. Last summer I was also studying the insect fauna of a pond, but I had to confine myself to a trap of the floating type which retains any insect emergent from the waters beneath. These traps are easily constructed on a variety of patterns, the simplest—the type I was using—being a box with the bottom removed and covered with a 'tent' of butter muslin. To remove the insects from this the entire contraption was lifted from the water and placed on one's shoulder with one's head inside. One could then collect all the specimens resting in the 'ridge of the tent' by means of an aspirator.

The trap was set out on 15.viii.1960 on a rather stagnant woodland pond of about half an acre in extent. This pond, either the remains of an old ironstone working or a sandstone quarry, is on rather acid soil in the Weald of East Sussex at Robertsbridge. It contains a number of dead or dying willow trees, but practically no water-weed. A few roach are known to be living in it.

In all, 686 insects were taken between 15.viii.60 and 3.x.60. I have only attempted to identify the diptera present, but a few mayflies were noted and one minute hymenopteron.

I give below a list of the species caught with the first and last dates on which they were taken, the numbers of each sex and the overall total for the period during which the trap was operative.

	Period over which examples were taken	*Total Nos. of Males*	*Total Nos. of Females*	*Overall Total (Both Sexes)*
Family: Culicidae.				
Dixa aestivalis Mg.	5/9	—	1	1
Dixa amphibia Deg.	18/8-9/9	5	1	6
Chaoborus pallidus Fab.	15/8-21/8	7	1	8
Chaoborus spp.	15/8-13/9	15	55	70

(Both *Ch. crystallinus* Deg. and *Ch. flavicans* Mg. were present, but I was unable to separate them on each occasion that they were taken due to lack of time.)

Family: Chironomidae.				
Pentaneura binotata Wied.	16/8-22/8	1	3	4
P. schineri Strobl.	18/8	1	—	1
P. falcigera Kief.	23/8-21/9	6	2	8
Anatophynia varia Fab.	21/8-3/10	8	4	12
Tanypus punctipennis Mg.	15/8-21/9	78	87	165
T. vilipennis Kief.	15/8-21/9	3	13	16
Procalidus choreus Mg.	21/8	1	—	1
Hydrobaenus (*Limnophyes*) sp.	2/9-3/10	3	22	25
Cricotopus sylvestris Fab.	24/8-3/10	1	7	8
Cricotopus tibialis Mg.	24/8-3/10	12	15	27
Corynoneura scutellata Winn.	16/8	—	1	1
Chironomus (s. str.) spp.	19/8-3/10	75	101	176

(From these males of *Ch. dorsalis* Mg., *Ch. longistylus* Goetghebuer, *Ch. cingulatus* Mg., *Ch. aprilinus* Mg., and *Ch. riparius* Mg. were separated in varying numbers. The females are almost inseparable and no attempt was made to identify them.)

Ch. plumosus L.	29/8	1	5	6
Ch. nervosus Staeger.	5/9-9/9	3	—	3
Ch. notatus Mg.	17/9	1	—	1
Ch. parilis Walker	29/8-17/9	11	12	23
Ch. (*Glyptotendipes*) *glaucus* Mg.	16/8-21/9	13	14	27
Ch. (*Endochironomus*) *impar* Walker	15/8-13/9	7	2	9
Ch. (*Microtendipes*) *chloris* Mg.	9/9-13/9	2	—	2
Ch. (*Polypedilum*) *nubeculosus* Mg.	31/8-17/9	2	—	2
Ch. (*Pentapedilum*) *sordens* van der Wulp	5/9-17/9	4	3	7
Ch. (*Pentapedilum*) *tendipediformis* Goetghebuer	17/8	1	—	1
Tanytarsus spp.	19/8-21/9	20	27	47

The above list contains only those species of whose identity I am certain. Besides these there were a few more Chironomids, one Psychodid, only one Ceratopogonid and a few Cyclorrophous species. Next year I hope to be able to conduct a similar experiment over a longer period and with more organization, for although the results of a fairly short period have been most interesting, I originally set the trap out merely in passing and was forthwith swamped with material to a degree for which I was not fully prepared.

If any other members feel inclined to carry out similar experiments—and they could be very useful in adding to our knowledge of pond-life—I will give what little help I can. The gnats and midges are not a particularly easy group and a good microscope is essential, but with perseverance one fairly soon becomes familiar with them and the scope for making original observations is greater with a less known group.

P. Roper

VENATION VARIATION IN SATURNIIDAE

This is a subject which is hardly ever mentioned in text books supposedly because extreme examples of such variation are very rare—far rarer than variation of colour and pattern, since the veinal construction is a far more permanent and rigid feature in the make-up of an insect. However, it is probable that substantial percentage of these aberrations is likely to pass unnoticed. It would appear that the factor which influences such a change is controlled genetically rather than environmentally. I have been fortunate enough to have had two examples of unusual veinal structure in my possession. The diagrame will show the aberrations more clearly than a mere verbal description. In both the abnormal specimen of *Antheraea pernyi* Guérin-Mén. × *Antheraea roylei* Moore hybrid, and the *Telea polyphemus* Cramer, the irregularities are exactly symmetrical so that it has only been necessary to figure half of the insects. Figure 1 represents the typical veinal structure of all species of Saturniid moths, both male and female. You will see that the abnormalities are by no means slight, but perhaps the most freakish feature is the subdivision of the fourth hindwing vein in the female hybrid, in which the nervure branches into two immediately before reaching the margin, as if in compensation for the missing eighth vein. I should be interested in hearing of any other records of irregular veinal structure and any theories as to the cause of these circumstances.

JOHN H. DRAKE (2967).

Fig. 1

ANTHERAEA PERNYI
NORMAL MALE

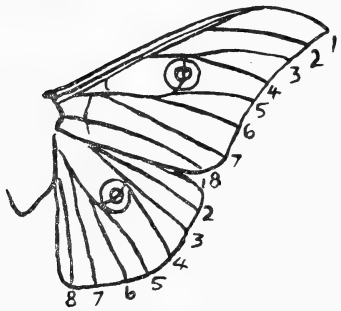

Fig. 2

A. PERNYI × A. ROYLEI
ABNORMAL FEMALE

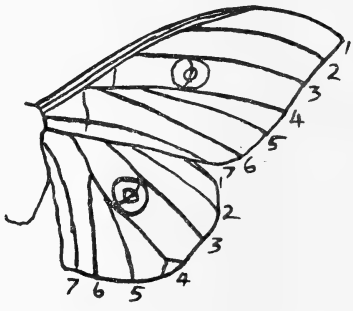

Fig. 3

TELEA POLYPHEMUS
ABNORMAL MALE.

COMPARISON OF CAPTURES OF MOTHS AT M.V. LIGHT TRAPS AT LANCING AND CHESTERFIELD

I was very pleased to see Mr. Cramp's list of moths taken in an m.v. light trap at Lancing (Sussex) as it gave me the opportunity of comparing the dates of first appearances of certain species at that place with those obtained in a similar way at Chesterfield (Derbyshire) during the same season. The two towns are about 200 miles apart; one is on the coast, the other is 100 miles from the sea in any direction, so some difference could be expected.

Mr. Cramp thinks that reliable phenological evidence can be obtained only from those species of which more than 100 specimens are captured in one season. Although 93 species on his Lancing list were also obtained at Chesterfield, only nine fulfilled this condition of abundance at both places. When I had calculated the differences in the dates of first appearances in the traps of these nine species, I found that on average the moths in the Lancing area were captured 12·5 days before they were taken at Chesterfield. In other words, the season was nearly a fortnight in advance at the southern site. For my own satisfaction, I also calculated the mean difference in times of first appearances of all 93 common species and produced the information that Lancing lepidoptera were 11·9 days earlier than those at Chesterfield. The difference in the two figures is not highly significant.

There are some striking differences in the times of first appearances of a few species: Square Spot Rustic appeared at Lancing 59 days before one was taken at Chesterfield, while Buff Ermine was 32 days later.

Although Mr. Cramp did not state what power of illumination he used in his trap, I guess that he used a 125 w. m.v. lamp, from the low proportion of geometers in his list. My trap is illuminated by an 80 w. m.v. lamp. This power probably takes a more balanced sample of the moths in the vicinity. In spite of the difference in light sources, and probably in the type of trap used, a comparison of the results obtained is still of value. These may explain some of the differences in the total numbers of moths captured but the dates of first appearances will not be affected.

The table below shows the dates of first appearances and the numbers of specimens of the nine abundant species taken in light traps at the two different locations.

Species	Locality	Total	First Date	Difference in days
A. exclamationis	C	2,037	May 21	+3
	L	23,529	May 18	
A. c. nigrum	C	126	June 12	+28
	L	153	May 15	
T. pronuba	C	583	June 16	+31
	L	517	May 17	
H. chenopodii	C	396	May 18	+14
	L	186	May 4	
A. sordens	C	332	May 21	0
	L	148	May 21	
A. monoglypha	C	2,871	June 4	+4
	L	1,265	May 31	
L. pallens	C	118	June 23	+2
	L	848	June 21	
O. luteolata	C	115	May 26	+22
	L	115	May 4	
H. lupulina	C	238	May 12	+9
	L	801	May 21	
			Total	113
		Average difference		12·5

C:—Chesterfield results L:—Lancing results

There are many more interesting differences in the lists of captures at these two places which merit further consideration, but I will content myself with the few I have given above. I had always believed that moths appeared at least a month earlier on the South Coast than in the Midlands, but the facts do not support the belief.

J. H. Johnson (1040).

NOTES AND OBSERVATIONS

AN UNUSUAL TRAP FOR COLEOPTERA

While searching a compost heap for Coleoptera recently, I noticed a number of grapefruit-skin halves. On shaking them over the sheet I was amazed at the large number of beetles precipitated upon it. It struck me that the skins of other citrus fruits might also be used as a trap for various species of Coleoptera. On experiment this was indeed found to be the case. The skins were placed in a sheltered spot to avoid the worst elements of the weather, upside down. I found that there was a succession of beetles using them. Firstly, the smaller Carabids used them as shelter; secondly, the usual species of Atomaria and Lathridiids feeding on vegetable refuse; thirdly, after a while the skins acquire a rich coat of fungus which, of course, has its own fauna.

It seems to me that these "traps" might well prove to be a rich hunting-ground for small beetles. I should be very interested to hear of any rare finds from AES members who decide to give this method a try.

Finally, I append a list of species collected from grapefruit skins after only two days. It is a short list, but bearing in mind the short time for which the trap had been operating, is quite a good haul.

Oxytelus laqeatus Mm.
O. rugosus F.
O. inustus Gv.
Proteinus ovalis S.
Megarthrus depressus Pk.
Atomaria fuscata Sch.
A. ruficornis Mm.
Nitidula carnaria Sch.
Lathridius nodifer Ww.
L. lardarius DeG.
Melanophthalma gibbosa Hb.
Anthicus floralis L.
Myllaena sps.
Aleochara sps.

R. G. Thimann (2924).

FORCING LAPPET LARVAE

During Winter, 1959-60, I bought a dozen *Gastropacha quercifolia* Linn. (Lappet) larvae from a dealer. They were about one inch long, and all were uniformly brown except for one, which had creamy camouflage streaks on its back. They were placed in an outdoor shed to continue hibernating.

On 13th March I went for a cycle ride and, by the side of a lane near Waltham Abbey, Essex, I noticed some hawthorn in leaf. I picked some branches which were fully out and took them home. For 1960, this hawthorn was very early, possibly because it was a hedge, trimmed every year in the Autumn. On arriving home the branches were put in water, the spaces at the top of the water-jar being filled in with screwed-up newspaper, and then I introduced the Lappet larvae into a mosquito-netting cage containing the watered leaves. The cage and inmates were placed in front of an electric fire, and after a few days the larvae began to feed, mostly at night, but taking nibbles at the leaves during the day as well. When the larvae were larger, I covered the cage with newspaper during the day. I must point out that the electric fire was only on during the day.

The Lappet larvae fed up fairly quickly, and on 25th April they began to spin cocoons, having reached an average size of 3¼ in. long. Newman states that the larva attains 4 in., but mine are perhaps small since I reared them on hawthorn. On 4th May all were snugly in cocoons—all cocoons firmly attached to the mosquito netting of the cage! (*Malacosoma neustria* Linn. (Lackey), another Lasiocampid, does this when I rear it.) The pupae were noticed inside the cocoons from 28th April to 8th May. Because one of the cocoons was badly placed in the cage, I removed the pupa, and observed the powder round it, and I then tried to think of a reason for this pinkish bloom. Could it be to make the pupa taste bad to any insect-eating creature? Perhaps someone will write and give their views on the subject.

The cage and cocoons were placed in an airy bedroom, and began to hatch on 25th May, and by 30th May all twelve imagines were out. There were four males, one crippled, and eight healthy females. Unfortunately, no pairings were obtained, since I had never reared Lappets before. I was told later that the adults should have been placed in the open.

L. R. Staines (3238*).

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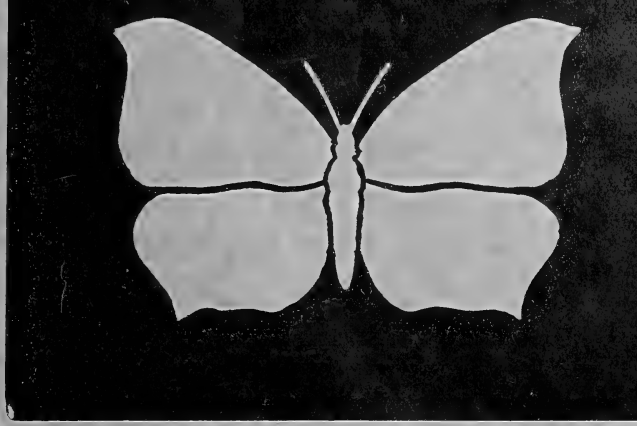

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World List abbreviation : *Bull. amat. Ent. Soc*

EDITED by W. N LAWFIELD

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AES BULLETIN

No. 243

MARCH 1961

SECRETARY'S LETTER

The Annual General Meeting will be held towards the end of this month, and details of it will be enclosed with this Bulletin. All members who can get to London are urged to attend this meeting, and so support the Society. Remember that in 'Other Business' the Council would like to hear the opinions of members and any suggestions that they would like to make.

A few suggestions have been received about the Annual Exhibition and these have been constructive ones. The most interesting exhibit is one which is well labelled and tells some sort of a 'story'. Mr. P. Roper, a dipterist, has suggested three exhibits these being: a case of one or two examples of every family of the Nematocera, with legible notes underneath as to their life-histories, etc.; another was the various insects taken in a floating trap, with photographs of the pond used, and an example of the trap; and finally drawings in colour of various fungi with specimens of the insects bred out of them.

Of course, living insects will always attract quite a lot of interest and please remember that if the Purple Emperor larva is very familiar to you there is sure to be someone who is interested in seeing it. Other than living insects, set ones either to illustrate a family or group of insects, or to illustrate some particular method of collecting or from some habitat or pabulum are always very interesting.

Whilst it is always a bother to carry many things, if everyone brought a small suitcase full, the hall would soon be filled, and the reputation of the Society enhanced.

On a more personal note, I wish to thank the kind members who sent me Christmas cards; a little personal touch like this goes a long way towards making all the work incurred in helping to run the AES worth while.

D. Ollevant (1514).

COLLECTING HINTS—March

The Smaller Moths

One of the best known moths to appear at this time of the year is *Diurnea fagella* Schiff. which may be found on tree trunks or it will come to light (or rather the males will); the females are best searched for on the tree trunks after dark.

The cases of *Coleophora lineola* Haw. may be searched for on black horehound, *Ballota nigra* L., or on the garden plant, *Stachys lanata.*

The stems of sea lavender, *Limonium vulgare* Miller may be collected for *C. limoniella* Staint. *C. albitarsella* Zell. may be found feeding on catmints, *Nepeta* sp., marjoram, *Origanum vulgare* L. and calamints, *Calamintha* sp. Any member who finds this larva on a boraginacous plant is asked to inform Mr. R. W. J. Uffen.

The lower leaves of common willow herb, *Epilobium montanum* L., may be searched for the mines of *Mompha propinquella* Staint.

To help me in my limited knowledge of botany, I still find that Collins 'Pocket Guide to Wild Flowers' by McClintock and Fitter by far the most useful and easiest to use.

Assistance in compiling these field notes would be much appreciated, and I should be very grateful for any field notes. These need not apply to the next month to be published (these notes have to be sent in six weeks in advance), but would be filed and used at the appropriate time. Also accurate line draw

ings of the smaller moths would be welcome. They would need to be twice the size of publication and done in black ink on white paper.

D. Ollevant (1514).

The Diptera

As the days lengthen and the warmth of sunshine becomes stronger, the variety of species on the wing increases rapidly. The Muscidae *Dasyphora cyanella* Mg. and *Musca autumnalis* Deg. overwinter in swarms in old buildings and the sunshine brings them out in large numbers on to church windows, etc. The Syrphidae attract attention at the flowers—Wood Anemone, Coltsfoot and especially the Sallows. *Syrphus balteatus* Deg. and *S. auricollis* Mg. that were about in February are joined by *S. torvus* O.S., *S. vitripennis* Mg., *S. punctulatus* Verr., *S. lasiophthalmus* Zett. and *S. quadrimaculatus* Verr., *Syritta pipiens* L., *Cheilosia paganus* Mg., *C. grossa* Fln., *C. albipila* Mg., *C. mutabilis* Fln. and *C. vernalis* Fln. The large mimic of bumble bees—*Criorhina ranunculi* Panz. is the first of the genus to appear and about the bulb flowers will be found *Eumerus strigulatus* Fln. and *E. tuberculatus* Rond.

Chironomidae are more varied, especially species of *Metriocnemus*, and visits to pools, lakes, sewage farms, etc., will enable a collection of the family to be increased from the numbers of *Pentaneura hirtimanus* Kieff., *Anatopynia nebulosa* Mg., *A. varia* Fln., *Protanypus morio* Zett., *Cricotopus obtexens* Walk., *Coryneura scutellata* Winn., *Chironomus gripekoveni* Keiff., *C. dorsalis* Mg. and *Tanytarsus brumipes* Zett. Look about for fences and walls nearest to the water, early in the morning, for the resting gnats can easily be tubed in 'mint' condition. Dr. Edwards always liked to kill and pin his specimens in the field to preserve the scales on the wings and bodies.

Examination of sun-lit tree trunks, carrion and animal dung and the nearby vegetation, as well as flowers, particularly sallow, will show a number of species of Muscidae. On sallows—*Egle muscaria* F. is abundant, *E. parva* R.D. numerous and elsewhere *Helina lucorum* Fln., *H. marmorata* Zett., *Phaonia variegata* Mg., *P. signata* Mg., and three of the four British *Muscina*—*stabulans* Fln., *pabulorum* Fln., and *assimilis* Fln., *Orthellia cornicina* F., *Hebecnema vespertina* Fln., *Lispocephala erythrocera* R.D. and *Delia intersecta* Mg. More Agromyzidae are now on the wing, and as is often the case of *Napomyza glechomae* Kalt., a miner of the leaves of Ground Ivy, larvae, pupae and adult can be taken in this month.

During a wet period, when sweeping with a net for diptera is out of the question, attention should be given to the Culicidae larvae in pools, etc. They can be identified with the help of J. F. Marshall's *The British Mosquitoes*. The adults are best bred for specimens complete with wing scales, etc. But besides collecting, make notes on the habits of each species, their habitat preferences, etc., and send your observations to the Editor, or, if you are diffident, circulate them through the Dipterists' Group bulletins.

L. Parmenter (895).

The Coleoptera

This month's notes are concerned with the family Cicindelidae, which usually heads the list of British Coleoptera. These are the Tiger Beetles of which we have five species. They are all very active during warm weather and their capture often requires considerable agility.

The commonest member of the family is *Cicindela campestris* L. and it can be found in suitable habitats throughout the country. It is still unrecorded for a number of counties but it probably occurs in most of them. Heaths, chalk downs and coastal dunes are some of the places where this beetle can be seen. The chief requirement seems to be that the soil should be well drained and quickly warmed by the sun.

C. sylvatica L. is much more local, its headquarters being in Hants., Dorset, Surrey and Berks., where it inhabits the sandy heathlands which are a characteristic feature of those counties. It has also been recorded from Devon, Cambridge and Brecon. This species flies even more strongly than the last.

C. germanica L. is much more localised in its distribution, being confined to comparatively short stretches of coast in the Isle of Wight, Dorset and Devon. It does not take to flight so readily as the other Tiger Beetles but it runs extremely fast and is just as difficult to capture.

The remaining two species are found only on coastal dunes. *C. maritima* Dej. ranges from Norfolk southwards, all along the South Coast and up the West Coast as far as North Wales. Its close relative *C. hybrida* L. is recorded from the coasts of Merioneth, Cheshire, Lancs. and Cumberland. Surprisingly, neither of them has been found in Anglesey, a county with some very extensive dune systems. I have looked for Tiger Beetles there but have only noted the common *C. campestris*.

K. C. Side (2140).

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JUNIOR NEWS SECTION

Editorial

As in previous years, I appeal to all Juniors (and others interested) to send me records of the common butterflies, with dates, as they see them. This includes the Vanessids, Whites, Brimstone, Speckled Wood, and Holly Blue, as species which interest me most.

News from Members

Several people have sent me interesting records, often with a query as to the status of their finds in their own localities.

Ian Whapshott (2753*) had last summer a collecting holiday in the New Forest and the Isle of Wight. He records the White Letter Hairstreak (*Strymonidia w-album* Knock) from Ventnor in the Isle of Wight, and points out that there is no information about its occurrence on the island in E. B. Ford's book on Butterflies. I have seen a "local list" for the island, but do not recall whether this species is on it. Can any reader help?

J. Muggleton (3253*) inquires about the Pine Hawk Moth (*Hyloicus pinastri* Linn.) in the Staines, Middlesex, district:—"On the 8th September 1960 I found a Pine Hawk larva under a pine tree. On the 9th September it had burrowed into the earth to pupate. By the 15th September it had pupated. I wonder if it has been recorded in this area before?" By a coincidence I took a pair of moths of this species some five miles from Staines, but in Surrey, in 1960, so it may well be permanently established or perhaps just a straggler on the edge of its range in Middlesex also. The Surrey heaths have abundant self-sown Pines to maintain it, but I do not know whether Staines is so favourably stocked with the foodplant. From my specimens I got plenty of ova, some of which I gave away, but have now 8 pupae overwintering. If any readers desire ova, I shall be pleased to send what I can spare—provided, of course, I get successful hatching and pairing!

Richard G. Charles (2816*) writes:—"After a rather disappointing hunting season I had quite a gift of fate to make up. Knowing of my interest in Lepidoptera, a school friend of mine kindly brought me a hawkmoth which had been found by his neighbour. At first glance, I thought it to be a Privet Hawkmoth (*Sphinx ligustri* Linn.) of abnormal colouring, but on more careful examination I found it to be an undamaged specimen of the Convolvulus Hawkmoth (*Herse convolvuli* Linn.). It has a wingspan of 4·6 inches and a body length of 2·5 inches. I have found somewhat conflicting reports on its frequency and rate of occurrence here, so could somebody please help? The insect was found on 2nd October 1960 in a garden in the Coldean area of Brighton".

Again, I have no first-hand experience to draw upon, and should welcome any help in answering this. My own opinion is that the Convolvulus Hawk must be a fairly regular and sometimes common visitor to this South Coast district.

A comment now on the date of the AES Exhibition, from C. J. Latham (3263*). "The Annual Exhibition of the Society is now in October. Maybe there is a very good reason for this, but I am sure most other junior members would agree that for them this is a most unsuitable time. Most, including me, have gone back to school by then and are not able to go to it. Surely it would be better to have it during say August or September. I'm sure this would encourage more people to go to the exhibitions and generally take more interest in the society as a whole".

The whole question of date of the Exhibition is, of course, discussed very fully by the Council each year. Briefly, the deciding factors are:—(1) The dates when a suitable hall can be obtained; (2) The availability of the organisers and visiting speakers and when they can all be brought together. Within these limits every other factor we can think of is considered—and, of course, there are probably as many people who are away on holiday in August and September and cannot get to a London meeting as there are in the other situation, namely of being in London in those months and back at school in October. Clearly we cannot please them all. Perhaps the best we can do is vary the date of the Exhibition from year to year to try to bring in as many people as possible. Is there any chance of organising a school visit to the Exhibition from the not-too-distant schools? I would quote the excellent exhibit brought by St. Ivo School, from Huntingdonshire.

My good correspondent Brian Sheen (2596*) is no respector of authority and has a refreshingly critical approach to much of what he reads:—

"I would like to comment on Mr. Stallwood's article on the Small Pearl-bordered Fritillary (*Bull. amat. Ent. Soc.*, **19**: 79). Firstly, from what enemy does this resemblance protect the butterfly during the night when sight is hardly ever used amongst predators? Secondly, who was the bright insect which first discovered this amazing resemblance? I am not sure whether I should comment on this, or leave it to Mr. Stallwood, but I would point out firstly that there are some hours of daylight or dusk before the butterflies are enveloped in darkness, and again some five or six hours of daylight often before they begin to move in the morning. Moreover, the colour pattern and the habit of selecting a resting place would be acquired by slow and expensive processes of trial and error, with natural selection at work over many generations—there would not be a sudden discovery by one specimen. These comments show the lines on which an answer might be sought to this problem.

T. S. Robertson (2417), *Youth Secretary.*

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AMONG THE BIG ONES

In late September 1960 I was called upon to go to a nearby potato plot to identify a peculiar grub. I had the thing explained to me and I was quite sure what it was and yet I could not believe such a stroke of luck could come my way. So I trotted off to the plot, not really daring to think about it till I reached the scene. I looked cautiously into a cardboard box which was handed to me; low and behold, what should be staring me in the face but one large fat pupa of *atropos*. I did very little explaining to the group of curious onlookers, just that this was a foreign thing known as *Acherontia atropos* Linn. and advised them to keep a sharp look out for any further signs of it, also to notify me immediately if they came across any more. Well, the end of the day brought me one more, the date being September 29th, then exactly one week later, October 6th, a third one.

I then did all I could by going to all the farms in the area that had potato fields not yet dug. I enquired when they would be lifting the crops and who would be picking them up. I found that gipsys would be employed, when, weather permitting. I looked then for gipsy camps round about and took with me "ligustri" pupae for samples, as these were very similar and would serve the purpose. I made enquiries at what farms they would be working and kept in touch with them by making daily rounds during my lunch hour to see what they had come across.

In early November the first one turned up; throughout that month and into December they kept coming. A very large proportion were damaged by the machines, and as the winter wore on, a large number were turned up dead and black.

I recorded some thirty-seven pupae in all and the appropriate forms were completed and sent on to Rothamstead.

The first two pupae were placed in the heated cage that I showed at the exhibition in September, the pupae being laid on the muslin platform immediately above the water container. I made a number of enquiries from collectors who had reared the odd one or two. After that I arrived at a temperature

of about 70° F. as being satisfactory. Within one week two of the pupae had become light and movement had ceased. Despite the fact that the cage steamed up well inside, I was convinced that dehydration had taken place, so some alterations had to be made. I put sides on the muslin platform, then two inches of sterilised peat moss on the muslin. After one more week, the third one was still alive and had retained its beautiful deep mahogany colour, although it seemed more sluggish in movement than the previous week. So I then increased the temperature and movement returned in one day.

I watched this pupae very carefully and noticed the activity of the tail hook or cremaster rotating periodically and as this reached the bottom of the turn, it took a grip on the peat and therefore rotated the pupae. (The pupae I found was continually rotating in the soil, as an egg is rotated in a nest.)

This seems to be very essential to the successful rearing of this insect. The second batch of pupae, as I have already mentioned, began to arrive in early November, number three of the first batch still being alive and kicking. I felt quite happy that I had found the ideal conditions, temperature being approximately 80° F.

On the 14th November the head began to turn dark, also the eyes and antennae were well defined. On the 15th the darkness spread to the wing cases. the legs became very prominent. On the 16th the wing cases became soft and the wing pattern visible. The body showed a slight mottled effect.

On the evening of the 17th the pupae changed entirely. The whole casing became transparent and when a strong light was directed on it the whole of the moth could be clearly seen.

At 3 a.m. the case split and the moth rushed out: it tore around the cage at a terrific speed and climbed up and down the strips of bandage that I had hung from the cage for this purpose; in about five minutes it had settled down and soon wing expansion began. The whole operation took about thirty minutes, although the wings did not dry for about two hours.

As several pupae came in early November I decided to do a few experiments. I put a thermometer in the ground four inches in depth as I understand this is the position of the pupae in the natural state. Two pupae were then kept at a corresponding temperature—night 62° F., day 65° F., and evening 70 degs. These also died in about a week. I then increased the cage temperature, adding plenty of water to the peat moss each evening. The moths were successfully reared in temperatures of 78 degs. and 87 degs. Several were slightly deformed and I put this down to the bump received by the potato spinner. The period of artificial heat and moisture appears to be about six weeks. All emerged between 1 a.m. and 3 a.m., with the exception of two; these emerged just before midnight on December 5th; the last to emerge was January 2nd, 1961.

From the early experiments, it is almost certain the pupae cannot survive the winter in this country. Although if August and September were warm months, the pupae would emerge in this country, but again, whether the moth could hibernate in this country during the winter, leaves food for thought. Damp conditions are no object if the peat moss is sterilized in the oven before use. (The moisture cannot be overdone.) Delayed development, owing to continued low temperature, will end the metamorphosis in a short while.

A great percentage were female, ratio 4:1: if this is the case in their natural home, could this have any bearing on the cause of migration?

R. A. Jarman (2706).

THE PEPPERED MOTH AND EVOLUTION

One of the weaknesses of our teaching system in the fields of science is that theory is often taught as fact and surmise as proven conclusion. This failing reaches to the level of some University instruction and it is my own experience that current evolutionary ideas are taught as dogma and the part that the 'genes' theory plays in heredity is expounded without a hint that it is only a theory borne out by facts as we at present understand them. The Natural History Museum during the Darwin Centenary year staged a nicely mixed evolution cum genetics exhibit to illustrate the idea of Natural Selection in the cause of evolution. This consisted of the normal and melanic forms

of the Peppered Moth, *Biston betularia* Linn., against various backgrounds to prove that industrial conditions had produced a melanic race by making the conditions for the normal form untenable. The support for the theory has been stated many times and it will be presumed that readers know the argument. It is refreshing to find that a Junior member in a recent issue of the *Bulletin* has refused to take the findings as gospel. He has the right approach. I would like to add my own comments in relation to the various breeding experiments that I have done and my takings at m.v. in town and country.

First let it be said that the melanic form of '*betularia*' occurs in many areas remote from industrialism but it is found to be predominant in industrial areas. It is predominant in the London area but this does not imply that the black form is a dominant form, only that it occurs in greater numbers. It is also known that between the melanic form and the normal there is a whole range of intermediate forms. In Brighton I have taken such a series at light and in the London area where I now live there are varying amounts of melanism in the species coming to light. I have found the same occurring with other species, *H. abruptaria* (Waved Umber) and *G. bidentata* (Scalloped Hazel). Again melanic forms of these two moths occur in many parts of the country, unaffected by industrialisation. In breeding the Large Thorn (*E. autumnaria*) I have by selectively breeding produced melanic forms from apparently normal types. These progeny seem to breed true to the melanic form but now and then a form reverting to the normal form occurs. We are taught that a pairing of homozygous forms will breed true and thus it would appear that both in my breeding experiments and in the wild 'betularia' in the London area the pairings are between heterozygous forms. If the theories are correct the chances of obtaining wild homozygous forms are very remote as even though all forms showing white are destroyed, the forms predominantly black will still be heterozygous if black is a dominant factor. If conditions changed to favour the normal form then there would be a gradual return to this form. It would appear that if a frequently occurring form of a moth is favoured by environment then it may well become the predominant form. That the form should be frequently occurring or that its strain should be carried throughout the population of the moth in a specific area seems to be necessary if the chances of favourable pairings are to occur. For a sport to become a predominant form it would require complete isolation and close interbreeding. My own experiments have shown me that such close interbreeding results in infertility and final loss of the strain. In nature, conditions would also reduce the probability of the continuance of a chance mutation or sport. In the case of a regularly occurring form, the chance of it becoming the normal form becomes a possibility. Such regularly occurring forms include the melanic forms of the Dark Marbled Carpet (*D. citrata*) which are becoming the prominent form in my part of Middlesex. In Devon it would be difficult to say whether the yellow or the red forms of the Jersey Tiger is predominant. If these remarks are valid then it is difficult to see where the matter of evolution and natural selection arises. The environment favours one existing form to the detriment of another and this form becomes the predominant one. The species has not changed genetically and reversion to the original form is not impossible in view of the mathematical chances against a homozygous form being the only form in existence. If it could be shown that environment was against all but the homozygous form then such a race could occur in nature but unless the melanic form is recessive and only occurs in a pure form (in the homozygote) this could not arise. Experience shows, however, that a grading of colour forms does occur and the very dark broken coloured form would seem to have a better chance of existence than the darkest form. It has never been contended that the chemical or other physical effects of the industrial atmosphere have genetically influenced '*betularia*'. Were this so it might then be considered as a positive step in evolution.

There remains the problem of the in-between forms which do not seem to fit into the idea of dominant and recessive forms. Although E. B. Ford refers to the principle of the non-blending of hereditary material and explains the occurrence of gradings of albinism in the Small Copper (*Lycaena phloeas*) as probably being due to multiple 'colour allelomorphs' this does not explain why it is possible to breed graded series of a species from a simple crossing. This occurs in the pale form *helice* of *Colias croceus*, where specimens range from

ab. *pallida* to typical if bred selectively and occur occasionally in the wild. A year or so ago I bred an F_1 generation of the Dingy Mocha (*C. orbicularia*) from wild stock from the New Forest. The resultant imagines ranged from type through progressively darker forms to a plum-coloured extreme. In breeding *Melitaea cinxia* (Glanville Fritillary), of which I have bred several thousand, I have observed interesting trends in wing patterns. On the upperside there are the following tendencies in pattern arising from one original stock batch of ova:—(1) Upper wing—markings radiated, obsolete or suffused; (2) Lower wing—radiated, or suffused. On the underside—(1) Upper wing—obsolete or markings decisive; (2) Lower wing—all markings in black disappeared, radiated or marked with heavy black wedge-shaped spots. It is possible to take any one of these forms and to set out a series ranging from an extreme form down to the typical form in that particular aberration but it is not possible to associate one type of aberration with another with any certainty although it can be noticed that usually those with a reduction of black on the underside are often radiated on the upperside. What can be the answers to this multiplicity of forms in one stock and to the puzzle of dominance and the intermediate forms that occur? If we accept the idea of one factor controlling colour and one factor controlling pattern the answer is not forthcoming. All the controlling factors are in the fertilised ovum (excluding physical controls such as heat, etc.) and within the nucleus of this new cell are written all things that will eventually make the new insect. If the factor of colour is controlled by one gene from each parent then the insect can either be coloured as either of its parents or as some intermediate form. Breeding in the same stock should continue these same forms but should not give rise to new forms or graded forms, yet they occur.

Recent research into the structure of the chromosome molecule indicates its complexity and also the fantastic range of possible combinations within its double helical structure. It is feasible that single factors control every single part and function of the insect and that within the chromosomes the final pattern is already laid down and there is a control or gene for every item. The fact that species remain so constant is due to the constancy of the pattern of these genes and to the maintenance of the combinations within the molecule. It could be contended that there is a combination covering a colour which tends to remain constant in division but which is capable of irregular pattern on occasions. This could give an answer to dominance and to grading of forms. If what appeared to be a homozygous form still had deeply latent factors then the unexpected occurrence of another form would be explained. Dominance of colour over colour could be explained by a preponderance of factors masking those in less numerical strength. Gradations of form would arise from the ratios of the factors present. The static nature of the markings of some of the Nymphalidae, e.g. *Vanessa atalanta*, *Nymphalis antiopa*, etc., would indicate a certain rigidity of the structure of the nucleic molecules while the multiplicity of patterns found in other Nymphalidae, e.g. the small fritillaries of the *Melitaea* group, would point to a certain instability of structure. Botanists are aware that there are alterations in the structure of the nucleus not only in the case of meiosis and subsequent fertilisation but occasionally during normal cell division. An example of this is the Zonal Pelargonium, Hockey, which was a sport of the commoner Paul Crampel. On occasions a spray of this plant will produce flowers of the Paul Crampel type, indicating that the factors controlling the colour and flower form have changed in normal cell division. Such "reversion" is fairly well known in plants. Presumably it can take place also in animal cells.

Although the amount of work the amateur can do in this field is limited and the future progress of knowledge seems to lie more in the fields of chemistry than biology, members should do all they can to record and experiment and assist where possible the professional experts in our universities. The purpose of this item is emphasised that no progress will be made if we start by accepting a theory as 'gospel' and abandon all findings that do not conform rather than looking for a new theory that will answer such problems. The tendency of some 'scientists' (of T.V. fame) to speak on such matters of evolution, genetics, etc., as if 'ex cathedra' might lead the unsuspecting to believe that all is known on these subjects. The truth is that in such matters more remains hidden than is known.

P. W. Cribb (2270).

SOME OBSERVATIONS MADE IN SOUTHERN FRANCE (PROVENCE DISTRICT) ON CONTINENTAL LEPIDOPTERA, JULY 1960

Whilst I was spending a fortnight's holiday in the Provence district of southern France, in mid-July of this year, I was fortunate enough to see a number of continental species of lepidoptera, some members of which I was able to obtain for further identification on my return home. I propose to set out my observations and notes concerning each species in separate paragraphs so as to provide a concise article.

Gonepteryx cleopatra Linn.

I discovered this delightful species, which is closely related to *G. rhamni* Linn., sparsely distributed around the maritime shores of the Mediterranean, but more apparent in the arid, limestone hills around Les Baux, which lies to the north-east of Arles, and also on the lower slopes of the Cévennes range of hills in the north-west of the district. The foot-hills abounding the famous Pont-du-Gard proved to be a lucrative region for this species. A number of males, which display an attractive orange 'flush' on the forewings. were seen flying close to the Pont-du-Gard and along the river banks. Shaded hill-slopes with sparse vegetation appeared to be the most favourable localities for this butterfly.

Papilio podalirius Linn.

This singularly graceful species of Papilionidae was only recorded in certain restricted areas in the northern regions of the district. This species appeared to favour similar terrain to that of the last-mentioned species, and, in fact, was seen on many occasions to be promiscuously associating with *G. cleopatra* Linn. and *P. machaon* ssp. *britannicus*. I found this species to be most abundant in the hills around Les Baux, and it was a delightful sight to witness small colonies gliding and soaring close to the roadside wherever varieties of fennel were profusely growing. On one occasion, such a colony displayed an astonishing quality of uninhibited curiosity by flying around me and alighting on plants close to my presence.

Papilio machaon ssp. *britannicus* Linn.

I noticed this species was much less confined to certain altitudes than the last member of the Papilionidae, and was seen in small colonies or singly throughout the district, and it was discovered even in the wild regions of La Camargue (Bouches-du-Rhône). It was also often seen flying along the coast at Les Saintes Maries. The species tended to be paler in colour in the south and maritime regions.

Limenitis camilla Linn.

This species, which is distributed widely in the southern regions of this country, was identified as such with great difficulty owing to certain irreconcilable and variant factors which I discovered to exist in the imagines which I saw. This variety was only found on the lower slopes of the hills which flank the river Gard. The difficulty encountered in identifying this species became apparent on closer examination, because I noticed that the black colouration was more prominent and the white sub-marginal band on the fore and hindwings was more continuous than in the variety found in this country. The forewings were also more elongated and rounded at the apex and the hindwings appeared to be less developed in size. The underside of the wings were universally deep ochreous (almost orange) with the white band sharply defined and pencilled with black. The flight was remarkably graceful and was conducted in and about the shaded areas of the slopes, especially around bushes, which caused the imagines to be most elusive to ensnare. W. F. Kirby refers to a species named *Neptis aceris* Lep. in his *European Butterflies and Moths* (printed 1882) which resembles *L. camilla* in appearance, but is differentiated from that species by having similarly shaped wings as I have described. This species was considered to be uncommon and confined to the extreme eastern districts of Europe, and to only exist in small isolated colonies in hill and mountainous regions. Perhaps the range of this species has been extended to parts of central Europe since the latter half of the last century, and, if so, I should be interested to know to what extent.

Satyra hermione Linn.

This species was exceedingly common wherever the terrain was dry and covered with rocks and shale. Numbers would be easily disturbed from their rest position, on stones or dry soil, on which they were well camouflaged. This species never appeared to fly for long distances, but rather eluded its enemy by a sharp flight into the air and alighting suddenly on the ground a few paces away whereupon it at once blended with the natural colour of the ground and became exceedingly difficult to discover again.

Satyra circe Fabr.

This species, which is closely related to the last, is the largest member of the Satyridae; it was not seen in large numbers, but appeared to exist in isolated colonies. Methods of behaviour were similar to those of *S. hermione* Linn. This species tended to prefer regions covered with dense scrub foliage, and as a result it was more often seen flying around and alighting on small bushes and trees, than on dry soil or rocks. Both the above-named members of the Satyridae were attractive insects when they were freshly emerged, since they displayed dark, velvet brown colouration with a cream sub-marginal band diffused with grey on both wings. The sub-marginal band on the wings of *S. circe* was very strongly marked in contrast to the colour of the rest of the wings. On both species the band was broken on the forewings close to the costa.

Zygaena carniolica Scop.

This was an interesting species of the 'burnet' family which I found to exist in small colonies in the hills around Les Baux. The imagines have six red spots ringed with a white border on the dark green forewings and the hindwings are red with a narrow black margin. The abdomen is black with a conspicuous red band situated about two-thirds down from the thorax. It is quite probable that this species only occurs at certain altitudes in mountainous regions in central Europe.

Saturnia pyri Schiff.

Whilst camping at Arles I found abundant evidence in the country lanes of larvae of *S. pyri* (Peacock Moth) which covered the edges of the lanes with excrement. The larvae were very difficult to obtain on account of their habit of living at a high height in trees (elms). However, as a result of a close search amongst some low-hanging boughs I did discover one full-grown larvae which was a magnificent insect. Although the larvae are very conspicuous with their cobalt blue tubercles studded over the dorsal region of the body when they are removed from their natural environment, they conceal themselves very effectively and mask their vulnerability by clinging motionless on the undersides of branches and twigs. The larva which I did capture lashed its body back and forth in a jerky manner and emitted a crackling noise when it was disturbed, and it is quite probable that this behaviour creates some intimidation to any unwary enemies.

In conclusion, it would only be proper to mention that apart from the continental insects which I have enumerated above, there were in abundance, wherever I visited, varieties of many of our British species. *Thecla quercus* (Purple Hairstreak) was fairly generally distributed in the district wherever the hills were covered with stunted oaks (especially the variety of holm-oak which grows densely throughout the limestone areas). *Colias croceus* (Clouded Yellow) and *Colias hyale* (Pale Clouded Yellow) were never seen in large numbers, but were discovered in small colonies in every region. Even in the barren areas of La Camargue where the only insect life in abundance was shimmering clouds of dragonflies, *C. croceus* would be found flying close to the ground in a searching manner. *C. hyale* was more common in the northern regions of the district and appeared to be less adaptable to arid conditions than *C. croceus*. *Vanessa cardui* (Painted Lady) was rather rare and I only saw a few of this species in the countryside around Arles. The summer form of *Leptidea senapis* (Wood White) was seen on isolated occasions flitting about in dense scrub in the Cévennes, but never in large numbers. Members of the 'Blues' and 'Skippers' were always to be found in fields and pasture, but, unfortunately, I did not have the opportunity to conduct a detailed study on these families.

N. F. Gossling (3170)

THE VAPOURER MOTH ON DARTMOOR

Some experiments carried out with the Vapour Moth (*Orgyia antiqua*) last Autumn may be of interest to our members. This moth is commonly found on Dartmoor, where its principal foodplant is bracken, more rarely heather. The cocoons are conspicuous and may be readily found, usually on the undersides of the bracken fronds. They are particularly easy to see when the wind is strong, bending the plants and exposing the undersides. On 15th September 1959, I had been walking on the moor and was returning down the valley of the river Plym when, in the vicinity of Ditsworthy Warren, I noticed a tiny Sallow bush growing from a crack in a small rock in midstream and bearing obvious signs of eating. It was a very small bush, certainly not more than two feet high, practically every branch showing signs of extensive eating. The rock itself very small, perhaps a square yard, certainly not more, and would be covered by water in a normal season. This seemed an interesting proposition, for the larva could only escape by swimming and must necessarily still be on this tiny island. I jumped on the rock, barely big enough to hold me, and carefully searched every leaf of the sallow, finding a cocoon between the bark, a leaf and a piece of dried moss left suspended by the last flood water. A white cocoon, very similar to a Vapourer but larger than usual. Through the lens I could see that it held hairs similar to the Vapourer—but how could it be this insect? Its wingless female never leaves its own cocoon and cannot possibly cross water. An intriguing problem! The evidence pointing to more than one larva, a thorough search was made of the rock, all dry moss being removed and every nook inspected. But nothing else was revealed, and if there had ever been other larva, they had either died of parasites or been eaten by birds—or bravely swam ashore! While crouching on this island, I glanced down at something moving on my trouser turn-up and found I was host to a newly-emerged male Vapourer, with wings only just beginning to expand! A bewildering sight! It certainly hadn't come from a cocoon on this rock, and must, I suppose, have been brushed off its cocoon by my corduroys just as it struggled free, and thus clinging to the cloth had been carried unnoticed to this island of mystery.

On 22nd September a female Vapourer emerged from a pupa which had been bred from a larva found feeding on heather on Ringmore Down, Dartmoor. This larva varied so much from the normal that I thought it might be a Scarce Vapourer (*O. recens*), exceedingly rare in Devon and last reported in 1870. Since it was a female I could not be sure whether it was in fact a Scarce Vapourer or not, and thought the only way to solve this problem was to take her to Ringmore Down and endeavour to assemble. I assumed that if she was indeed a Scarce Vapourer, the Common Vapourer males would pay her no attention.

Accordingly, on 23rd September, a fine sunny day, I took her to Ringmore, together with two known Common Vapourer females. I put the supposed Scarce Vapourer on a large rock among the heather and the two Common Vapourers I took to another rock, some thirty feet away, near a good stretch of bracken. I opened the first box and before I had time to open the second, the first male arrived. Quickly the second box was opened, with males all around, fluttering over my fingers. These two were coupled immediately, though males continued to arrive and crawl fluttering over the couples. I then went back to the Scarce Vapourer, in time to see a male flying in the vicinity. This male missed the target and for a few minutes nothing appeared, which gave me hope that it really was a Scarce Vapourer. However, another male soon appeared, was netted and proved to be Antiqua. The female continued to call and within a minute or so another male Antiqua arrived and immediately coupled, thus proving that my Scarce Vapourer was nothing of the kind. Most disappointing. I then put all three coupled females on one rock—a rock that was now swarming with unlucky males.

My experiment as complete as I thought necessary, I climbed to Gutter Tor and sat there for a while, enjoying the glorious scenery, so clear on this fresh Autumn morning. Male Vapourers were flying about me all the time, countless numbers of them.

Returning a little later to my scooter, I noted the three females still on their rock and still coupled to their mates, so I thought it must be a long process. Unlucky males were still fluttering about and crawling over the lovers. Evidently the scent is strong and lasting and not cut off at the commencement of copulation.

The next day a female Antiqua emerged from the cocoon found on the tiny rock in the river Plym. How did its mother cross the water to lay her eggs? It has been said that the male may carry the female in copulation, but so far as I know it has never been observed, nor the eggs found other than on the cocoon of the female.

I decided, therefore, that I would assemble a male, mate it and somehow attempt to set the pair in flight. To this end I proceeded to Cann Wood, fairly near home and where Vapourers are occasionally found, carrying my female and a freshly emerged male, in case assembly was not successful. I arrived at Cann at 9.50 a.m. and walked along the main ride, carrying the female in an open box in my hand. The weather was sunny but rather cold and the undergrowth wet with dew and no butterflies stirring. Arriving at the North Ride, a male Antiqua appeared, and with some blundering eventually found the female, which had been calling since arrival at the forest gate, and immediately coupled. This was exactly as planned and the pair were carried to the old Clay Works hauling station, long in ruins, where a drop of about fifteen feet was available. Having climbed to this point, the moment I picked up the cocoon to which the pair was clinging, the male disengaged and flew off. He had been coupled sixteen minutes, as compared with the two hours plus of the specimens on Wednesday. The female still clung limply to her cocoon, no longer calling, of course. I then thought of my captive male, emerged only yesterday. I put him in my net and introduced the female. Almost within seconds he had found her and, to my surprise, had paired. So my experiment was again possible. First of all, I attempted to blow them off the cocoon, but repeated puffing failed to dislodge them or do more than ruffle the wings of the male. Evidently, in the wild state, no wind short of hurricane force would move them. I then removed the pair from the cocoon by force, and a great deal of this was necessary, using a stiff dry grass stalk, first moving the female, leg by leg, then the male. Quite a struggle, and one cannot imagine such an event happening in a wild state. The pair were then dropped the fifteen feet or more to the ground below, without the male giving a flutter. They were brought up and repeatedly tossed into the air, with the same result. Again they were thrown up as high as possible and allowed to drop to the ground below, certainly a great deal more than twenty feet, and they fell like a stone. And this time, on going down to recover them, I found the male disengaged and about to fly away. I can hardly blame him! He had been coupled fourteen minutes. This experiment may not be complete proof, but does show that the male is not inclined to fly with the female, perhaps could not, for she is much bigger, and his flight is not strong. I have not heard of any moth that does so, except perhaps, the Burnets. So I think it fair to presume that the female which laid the eggs on my mystery island was not flown there by her husband. A larger Sallow tree, growing on the bank a few yards upstream, might have been the birthplace of the larva, which may have dropped into the water and been swept downstream. Or have dropped on a silk thread and been blown out by a strong wind until it reached the island.

If we presume that I had not found this cocoon and it had emerged on this tiny rock. Unable to leave, it would have assembled a male and laid its hundred or so eggs on its cocoon. Next year the resulting larva would have rapidly eaten their limited food supply and all starved to death, unless any developed into Channel swimmers!

Another problem develops from this incident, the acceptance by the female of two males. This appears to be an unusual event in insect life. Remembering the apparent pairing for two hours plus on 23rd September and the continual assembly of males after copulation began, it seemed likely that these two females were enjoying a succession of males, for all I know every fifteen minutes or so. Not suspecting this might happen, I was not keeping a continuous watch on them, so this gives me a chance for further experiment. Unfortunately, I had no more pupa left to emerge, so the problem was shelved for another year.

Another point about this female, and probably common to all Vapourers, at the opaque chitinous junctions of segments of the abdomen, the unlaid eggs could plainly be seen with the aid of a $\times 10$ lens. An extraordinary sight.

With a view to elucidating the above problems, I visited the Moor on 9th September 1960, the Ringmore Down area. Here were plenty of both larva and pupa. I collected a dozen cocoons, which I thought sufficient for my purpose.

A female emerged from one of these cocoons on 27th September, and on 29th September I took her to Ringmore Down, arriving at 10.15 a.m. A perfect day, cloudless, with the lightest of south-east airs. I walked to the biggest patch of bracken and heather, selected a suitable flat rock and put the female on it. Males had been seen in flight from time of arrival and the first one arrived to the female's call at 10.24, after she had been exposed only one minute. This one, and a second, crawled fluttering across the rock, missed and flew away. The third arrival, however, was a little more expert, found the female, crawled over her a time or two and eventually paired at 10.37. Thereafter, male after male arrived, sometimes as many as seven together, all crawling over the pair, pulling at the male's wings, head, antennae, and each doing his utmost to separate the pair. A favourite ruse was to crawl under the wings of the fortunate male, fluttering and shouldering in an effort to dislodge. All without success. Until at 11.33 (after one hour and four minutes) the first male disengaged. At that time no other male was on the scene, but one soon arrived. After crawling over the female many times and making many unsuccessful attempts, he paired at 11.44. This one, too, was subject to a good deal of pushing and pulling from several late arrivals but was eventually left alone to complete his task at 11.59 (after fifteen minutes).

As no further males had arrived in the last five or six minutes, I concluded that the scent had weakened, perhaps ceased, so I was rather surprised to see another male arrive two minutes later, at 12.01, and pair with little difficulty. I was compelled to leave at 12.10 with this pair still coupled. They were not disturbed by other males, though two arrived and fluttered about the rock indecisively and flew away. Obviously the scent still present but much weaker. All the males made their approach in the same way. They were first noticed about fifteen yards away (the limit of the bracken) flying up-wind fairly purposefully to the rock. Each alighted on the rock and crawled across its flat top in a straight line to the female. Few hesitated or deviated from the direct line.

It seems plain that the females are accustomed to mate with more than one male, as I had supposed. She was seen to be calling before the arrival of the first male, but thereafter the scent organ was not used.

This leaves me with two more problems. How many males would be accepted by the females before egg laying commenced, and could fertile eggs be laid by a female after copulation with one male only. To solve these problems I should need at least two females, yet of the twelve cocoons collected, only one was female. One was parasitised and the remainder were males. This gives a proportion of at least ten to one in favour of males. I suppose so many males are necessary with such a promiscuous female, presuming such a proportion to be similar in the wild.

R. G. Haynes (1545).

NOTES AND OBSERVATIONS

MACROTHYLACIA RUBI Linn.—FOX MOTH

There has been considerable discourse on methods of rearing this species, but I have seen no record of how the larva actually passes the winter. This year I have some larvae taken in North Wales, and during September I put them into winter quarters with cut heather on sand. They are more than I anticipated and I had to renew their food supply on the 30th October. As the sand was very wet some adhered to the stems when I removed the old foodplant, and I was surprised to find that four or five of the larvae had formed cells just below the surface and were curled up therein. The long hairs were quite unsoiled and very lightly dewed with moisture. This latter is hardly surprising in view of the considerable amount of rain we have had this year! Is the construction of such a hibernaculum normal to the species?

John E. Knight (94).

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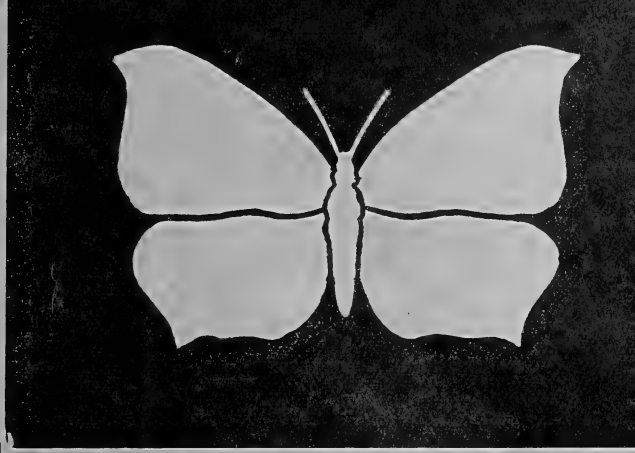

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc*

EDITED by W. N LAWFIELD

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A E S BULLETIN No. 244 APRIL 1961

COLLECTING HINTS—April

The Smaller Moths: April-May

Many species will be found on tree trunks during these two months, especially Tortrices and Lithocolletids.

Keep a look out for *Genista anglica* L. (petty whin): on it may be found the cases of the larvae of *Coleophora genistae* Staint.

The larvae of *Clepsis costana* Fb. are usually quite common in late May. They spin together the terminal shoots of *Epilobium hirsutum* L. (great willow-herb).

On 1st May last year I found some oak leaf-buds which showed signs of being eaten, and from these I bred *Ypsolophus radiatellus* Don.

During late April and May two small moths are particularly common on flower-heads in Surrey, these being *Adela fibulella* Schiff. and *Glyphipterix equitella* Scop. Where there are violets, *Pancalia leuwenhoekella* Linn. may be found flying in the sunshine.

During late April and May the leaves of *Helianthemum* species (rock-rose) may be searched for the blotches betraying the pinkish larvae of *Mompha miscella* Schiff.

In May birch leaves rolled lengthwise usually indicate the larvae of *Anacampsis betulinella* Vari. Also in May the eaten shoots of holly should be examined for the larvae of *Rhopobota naevana* Hübn., the moths emerging towards the end of June. If a careful search of the flowers and leaves of *Veronica chamaedrys*. L. (bird's-eye speedwell) is made the larvae of *Stenoptilia pterodactyla* Linn. may be found.

D. Ollevant.

The Coleoptera

From now until the autumn phytophagous beetles can be sought on their host plants. Trees of the willow family support many different species of Coleoptera, some of which are discussed here.

Phytodecta viminalis (L.) can be beaten from various species of willows in the spring and summer. It is locally common in the south of England but becomes rarer further north and does not seem to occur in Scotland. *P. decemnotata* (Marsham) (*rufipes* DeGeer) has a similar distribution except that in this case there are Scottish records. Aspen is the favourite tree, but it does occur on other willows, and Fowler mentions hazel as well. *P. pallida* (L.) is another local species found throughout Great Britain but like the last it is rarer in the north. The host plant is hazel according to Joy, rowan according to the German coleopterist Reitter and Fowler gives sallow, hazel and rowan. Possibly it feeds on all of these. I have not yet taken the species myself and would welcome further information. The fourth British species of the genus is *P. olivacea* (Forster) which is the commonest and most widespread of them all. There is no doubt about its food-plant, for it is invariably found in association with broom, sometimes in large numbers.

Closely related to the above is another genus with a rather similar name, *Phyllodecta*. The three British species are all attached to willows and poplars from which they can be beaten in the summer months. On the whole they seem to favour older trees than those frequented by *Phytodecta* species, but this is only my personal experience and may not always be true. In winter they hibernate under the bark and can sometimes be found in large numbers. The species are *Phyllodecta vulgatissima* (L.) which is common throughout Great Britain, *P. vitellinae* (L.) which is even commoner and just as widely distributed and *P. laticollis* Suff. which is much more local and seems to have a preference for poplar and aspen.

K. C. Side (2140).

The Diptera

A large number of species of the genus *Chironomus* are on the wing this month and *Graceus ambiguus* Goet. has been found flying in large numbers within an inch of the surface of pools on heaths about London. The seaside Chironomid *Clunio marinus* Hal. emerges this month.

Limonia chorea Mg., *Tipula rufina* Mg. and *Bibio johannis* L. are to be found in the centre of London and many more Tipulidae and several species of Bibionidae and other Nematocera are about. *Dolichopeza albipes* Stroem, with its white tarsal segments, is found about the streams of woods; from rotten birch logs the handsome black and red *Tanyptera atrata* L. emerges. Among the species of *Tipula* appearing this month is *T. maxima* Poda, the fly with the greatest wing span in Britain.

Of the Brachycera, few species are on the wing. *Bombylius major* L. visits Bluebell flowers, *Microchrysa polita* L., the first of the metallic Stratiomyiidae that breed in cow dung and rotting vegetable matter haunts the cattle pastures. The Empid—*Tachypeza nubila* Mg. will be found on tree trunks. *Empis chioptera* is the first on the wing of the smaller species of this large genus and is easily recognised by its white-haired abdomen and black halteres. Along the hill streams in the north, *Clinocera stagnalis* Hal. and *C. wesmaelii* Macq. should be sought. About woodland puddles are the Dolichopodidae—*Campsicnemus curvipes* Fln. and *C. scambus* Fln. whilst *Hydrophorus litoreus* Fln. runs on the surface of streams. The first of the tree trunk "squatters" of the genus *Medeterus-tristis* Zett. appears.

A family that has a number of species emerging in April is the Phoridae. It is one that should receive more attention from dipterists, considering the years of study Mr. C. N. Colyer has spent on the British fauna. Even in the centre of London during April *Megaselia brevicostalis* Wood, *Phora aterrima* F. and *Triphleba nudipalpis* Beck have been taken. In the north Harry Britten collected *Aneurina curvinervis* Beck. and *Triphleba opaca* Mg. When mounting Phoridae and other small diptera, extend the wings and legs and pin from below between the coxae and allow the pin-point to just break through the dorsal surface sufficient to hold the insect so that all the bristles can be seen.

In the Syrphidae, the emergence of species is overwhelming. The early flowers will attract a large number of species, some of which are on the wing for only a few weeks. There is much still to be learnt of their life histories and a plea is made for all collectors of the family to add to our knowledge by observing the flower visitors, numbers of each sex, whether taking nectar or pollen, time of day, influence of sunshine, etc. Records of flies that visit species of *Primula* are required by Dr. S. R. J. Woodall of Botany Dept., Univ. of Oxford, South Parks Road, Oxford, for inclusion in the Biological Flora now in publication by the British Ecological Society. Those interested in rearing Syrphidae should study the paper by T. J. Dixon, Zool. Dept., Univ. of Glasgow, who describes the larvae of 56 of the British species, with figures of many, in *Trans. Royal Entomological Soc.*, Vol. **113**, Part 13 (price 15/-, at 41 Queens Gate, London, S.W.7). Even casual observations of eggs being deposited or the number laid in a tube by a captured gravid female, may add to known data and be worthy of publication. Quite abundant and well distributed species such as *Eristalis horticola* Deg. and *pertinax* Scop. remain to have their larvae described.

Collecting at sallow blossom can be productive. *Criorhina ranunculi* Pz., that resembles a large *Bombus* bee and *Syrphus quadrimaculatus* Verr. are two species soon to disappear from the spring scene. The latter can be enticed down from high blossom by spreading white newspaper or plastic sheet below the tree. At sap-exuding trees look for species of *Brachyopa*. *Rhingia campestris* Mg. will be visiting flowering bluebells and the females will resort to fresh cow-pats to lay their eggs. Fresh droppings should be examined several times during the first day for several species of flies use the cow-pat for a larval habitat.

With the publication of the keys for several genera of Muscidae by Mr. E. C. M. d'A. Fonseca in *Trans. Soc. Brit. Ent.* greater interest is being taken in this family which has so many species in this country and of such varied habits. The life histories of most of these are still unknown. At sallow blossom are found *Egle muscaria* F., *E. parva* R.D. and *E. minuta* Mg., the first two quite abundantly. *Coelomyia mollissima* Hal. can be seen in woods about the early white flowers. In the centre of London, *Phaonia fuscata* Fln., *P. signata* Mg., *Hydrotaea dentipes* F., *H. occulta* Mg., *Helina duplicata* Mg., *H. lucorum* Fln., *Coenosia tricolor* Zett. and *Muscina stabulans* Fln. have been taken in April. Sheltered warm areas often enable species to emerge earlier than in the open country subject to wind. Waste ground with uneven surface, a variety of plants and shelter given by walls provides a habitat worth working over during the month. These early flies enable the student to become acquainted

with the general characteristics of the genus or group and thus assist him to be able to recognise related species as they appear so that a representative collection can be obtained during a year's collecting.

In the City, *Sarcophaga haemorrhoidalis* Mg. is about. The beginner will soon recognise the many other species of this genus as they emerge. Select males at first, mounting the specimen on the side with wings and legs extended and genitalia pulled out and allowed to dry so extended, for identification is easiest this way; see illustrations in Dr. C. D. Day's *British Tachinid Flies.*

Quite a number of Sciomyzidae haunt the fringes of ponds where some species of Ephydridae will be running over the exposed mud surfaces. In grass tufts, examined over newspaper or plastic sheet, species such as *Stilpon graminum* Fln., *Phytomyza nigra* Mg., *Elachiptera diastema* Collin and *E. cornuta* Fln. will appear.

L. Parmenter (895).

MELANISM IS IMPORTANT

Almost everybody now believes that the world is globular, that the Earth moves round the sun, and that evolution has taken place. Biologists are mainly concerned about the last phenomenon. Here controversy centres on *how* living things have evolved to their present form. This problem is the subject of countless books and papers, in many languages, all of which even the most learned naturalist has not read. Even in the books which are available, there is very little agreement. No biologist seems observant enough or lucky enough, to find any proof of evolution which all the others will accept as final.

Dr. E. B. Ford of Oxford University writes in a recent impressive volume of essays by many of the accepted authorities on evolution ("The Evolution of Life, its Origin, History and Future", edited by Sol Tax and published by the University of Chicago at ten dollars): "Industrial Melanism is the most striking instance of evolution ever witnessed in any organism, animal or plant". In the same volume Prof. Ernest Mayr of Harvard writes that industrial melanism is only an example of "ecotypic adaptation, not a shift of phylogenetic importance". There are plenty of supporters for both arguments. To those who are already fully convinced of the doctrine of evolution, the fact that *Betularia* imagines are now completely black where once they were all piebald is just a good, tangible, text-book example of the way Natural Selection acts on living creatures. To those who are still, perhaps unconsciously, opposed to the idea of evolution, the fact that a species of moth has, in some places, slightly changed in its wing colour is a matter of small importance, and has to be played down. They point out, quite truthfully, that the species is still the same; a black Peppered Moth is still a Peppered Moth, and there is no proof of the origin of species by Natural Selection.

Whether melanism in moths is an important item in the study of evolution or not, there can be no denying that it is an important item in the ecology of Great Britain. It is still one manifestation of the workings of "Nature" which we can observe in our own country. Every day more acres of land are being built over and the animal and plant populations are changing in consequence. We shall do well to observe and record as many of these changes as we can discover. In every species in which melanism is known to occur the course of events is unique. By studying the trends in the field and carrying out experiments in genetics in the laboratory we may obtain sufficient data to substantiate the theory of evolution to everyone's satisfaction.

The concept of dominant and recessive characters in genetics is still limited in its application. These terms were invented to explain certain patterns of inheritance, they do not help to solve all the problems of heredity. Brian Sheen uses these theories as if they were like the laws of the Medes and the Persians. At present they are only probabilities, as all scientific hypotheses are. Many more investigations and observations are required especially in the problem of melanism before all the puzzles are elucidated. Unluckily, observations are not much use unless they can be compared scientifically with other observations in time and space. If Brian Sheen and other young naturalists would make a survey of melanism in their district and publish their findings, they might produce a few facts which would be worth large volumes of theories and counter theories.

J. H. Johnson (1040).

JUNIOR NEWS SECTION

Editorial

Your present Youth Secretary is finding increasing difficulty in keeping pace with the correspondence from members. Also he is hard pressed to find something original to write about at times. If any senior member feels he could take over, I should be pleased to hear from him.

News from Members

Again news of the St. Ivo Entomology Society, St. Ives, Hunts., from Henry Berman and the boys and girls of the society:—

"We are taking a party of boys to the area in South Eastern France around Narbonne. We are hoping to bring back scorpions, tarantulas, cicadas, mantids, lizards, snakes and any other interesting insects or spiders we can find. "Bring 'em back alive" is our motto.

If any members of the AES have need of specimens from the area mentioned, we shall be only too pleased to oblige, with dead or living material. Of course, we cannot guarantee that we will catch anything at all, but if we do have a surplus it may as well be used to some purpose. We are not very happy about Lepidoptera as they are so fragile, but I suppose we could try.

We do not leave England until 24th July—returning two weeks later, so members have some time yet to think out their requirements. We still have surpluses of locusts, stick insects, etc. (Apologies to all those we have disappointed.)

I almost forgot to mention—there will be no charge for specimens or postage."

B. Stanley, of 79 Stanley Avenue, St. Albans, Herts., would like to get in touch with other junior members in St. Albans. He writes:—

"I belong to the AES, and find the *Bulletins* very interesting, but have difficulty in translating the Latin names. I know that they are explained in some of my books, but by the time I have found the meaning I have wasted about five minutes. For this reason, I would appreciate it if you printed the equivalent English names in some of the articles."

This has always been an arguing point for entomologists. Recalling my own difficulties, I am whole-heartedly in favour of the inclusion of both English and scientific names in our *Bulletin*—which is, of course, for amateurs. Certainly some amateurs are first-rate entomologists—but we should not cater solely for the experts.

If anybody knows exactly where caterpillars of the Lappet Moth may be found, within cycling distance (20 miles) of Ely, would they please get in touch with L. R. Staines (3238*), 13 Tudor Road, London, N.9? He is having a Youth Hostel holiday at Easter, and wants to take the opportunity to obtain this species.

T. S. Robertson (2417), *Youth Secretary.*

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MEMORIES OF AN OLD-TIMER

I have no hesitation in saying that no adult ever commences the pursuit of entomology. It is impossible to conceive a middle-aged man suddenly having an impulse to collect lepidoptera. I think every entomologist will realise that an interest in insect life gripped him at a very early age.

All small boys have a desire to capture butterflies, either with or without the assistance of a net, but it is easy to note the embryo of an entomologist. He brings you insects and asks intelligent questions about them, and acquires the proverbial collection of jam-pots containing feeding larvae. This interest is seldom inherited, nor is it, as a rule, the result of paternal influence.

I happen to be one of the old school, and as I look back on my early collecting days, what happy memories I recall! They started many years ago when at the age of ten I was a pupil at a boarding-school in a village near Salisbury, an old-fashioned house standing in its own grounds, some of them wooded. I remember my first net, a home-made affair with a green muslin bag, fitted with a cane stick about five feet long. One of my school-fellows, whose father happened to be a collector, derided this net and assured me that I would never catch anything with 'that thing'. I remember the climax came one day when

I chanced to be chasing a *brassicae* round the playground, making desperate but unsuccessful sweeps at it with my unwieldy net, when I noticed, to my horror, that the critic of my net was watching me. He jeered at me, and I just hated him. However, that incident resulted in the shortening of my net-handle and our becoming fast friends.

He was my first entomologist brother, and we spent a great deal of time collecting together. We could not afford pukka storeboxes, of course, so we used to procure small, flat wooden boxes in which sweets had been packed, from the tuckshop. By slicing bottle-corks into small pieces and sticking them in strips, we made some by no means airtight storeboxes. My desire to study nature appealed to a benevolent aunt, and I remember her taking me into a bookshop and presenting me with my first book on butterflies. It was "British Butterflies" by W. S. Coleman, and cost one shilling bound in cloth. It contained illustrations of all the British butterflies, and a great deal of information about them. I studied the list of Latin names carefully, and some of them I still prefer to the more modern nomenclature.

One very vivid recollection of those days was the fact that the Large Tortoiseshell (*Vanessa polychloros* L.) was very common and the Black-veined White (*Aporia crataegi* L.) was plentiful. Those happy schooldays came, as schooldays always do, to an end, but the memories remain very vividly.

There now came a break in my entomological activities. I went into business, and for the first ten years had so little spare time to devote to my hobby that I have very few, if any, happy memories to recall in that sphere.

When I married in 1901 I moved from lodgings to a villa with a small garden on the fringe of suburbia. From that time I started collecting seriously, and during holidays and leisure hours I found myself in the New Forest district, and still have some specimens which revive happy memories of those days. For some years I was a lone collector, and, although I had a helpful companion in my wife, I lacked an entomological friend, and from a scientific point of view I made slow progress.

At the conclusion of my service during the First World War, however, business dictates found me residing in Cheshire, not far out of Manchester, and there I was fortunate indeed in having as my neighbour the late Dr. John Hope. He was a very enthusiastic collector and a good entomologist, and for a few years we spent a good deal of time together, and, thanks to his help and inspiration, my collection grew apace. His sudden death in his early forties came as a great shock to me. I have many specimens which revive happy memories of days I spent afield with him.

Among my valued specimens are five specimens of the Large Heath (*Coenonympha tullia* Mull.) which I prize as a reminder of one of the occasions when I met that popular entomologist and charming personality, the late Mr. H. W. Head. We went down to Burniston from Manchester one sunny Sunday morning, and he suggested, after lunch, taking us to a habitat of this species. The weather proved unkind, the sun disappearing when we reached the collecting-ground, and I had to be content with five specimens beaten from the grass. The day was well spent, however, for I enjoyed the privilege of spending a few hours with a man I very much admired.

With no capital other than a butterfly net and a bicycle he conceived the idea, and was the originator of, a butterfly farm. He had no pecuniary ambitions, although he worked very hard. I believe I am correct when I say that his extensive glasshouses and breeding-cages, and the planting of trees and shrubs on the plot of land he owned were the result of his own labour. He acquired a small printing press and set the type and printed his own lists. His whole heart was in his work, and he had no ambition for gain beyond procuring sufficient to defray the cost of living a very simple life. I am glad to say that I am fortunate enough to possess a series of some of the last forms he bred of the ab. *citronea* of *Pieris napi* L. (Green-veined White).

I suppose the majority of people, when they reach an age of maturity, have a desire to migrate back to their native heath. I was no exception to this rule, and in 1938 I conceived the idea of transferring my business interests from the north of England to Hampshire, the county of my birth. I was fortunate in procuring a bungalow to which was attached a fair-sized garden and a paddock of about an acre in extent. This appeared to me to be an ideal residence for an entomologist with visions of old age and an arthritic hip probably restricting my activities in the near future.

I took the precaution of planting such trees and shrubs as I might find useful for feeding larvae. The war, however, upset my calculations, and it was not until the summer of 1948 that I retired. By this time my trees and shrubs had matured; there were sallow, birch, poplar and lime, blackthorn and whitethorn in the paddock, and buddleia and Michaelmas daisies and valerian in the garden, and it seemed that I had attained my heart's desire, leisure, and the opportunity of pursuing my hobby.

Eighteen months later, I lost the companion who over a period of nearly fifty years had helped and encouraged me—my wife.

Now, more than ten years later, I look back on the happy collecting memories of the years. Circumstances change, and I have again left my native Hampshire; but often in my mind's eye I wander down a glade in the Forest which the bulldozer and the axe have spared, and watch *paphia* sunning itself on the bramble and *camilla* floating among the oak trees, or sit on the Downs, somewhere where Nature has defeated the designs of the tractor and the plough, and search for *corydon* vars. as in the days of long ago.

P. Maggs (244).

FURTHER OBSERVATIONS ON THE INSECTS OF SOUTHERN FRANCE, 1959-1960 COLEOPTERA

A full description of the terrain and lepidopterous fauna of Provence, the countryside around Digne and the Departments of Isere and Hautes Alpes was given in two previous issues of the *Bulletin*. As the coleopterist of the small party, I should like to record some of the many species of beetle taken during our two journeys to France. The time in both cases was from the end of June to the second week in July, the first time being a little later by two days (27th June to 11th July in 1959 and 25th June to 10th July 1960). I mention the dates because many insects are about on the wing for a very short time. A few days can make a great difference in the appearance or non-appearance of certain insects.

I armed myself with a strong sweep-net, an umbrella net for beating, and a water net; also four wide-mouthed bottles with strong bungs and four metal cases of glass tubes. My son has covered the type of ground we collected over, so I will concentrate on recording the beetles seen and taken. Our first stop on the banks of the Rhone near Valence produced several specimens of *Melasoma populi*. We did not stop long enough for me to search the banks which would have been an ideal area for species of *Bembidion* and other Carabs. Our four days in Provence produced the following species:—*Cicindela littoralis*, *Bembidion varium*, *B. nitidulum*, *Pogonus chalceus*, *P. luridipennis* and *Chlaenius spoliatus*.

All the above beetles were taken in the Camargue. This great nature reserve must be a paradise for the coleopterist. I wished that we could have spent more time there, but as we had seen most of the birds we had come to see and butterflies were almost absent, we moved on to the town of Arles. To the coleopterist, lepidopterists seem restless indiviuals and always on the move. The former would prefer to stop and examine manure heaps, shake out masses of dead reeds and examine dead trees, etc., but it would be only fair to say that many of the best captures on our trips were due to the quick strokes of the butterfly nets and the sharp eyes of my companions. In the hotel garden at Isle sur la Sorgue while hunting for toads and frogs I took a male and female *Lampyris noctiluca*. There was a small weedy pond in the garden and although I worked this with a water net there was no sign of insect life, other than a few larval Odonata. I expect the frogs kept the insect life well in check.

Sweeping and hunting flower heads produced the following beetles:—*Zonabris polymorpha* and *Z. duodecempunctata*, *Trichodes apairus* and *T. alvearius*. (The last two are very beautiful with their red and black elytra. They have been found in England and Fowler records and illustrates them, but it is now a doubtful species here and not on the British list). *Hoplia caerula*, which is a living gem when seen sitting on a flower head in the bright sunshine, I found in a deep valley near a small monastery. It can be seen 25 yards away and I did not need to use the sweep net. Towards the end of our stay, I used the sweep net hardly at all and just watched the flower heads. This is

not a simple task as anyone who has wandered on the lower slopes of these mountains will know. One is knee-deep in hundreds of flowers over which skip brilliant copper and blue butterflies. Beautiful fritillaries skim from flower to flower and occasionally a Swallow-tail or an Apollo sails past. In Provence I also took specimens of:—*Cerambyx scopolii, Cetonia aurata, Potosia cuprea* and *Leptura cordigera.* (Many smaller species are still unnamed, despite hours at the N.H. Museum peering through their European collections). From Provence we moved to Digne.

Digne is the entomologist's paradise. Every order of insect is represented and on our first visit in 1959 I was bewildered with the hosts of insects. As one wades through the grass and masses of flowers, grasshoppers, large and small of many species, crickets and locusts rise up in front of one in a great spray. In both our visits this district was most prolific in Coleoptera. The following are some of the species:—*Cicindela campestris, C. hybrida, Paederus ruficollis, Gyrinus natator, G. elongatus, Anthaxia hungarica, A. salicis, A. nitidula, Leptura melanura, L. fulva, L. sanguinolenta, L. bifasciata, L. nigra, L. armata, L. unipunctata, Clythanthus figuratus, Cryptocephalus cristula, C. sericeus, C. trimaculatus, C. aureolus, C. violaceus, C. nitidus, Pachybrachus hyeroglyphicus, Chrysochlos gloriosa, Cetonia aurata, Phyllopertha horticola, Pedius femoralis, Odemera podagrariae, O. nobilis, O. virescens, Henicopus pilosus, Anisoplia tempestra, Rhizotrogus ater* (syn. *Amphimallon ater*), *R. assimilis* (syn. *A. assimilis*), *R. solstitialis* var. *pineticola, Potosia morio, Chrysochloa cacaliae, Chrysanthis viridissima, Chrysolina menthastri, Clythanthus trifasciata, Mordella aculenta, Stenopterus rufus, Purpuricenus koehleri, Trichius zonatus, Hoplia philanthus, Trichodes apairus, T. alvearius, Capnadis tenebrionis, Lachlaia pubescens, Ophonus rotundicollis, Labidostomis longimana.*

During our first visit to Digne, the three chafers, *A. ater, A. assimilis* and *A. solstitialis* var. *pineticola* were very common, flying in the hot sunshine and settling on the thistle and knapweed heads. *Potosia morio* was also common. In our second visit the first three were scarce owing probably to the duller rainy weather. *Potosia morio* was common, however, together with *Cetonia aurata*, on both our visits.

La Grave, in the Hautes Alpes, where we spent four days on each occasion, is also rich in Coleoptera. Many of the species found at Digne were also present here. The hunting grounds are on the lower slopes of the mountains up to the loose shale line. Many of the Carabidae are no doubt found higher than this, up to the snow line. The lower slopes and fields are thick with flowers and in many places well wooded with willow, oak, alder, larch, etc. A very fast river runs at the foot of the La Meije Massif but this produced no beetles. It is very cold. A small pool by the side of the river had many fat tadpoles in it and one specimen of *Laccobius.* By the side of the river were some fresh manure heaps of horse, mule and cow dung. These heaps were good hunting grounds and produced the handsome Stapheline, *Emus hirtus*, also *Ortholestes tesselatus* and *O. murinus.* There were few *Aphodius* but many small Staphelines. It was a little embarrassing to stay too long at the heaps as many visitors and some French Boy Scouts were passing and no doubt wondering what the mad Englishmen found so interesting in dung heaps. *Emus hirtus* is a very active insect and is continually on the move, in and out of the dung. I hunted many cow pats higher up the slopes but *Emus* was not on them and they only produced *Aphodius depressus.* Among the many species taken at La Grave were the following:—*Cicendela campestris, Pterostichus hungarica, P. femoralis, Carabus auratus, C. catenulatus, Staphilinus caesarius, Pachyta corbriscina, P. cerambyciformis, Leptura bifasciata, L. cordigera, Trichius zonatus, Cicandela gallico, Anomala dubia, Calathus punctipennis, Poecilus quadricollis* var. *vicinus, Lamia textor.*

In a dead pine stump in a small wood near the village of Pelissanne in Provence, we had found two larvae and a pupa of *Ergatis faber.* The pupa, as big as one's thumb, I took home with me, hoping to rear it, but, alas, it died.

In Northern France, the water net would be essential, but in Southern France I found little use for it. I made the mistake of not taking a store box with me and setting apparatus. The lepidopterists were more sensible and set very many of their captures at the end of each day in the hotel bedroom. I brought all my captures back in bottles and tubes. These had crushed laurel shoots in the bottom, covered with cotton wool and then a wad of blotting paper. From time to time I added a spot of ethyl acetate. This kept the specimens

in perfect condition and when home was reached, I was able to set over 400 specimens on each expedition.

While in France during the First World War, I found a small pond in the village of Flixecourt on the Somme. Having no water net, I cut a branch from a tree and swept the water onto the bank. The result, six specimens of *Hydrophilus caraboides*, one *Cybister lateralimarginalis* and many small *Palpicornia*. I often think of that small pond and wish I could have a few hours there with a water net.. The Somme district with its many ponds, small pools and streams must be very rich in beetle life.

H. J. Cribb (2044).

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DYTISCUS MARGINALIS LINN.

The October (No. 50) "Wants and Exchanges" was even more interesting than usual. Mr. J. E. Cooper (2343*) asks for imagines or pupae of *Dytiscus marginalis* Linn. (Great Water Beetle) and *Hydrophilus piceus* Linn. (Silver Water Beetle).

An advertisement for specimens of *H. piceus* Linn. is not surprising, for it is hard to come by, and its few remaining habitats in this country usually kept a pretty closely guarded secret. In the English translation of Dr. Jan Bechyně's *Beetles* (1956) we are warned that in Germany this insect is protected. An advertisement for *D. marginalis*, however, is a very different matter, especially when we are invited to state our own price, as in this case.

All my old or oldish books dealing with aquatic beetles refer to *D. marginalis* Linn. as "common", and forty years ago it certainly was, at any rate in Cheshire. Standing quietly by any likely-looking piece of water one could be almost sure, within a few minutes, of seeing a *D. marginalis* Linn. swim from one clump of weed to another, or float to the surface for a breather. Times seem to have changed.

For some years I had to give up bug-hunting, but in 1926 took it up again near Chesterfield, Derbyshire. Having a car, I was able to cover a pretty wide area, and had access to half a dozen or more nice, weedy ponds, in at least some of which I expected to find *D. marginalis* Linn. well established. I was disappointed, for in four and a half years I only took one, which was a larva.

In 1930 I moved into Bedfordshire. Badly placed for ponds, only two were available. Still, they were weedy and well stocked with sticklebacks and whatnot, and I was surprised at catching only one *D. marginalis* Linn. in over six years.

Bedfordshire was followed by two years in Northamptonshire, during which aquatic bug-hunting was impracticable.

In 1938 I moved into Kent, and lived there until November, 1960, firstly near Orpington, then near Maidstone. In Kent, though actually it was only within a couple of hundred yards of being Surrey, there was a sudden break in the clouds, for a glorious pond was discovered stocked with all kinds of insects, from *Aeshna* Fab. dragonflies in the air to *Nepa cinerea* Linn. in the mud, and as for *D. marginalis* Linn. it was quite like old times, for two or even three would be found in my net at the same time!

One radiant summer morning in the following year I arrived at this pond of ponds and found it ruined. There was not a sign of life. All the frog-bit, starwort, and crowfoot was gone, and in the black and turgid water floated a half-submerged, sinister-looking canister.

From that time onwards my experience with *D. marginalis* Linn. in south-east England may seem almost incredible. I hope it does, for it would indicate that the situation is not as black as I suspect.

The unfailing kindness of farmers and land-owners enabled me to cover a wide area in both Kent and Sussex, and ponds and ditches innumerable were fished in both counties. Nevertheless, twelve years fishing produced but two *D. marginalis* Linn. larvae in each of two widely-separated ponds, and not a single imago.

I left Kent in the autumn of 1960, and it is pleasant to record that during the summer two imagines were taken, one from each of two widely-separated

ponds. Both were promptly returned, as would have been the case if I had caught a million, for all I want to know is how the species is getting on.

Perhaps this beetle is still common in certain districts. In 1958 I spent a summer's afternoon near Aylesbury, Bucks., fishing a weedy, disused canal and a weedy ditch nearby. The ditch produced one *D. marginalis* Linn. In 1959 I spent a summer's afternoon fishing another weedy canal, and a promising-looking ditch, near Macclesfield, Cheshire. The canal produced one *D. marginalis* Linn. So if either district had been fished more thoroughly, I might possibly have found water in which this beetle was well established.

I have now returned to Cheshire, and to a district, moreover, which appears to abound in ponds. I look forward to fishing some of them, and hope to find *D. marginalis* Linn. as common as it was when I was a boy—but I have my doubts.

John Clegg (*Freshwater Life*, 1952) writes:—

"*D. marginalis* Linn. is common and may be found in ponds all over Britain;" but although F. Balfour-Browne (*Handbooks for Identification of British Insects.* Vol. IV, Pt. 3) refers to several aquatic beetles as "common", he never uses the word of any of the six species of *Dytiscus* Linn. without qualification. He says that *D. circumflexus* Fab. is "more common near the coast than inland;" that *D. semisulcatus* Muell. is "fairly common;" and that *D. marginalis* Linn. is "more common than *D. semisulcatus* Muell." but a beetle may be more common than one that is fairly common, without actually being common.

E. F. Linssen (*Beetles*, 1959) also refers to many beetles as "common", but of *D. marginalis* Linn. he only says: "It is the commonest and most widely spread species of this genus".

I should be most grateful to learn from other pond-hunters, either through the *Bulletin*, or through correspondence addressed to me at 354 Chester Road, Woodford, Stockport, Cheshire, how they have fared with this fine, ferocious beetle. Is it by no means common nowadays, or have I been extraordinarily unlucky?

HUGH CAIGER (2908).

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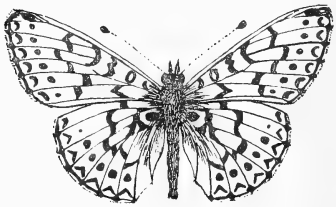
NOTES ON THE FRITILLARIES OF WYRE FOREST

During May 1959 I discovered a clearing in Wyre Forest, Worcs., where the Pearl-bordered Fritillary (*Argynnis euphrosyne* L.) was flying abundantly. This clearing proved to be a large breeding ground for this species and also for The Small Pearl-bordered Fritillary (*A. selene* Schiff.), The High Brown Fritillary (*A. cydippe* L.), and to a lesser degree The Silver Washed Fritillary (*A. paphia* L.).

In their respective seasons these four butterflies could be easily observed and their variations noted. The clearing, approximately 500 yards by 250 yards in extent is surrounded on three sides by fairly closely planted oaks, none of them of great age and bordered on the fourth side by a belt of conifers and the woodland path. Ling, rough grass and a varied selection of forest flowers, including Bugle, dog violet and bramble carpet the clearing and, to one side, a vast area of bracken has sprung up. In such ideal conditions it was not surprising to find an abundance of butterflies and moths, but in this note, I am confining my observations to the four fritillaries mentioned. In 1959, a considerable number of *A. euphrosyne* showed excessive amounts of dark markings, especially at the wing bases, but in 1960 every specimen I examined was marked true to 'type.' Then, again, the 1959 emergence of *A. selene* showed a lot of minor variation, the most outstanding being a fair number of specimens which were very lightly marked, the spots in some cases being merely pin-points and the dark streaks only represented by very fine dark lines. In 1960, however, the butterflies were again all 'type' specimens. *A. cydippe* on the other hand, showed little variation in either year, the main difference being the slightly richer background colour of the 1960 brood. Now both *A. euphrosyne* and *A. selene* hibernate as small larvae, and, after hibernation, the weather in early spring of both 1959 and 1960 was similar. The early larval life of both these species differed greatly, however, as far as the weather was concerned. The 1959 brood hatched from the egg in 1958 as young larvae, to face

one of the wettest summers on record, then hibernated and finally pupated and emerged in 1959 as a very variable batch. The 1960 brood were more fortunate and hatched from the egg in 1959 to commence life in one of the hottest summers we have had for years, and the imagines resulting were all typical.

♂ A. SELENE WYRE FOREST WORCS 31/V/59



♂ A. SELENE WYRE FOREST WORCS 6/VI/60

A. cydippe, however, hibernates in the egg stage and climatic conditions in spring and early summer of both 1959 and 1960 were similar. Variation in this species was not noted to any considerable degree.

My observations were timed as near as possible to the post mating period as the butterflies had by then ceased their wild emergence and mating flights and had become more docile. In many cases it was unnecessary to net the two smaller species as they could easily be observed at close quarters whilst basking in the sunshine.

As regards *A. paphia*, the numbers seen were insufficient to draw any conclusions. This fine insect appears to be getting much rarer, but of the half dozen observed, all were typical as far as we could see. None were netted, as my son and I found that with this species a particularly dense bramble patch proved more than a match for our nets.

To sum up, it does seem possible that *adverse* climatic conditions in the early instars of the larval life of *A. euphrosyne* and *A. selene* can affect the final colour pattern of the imagines but many more years careful observation will be necessary to prove that point. On the face of these observations it seems unlikely that the variation noted is inherited and my chief regret is that I failed to rear some ova from a very lightly marked example of a female *A. selene*. The young larvae died (after hibernating) from what appeared to be a form of virus disease. In conclusion, I would be very interested in members' observations of these four species, especially if they can throw any light on the subject of variation.

W. J. Tisbury (2717).

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A POT-POURRI

It's a bit difficult to do much breeding in a student's hall. Not only is it inconvenient to have cages in one's room; it is also quite a job to transport livestock by train during the vacations. However, by using nests of transparent plastic lunch boxes I was able to breed a few Hairstreaks in my room this Trinity Term.

I collected fourteen Purple Hairstreak caterpillars between May 21st and 26th, all but one being in the last stage. This one moulted on May 27th, fed until June 14th, and then ceased feeding. It was still very small but would not touch the foodplant and roamed about the box until it died on June 22nd.

Of the others, all had humped up by May 30th and between this day and June 4th seven had pupated and six had died of parasites. One to three Dipterous larvae crawled from each caterpillar and pupated alongside. I sent these to Mr. Uffen, who told me that they were Tachinidae.

Two of the seven hairstreak pupae did not emerge—a single Tachinid (?) larva crawled from each, pupated and emerged on June 23rd. I did get five fine adults from the fourteen larvae. Between June 22nd and 25th three females and two males emerged. Isn't this very early for Purple Hairstreaks? Has anyone else who bred them this year had 61·5% of his sample parasitised?

After beating many blackthorn bushes on many weary afternoons, I got two Brown Hairstreak caterpillars on June 2nd. For a beating tray I used an old sheet, 8 ft. × 8 ft., spreading it under the bush and beating branches separately. It was surprising how few caterpillars of any kind were to be found on blackthorn.

On June 15th the two larvae turned purple and pupated three days later. One male and one female emerged between July 14th and 21st. Once again, isn't this very early for the species?

I saw first generation Wood Whites in three Devon localities and also saw Heath Fritillaries from that county.

I caught a female Meadow Brown which had the orange band on the right forewing replaced by a very pale yellow, almost white.

Perhaps the highlight of the year was the caterpillar I found feeding on an old cardboard packet. It looked like a Large White caterpillar, but it would not eat cabbage. I examined the rotting cardboard and found that it was the packet of a well-known brand of washing powder. I bought some of this powder (with a 'Save 2d. coupon' which had been delivered that day) and, sure enough, the caterpillar throve on it. Eventually, it pupated and emerged in September. It wasn't a Large White. Every trace of black marking had been removed by the blue speckles and the wings were whiter than white. I have called it the Shining, Shining White.

Looking through the 1959 *Bulletin* (Vol. **18**, p. 71), I was interested to read of the pairing Brimstones.

" . . . a pair of Brimstones sitting there *in cop* . . . the sky being overcast at the time . . . Those butterflies paired continuously and immobile not for one day, not for two days, but for FIVE DAYS! . . . Have any members records such as this?"

Well, have they?

PETER A. TYLER (2476).

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SOME FURTHER OBSERVATIONS ON BUTTERFLIES IN PROVENCE, JULY 1960

Referring to the notes of N. F. Gosling (3170) (see *antea*, p. 32, I would like to add the following comments. His own visit was in mid-July, whereas our expedition was there at the end of June and the first days of July. Already we observed that the countryside was becoming arid and the vegetation scorched in the areas away from the rivers. We appeared to strike the peak of the butterfly emergence period, and Mr. Gossling would have probably missed the majority of the species seen by us by being there two weeks later. Mid-July would be more profitable farther north in the High Alps. He does not mention fritillaries, whereas we found several species at Les Baux and in the area around Arles we recorded 60 species of butterfly on the wing. We found *S. circe* everywhere where there was grassland, whereas Mr. Gossling found it only in small colonies. Of the other species he mentions, it should be noted that *Papilio podalirius* feeds on the leaves of trees and not on fennel, and while I do not dispute that it may fly round fennel plants it is more often to be found sailing round the cherry, sloe and peach bushes growing on the slopes or in the valleys of the mountains. Unlike *machaon* it does not fly near to the ground but tends to soar up and down. The species referred to as *Limenitis camilla* Linn. is, in fact, *L. sibylla* form *rivularis*, and not our English White Admiral. It is a common insect in all wooded areas in Provence and the French Alps,

varying much in size and in colour. The underside is much more intense than *L. camilla* but its habits and foodplant are the same, although the type of honeysuckle eaten is the scrubby mountain species as well as *Lonicera periclymenum*.

The nomenclature of these two species has always been confusing, and there have been several change-overs between the two *camilla* and *sibylla* on grounds of priority. It is accepted, however, that they are two distinct species. I can find no record of *L. camilla* or *Neptis aceris* being taken in Provence nor did we see the former in South France during our visits. In regard to the Burnet, *Z. carnioloca*, this is fairly widespread in central and south France, occurring on the lower slope of the mountains. We found it flying with the moth *Syntomis phegea*, common in the Basses Alpes area.

P. W. Cribb (2270).

LETTER TO THE EDITOR

May I, as a young senior member, say how very interesting I find the Junior News Section. In particular, I was pleased to see in recent issues of the *Bulletin* comments by junior members on insects belonging to other orders than Lepidoptera. Perhaps I may be permitted to make a few comments.

Surely the number of wasps which occur in the summer is dependent on the weather of both winter and spring. If we have an extremely cold or wet winter, then the number of queen wasps which survive are less than when a mild winter occurs. Consequently, the number of wasps seen in the summer is also reduced, whatever the state of the weather in the spring. If, however, the queen wasps, which started to hibernate in the autumn, survive, then the number of wasps will depend on the weather conditions at the time of nesting. Does it make any difference to the number of wasps seen later in the year, whether a queen wasp is killed whilst hibernating or whether the nest is destroyed later on in the year? If the nest is destroyed then there is the possibility that the queen wasp will escape and start a new nest. Therefore, might not the winter weather conditions be more important than the conditions later on in the year? What are other members' views?

I quite agree with J. M. Porter (*Bull. amat. Ent. Soc.*, **19** (1960), 109) that there is plenty of scope for members interested in doing original work on ants and, of course, for all the other orders of insects as well. One of my particular interests is the distribution in Great Britain and Ireland of the social bees and wasps: a few examples of questions that require to be answered are: —

1. How common is the Hornet (*Vespa crabro* L.)?
2. Do the two common wasps, *Vespula germanica* and *V. vulgaris*, which are very similar, interbreed?
3. Do these two wasps come into houses to the same extent? This is a field where junior members could make really useful contributions to entomology. Are there enough ordinary and junior members interested to form a group to study the social insects?

Has Miss Neill (*Bull. amat. Ent. Soc.*, **20** (1961), 2) tried to identify her bumble bee with the aid of the Society's own leaflet (No. 25), or the book on Bumble Bees in the New Naturalist Series?

When collecting bumble bees it is important to keep the insect dry so that the hairs do not become matted together, with the consequent loss of a valuable identification characteristic. It is also well worth taking the trouble of pulling out the genitalia when setting male specimens, as these provide a good method of identification.

I shall be pleased to try and help members by identifying any social bees and wasps that they may care to send me. I shall also be grateful to receive from members records and specimens of these insects from all parts of these islands.

D. I. Chapman (1648).

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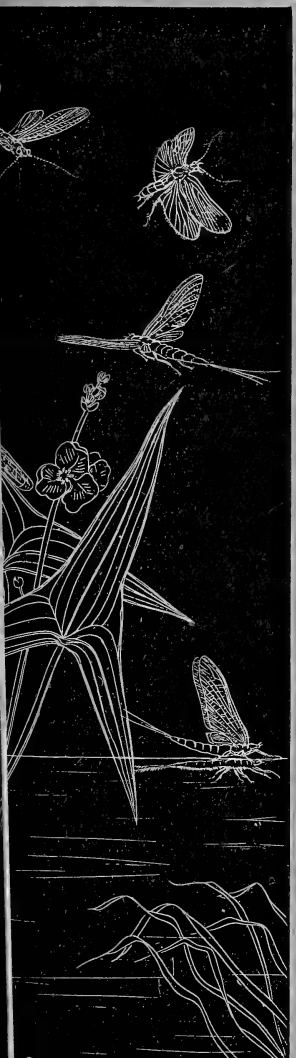

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by W. N LAWFIELD

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A E S

No. 245

BULLETIN

MAY 1961

COLLECTING HINTS—May

The Smaller Moths

Many of the day flying moths and those easily disturbed will be found during this period. Amongst them will be the Pyraustids, such as *P. aurata* Scop. and *P. nigrata* Scop.; Crambids, such as *C. pratellus* Linn. and *C. chrysonuchellus* Scop.; the Elachistid, *E. argentella* Clerck.; and also *Nemotois degeerella* Linn., and *Oecophora geoffrella* Linn.

Keep a look out for heavily webbed hawthorn bushes, particularly small ones, which may mean that the bush is infested with the larvae of *Scythropia crataegella* Linn. Last year mine emerged about the 16th of June.

A watch should always be kept on tree trunks and fences for Psychid cases, although not all species pupate on them, of course. Probably, the commonest at this time of the year is the easily seen case of *Fumea casta* Pallas. The larva feeds on 'grasses' and then pupates on a wall, fence or tree trunk. The less common *Epichnopteryx pulla* Esp. is similar and usually is a little earlier than *casta*. Remember that the females are apterous; indeed, the *pulla* female has no legs, antennae or wings. Usually the first sign that the female has emerged is the presence of a large number of small larvae crawling about in cases that they may have made from their mother's case.

The larva of the plume moth, *Alucita baliodactylus* Z. may be found in the Southern counties on marjoram (*Origanum vulgare* L.). The larva of the local moth, *Cnephasia incanana* Steph., may be found feeding in the flowers of the bluebell. This plant which has a different common name in different parts of the British Isles also has a collection of scientific names. It used to be called *Scilla nutans*, but amongst others it may be known as *Scilla non-scripta* Linn. now.

D. Ollevant (1514).

The Diptera

With increasing length of daylight and sunshine, even those who have to spend much time away from the woods and fields earning 'bread and butter' are tempted to collect and observe the host of species of flies that are on the wing in May. Flowers are everywhere and a collection of the diptera visiting them and by making notes at the same time of their habits should produce much new scientific knowledge as the collection grows. There is yet to appear an account of the flies pollinating fruit trees. Plum, pear and cherry flowered last month, but apple is now in blossom and needs attention. The wild flowers attract—great stitchwort and herb robert for *Empis praevia* Collin,bugle for *Rhingia campestris* Mg., wild arum for species of *Psychoda*, especially females of *phalaenoides* L., tormentil for *Hercostomus nigripennis* Fln., and hawthorn for many Syrphidae, etc.

There are many insect collectors of diptera, and May sees many at work. *Rhamphomyia sulcata* Fln. provides interest in its behaviour when courting. The males patrol to and fro over grassland at woodland verge, males seeking prey, mostly *Dilophus febrilis* L., and then pass the prey to females when coupling. In the genus *Hilara*, the relatively large *interstincta* Fln. flies over pools and puddles gathering other smaller species of *Hilara—cornicula* Lw., *manicata* Mg., *quadrivittata* Mg. and *pilosa* Zett.—the latter itself preying on small Chironomidae. Of the genus *Empis*, some 22 species are on the wing. The largest, *tessellata* F., frequents several flowers, mostly white, a few yellow, about woodlands and hedgerows. There are two forms; the pale-legged form prefers interior of the woods. The species is a strong flyer, patrols about flowering bushes and hedgerows, collecting a large variety of flies of several families with *Bibio marci* L. a favourite. The prey is presented to the female when they couple. *E. livida* L. is a smaller species and more given to visiting lilac and rose-tinted flowers, as well as those of white and yellow. Fewer diptera are taken, but quite often the chief victim is the moth *Tortix viridana* L. when that is abundant. *E. femorata* F. takes smaller prey—*Fannia*, *Bibio* and

Dilophus. A rarer visitor to flowers, the males patrol beneath the canopy of a tree, taking other patrolling flies, to pass them to the females as they mate. Observations on the less common species of *Empis* are wanted, and although identification of the adults of this large family will soon be easy on the publication of Mr. J. E. Collin's volumes, the early stages have still to be described. Even observations on egg laying should be possible by field workers and worthy of publication.

The collection of adult flies in May and June is so easy. The variety is enormous and there is a need to adhere to some plan if progress is to be made in the study of diptera. The collecting and study preparatory to the production of 'county lists' have assisted the compilation of the 'Keys'. Now that the bulk of the species of this country are known, the new species are mostly found by collectors working small areas intensively and by those who rear flies from animal dung, plant galls, leaf mines, bird nests, etc. May is a good month to start a 'rearing' programme. Immature stages can be found that will soon produce the imagines. Commence with easily reared species of identifiable adults—cow pats for *Scatophaga stercoraria* L., the round 'gooseberry' shaped gall on field thistle for *Urophora cardui* L., the leaf mines on ragwort for *Phytomyza atricornis* Mg. and the cigar-shaped galls on *Phragmites* for *Lipara lucens* Mg.

This is the month for collecting Bibionidae, almost all the species are on the wing. Whilst amassing a representative series, try and collect data on the enemies of these black flies. They are captured by several species of *Empis* and by spiders and birds. An intensive study of a small area where Bibionidae are abundant should enable an observer to find out many facts at present unknown.

L. Parmenter (895).

The Coleoptera

During May, the Coleopterist will do well to make full use of his beating tray. Almost every kind of tree and shrub will be found to harbour a number of beetles, and representatives of many different families of Coleoptera can be collected in this way. The weevils will be much in evidence, and this month I propose to discuss the genus *Phyllobius*, of which we have ten species in this country.

Phyllobius parvulus (Ol.), *P. virideaeris* (Laich.), *P. pyri* (L.), *P. oblongus* (L.), and *P. argentatus* (L.) are all common and very widely distributed. They do not seem to show any preference for particular host trees but they are certainly commoner on the younger trees at the edges of woods and in scrubland. Birch, oak, hawthorn and various fruit trees can usually be relied on to yield these common species. They may also be swept from herbaceous vegetation, especially nettle beds.

P. maculicornis Germ. and *P. calcaratus* (Fab.) are much more local but equally widely distributed. They occur on a wide variety of host plants but the latter species is particularly partial to alder.

P. pomaceus Gyll. is very common throughout the country. It has a decided preference for nettles and it can most easily be obtained by sweeping a good stand of that plant.

P. viridicollis (Fab.) is a northern species although there are some southern records. It can be taken by sweeping rather than by beating as it frequents low vegetation and is often found on flowers.

There is one more species, *P. artemisiae* Desbr., which does not appear in the older books. It lives on that very pleasantly aromatic plant, the sea wormwood which grows on salt-marshes all round our coasts except in the extreme north of Scotland. Wherever the plant is found the weevil should be sought for but as it has not yet been adequately recorded, its full range cannot be given.

K. C. Side (2140).

The Macrolepidoptera

The larvae of *Tiliacea citrago* (Orange Sallow) are to be obtained by beating limes at night. During the day they remain spun up between the leaves, and in this position are difficult to find except by careful searching. P. Le Masurier states (*antea*, 17)) that they are also found amongst the rubbish and young shoots at the base of the trunks. This species is widespread throughout the London area. Lime trees bordering roads and parks seem equally productive as those growing in wilder situations. Such trees are, of course, grown for ornamentation, so great care should be exercised when beating if one does not wish to arouse the wrath of local inhabitants.

Other "sallow" larvae can be collected in a similar way:—*T. aurago* (Barred Sallow), from Beech, Maple and Sycamore, *Cirrhia gilvago* (Dusky-lemon Sallow) from Elm, and *Atethmia xerampelina* (Centre-barred Sallow) from Ash. The larvae of the latter do not spin up amongst the foliage, but conceal themselves under loose bark and debris at the base. Another method of collecting this species which is said to be quite successful, although I have never attempted it myself, is to tie a piece of sacking around the trunk a few feet from the base. When the larvae descend after their nocturnal feeding, they hide between the folds of the sacking unaware that they have not reached the ground.

As a final note, I will add that the larvae of all species mentioned do not pupate immediately upon entering the soil, but spin a cocoon and remain in the larval state until a few weeks prior to emergence. It is, therefore, imperative that they are not disturbed during this state of torpidity.

B. F. Skinner (2470).

PAIRING OF THE *SAMIA CECROPIA* IN THE WILD

As much of the native woodlands of my locality (Long Island, New York) are being rapidly destroyed for the purpose of housing, mating the silkmoths and procuring wild cocoons is becoming an increasingly difficult task. Here on Long Island are found *S. cecropia, C. promethea, A. io, T. polyphemus* and, rarely, *T. luna.* Among the most often bred of the silkmoths is *S. cecropia,* doubtless because of its ease in rearing along with its large size and showiness rendering appeal to the amateur collector.

Although cage matings of this species are easily obtained, much is to be gained if one subscribes to the practice of tying out. If he ties his females in proper fashion much is to be gained. A strong strain of stock is one important physical result, while obtaining large wild males for setting along with the enjoyment and satisfaction derived from witnessing the phenomenon of assembly, also make this a wise practice. Below, I have tried to set down a typical experience as best I can to show the collectors of Europe somewhat the nature of actual mating of the *cecropia* along with the enjoyable times involved.

It was a warm, somewhat humid, evening in early June, when upon nearing my outdoor breeding cage in which hung many hundred native and foreign silkmoth cocoons, I discerned three freshly emerged moths. These had evidently hatched early in the afternoon as they were fully dried and already beginning to stir as the last rays of sunlight were slowly disbursed by the dark curtain of night. Upon closer inspection, I found the moths to be two female *S. cecropia* and one male of the sames species. These were of the first to emerge, as spring arrives rather late in the U.S. compared with Europe. I took from the cage one of the females and left the remaining pair untouched within the cage to mate if such was to be the case. A piece of soft knitting wool was carefully looped around the abdomen of the female and slipped up into place directly below the thorax, where the girth of the moth is at its minimum, and thus tied securely to prevent the moth's escape but not too tight to interfere with normal movement and breeding. After waiting until it was entirely dark to avoid the birds, I set out with moth in hand to the border of a nearby wood. After selecting an appropriate wild cherry as high as my head, I carefully tied the loose end of the string to a low branch, giving the moth perhaps 8-10 inches freedom to wander about. After marking the spot carefully, I returned home to await the calling hour, which in this species is quite variable. At eleven o'clock, accompanied by a companion, I returned to the tied *cecropia* and observed her hanging rather low down with genitalia protruding. We then retreated to about ten yards of the moth so as not to disturb her calling, and awaited any males which might be in the area. After a rather long twenty minutes, we were rewarded by the sight of a male *cecropia* blindly flying along the ground. At the same moment another male appeared on the scene and, soon after, another and another, until there were four moths circling and diving in the area of the female. At this time we moved to a considerably closer vantage point to better view the goings on, and the males seemed completely oblivious to our presence as we ducked from their erratic flight paths. After several minutes of this action, one of the males began a more systematic hovering about the bottom

of the bush until he found the female and then at once began circling and darting again. He shortly settled down, however, and soon connection was made. At this very moment the other suitors seemingly disappeared, probably responding to the call of another female somewhere in the vicinity. After giving the moths sufficient time to settle down, they were carefully transferred and brought home. The following noon they broke up, but remained resting together until dusk, at which time the male flew high up and to the south upon release. The female then commenced to lay her eggs which amounted to more than 350, not an uncommon number for this species.

The specimens left in my cage also paired satisfactorily and the practice of tying out was used to excess in 1960 very successfully. I hope I have done something to enlighten the collector who has had little opportunity in this endeavour to the thrills of these wild matings which, with a little luck, are almost always rewarding to the breeder.

BRUCE A. FELLER.

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JUNIOR NEWS SECTION

I have had a letter from a Junior Member as follows: "I have been extremely interested in the British Lepidoptera for many years, and I am writing to you with a hope that you can give me some idea if there is any future in this study in the way of a living?"

At the risk of increasing the competition for a job on the lines he mentions, I will include this month some of the points I made in the letter I wrote to him.

There are very few posts for the British Lepidoptera alone; and I think it is best to use the butterflies and moths to get a grounding in Natural History, scientific ideas and sound observation—then go on to some allied study with more prospects for a career. I know of only three establishments where people are employed solely on the British Lepidoptera—(a) the British Museum (Natural History) in London; (b) the Natural History Museum, Tring, Herts., which is a branch of the British Museum; and (c) the Rothamsted Experimental Station, nr. Harpenden, Herts.

If you are up to University work and your parents can send you, it is well worth while going on for a Degree after school. The best to aim at would be a B.Sc., with Honours in Zoology, when you could specialise in Entomology. Even at this, you should be looking round for interests in other Orders; or aspects of Entomology than Lepidoptera. Only if you are so good as to gain 1st class Honours is it likely that you can stay on at a University after your first degree to do research in your chosen line. Many of the posts for Entomologists involve tours of several months' or years' duration under primitive conditions abroad, studying insects of Medical or Veterinary importance—and, of course, you must be reasonably fit and of independent nature to undertake this.

Posts in provincial museums sometimes arise at various levels—for people with 'O' level or 'A' level G.C.E., or with degrees. A junior assistant would get a lot of routine and unskilled work and would have to continue his studies. The work is rarely concerned with Entomology alone, and the good all-round naturalist who can show that he is clever with his hands, and has some artistic sense, is wanted. Sketching, painting, making models, knowing the countryside—this is the type of background which helps. There is a Directory of Museums in the British Isles, which any Public Library could obtain. A look through this to select likely-looking establishments would tell you where to enquire about possible vacancies. The salary and prospects in museums are very variable. Some barely give a living wage—because often they are manned by people with private means for whom the work is its own reward. Others offer a career for life with excellent prospects.

The Nature Conservancy is another body employing field scientists—but again if you have not a degree the chances are you will have to work up slowly from a pretty junior position. The Field Studies Council also has a few vacancies each year—though usually for graduates. For all of these and other Biological posts, it is worth consulting the pamphlet "Careers in Biology", published by the Institute of Biology, 41 Queen's Gate, London, S.W.7.

Most of us have to continue our Entomology merely as a hobby—the serious business of earning a living taking some other form. Plenty of Doctors, businessmen, skilled and unskilled workers are first-rate Entomologists. For those with

the leanings for it, school-teaching combines well with Entomology, and I can think of one very well-known Entomological book with a school-teacher as joint author. While a degree is desirable it is not essential. An Honours degree in a Biological subject can lead to teaching Botany and Zoology, with plenty of scope for developing field work on the lines you wish.

To summarise—it would be wrong for me to encourage any Junior unless he can acquire a good general education and has the basic ability and self-discipline to look forward to several years full-time or part-time study, often at subjects not closely connected with his special interest—often difficult and even uninteresting.

A good General Certificate of Education—with some half-dozen subjects at 'O' level is almost indispensable. Some science subjects, particularly Biology, would be desirable, but perhaps not essential. For those with 'A' level G.C.E., the best combination would include two or three subjects out of Zoology, Botany, Biology, Chemistry, Physics and Mathematics. Even at this level a Biological subject need not be essential—though, of course, an advantage. A degree, preferably with good Honours, will open the way to the widest choice of careers and ultimately give the best prospects of reaching the top of the tree. The Diploma in Technology, with a biological bias and the Ministry of Education Endorsed Certificates of the Institute of Biology are alternative qualifications—though with a more practical trend than the University degree. Whatever way you look at it—it's hard work!

T. S. Robertson (2417).

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BUTTERFLIES OF PORT ELIZABETH

Having carried out a considerable amount of breeding in England, I decided that I must recommence my activities in South Africa. I have now been in the Union for one year and have studied some of the butterflies of the Port Elizabeth and surrounding districts. As I had no knowledge of the South African species, I was most fortunate in meeting Mr. Gowan C. Clark, who is recognised as an authority on butterflies in the Union, and who lives close by.

There are about 600 species in the country, about 300 of which have been reared from the egg, mainly by Mr. Clark. Of these, about 50 are found in this district, and I shall probably have reared about 20 at the end of summer. A lot of areas which used to abound are now built up, but a stretch of land in the middle of Port Elizabeth, of several square miles in area, is in its natural state. This is known as Settlers' Park, named after the 1820 English Settlers. Several species which had disappeared from the area are now returning, and about 90 of the local insects are to be found here. Although a few species are to be found in the town, one has to travel at least ten miles to the nearest hunting-ground, apart from the Park already mentioned. One of the major difficulties is the obtaining of foodplant, so that I have now commenced to grow various plants by soil-less culture, i.e., the use of vermiculite soaked in a balanced nutrient solution of the correct chemicals.

The whole Eastern Cape area is relatively poorly endowed and does not compare with the Barbeton area in the Transvaal and the Oribi Gorge in Natal. In these two areas it is possible that three-quarters of the butterflies of the Union are to be found. These two areas are, however, 1,000 and 600 miles respectively from Port Elizabeth, but I am hoping to visit the Oribi Gorge at some future date.

I shall now describe some of the species I have seen and/or reared. The Papilionidae have four members in the area, two of which I have seen but not reared. *P. demodocus* and *P. lyaeus* both feed on citrus, although *demodocus* also feeds on fennel, in which case the larva changes colour. *P. demodocus* is very similar to *P. machaon* but larger, and *P. lyaeus* is a black-winged butterfly with beautiful irridescent blue bands on the upper surface. Both species are to be seen in town, but breed in the citrus farm areas about 50 miles from Port Elizabeth.

The Nymphalidae have only a few representatives in the area, but include a beautiful genus known as *Charaxes*, which have a flight very similar to the Fritillary family, but are characterized by larvae having four horns at the head, and which in their final instar look very similar to *A. iris* larvae. The only local representative is *C. varanes*, resembling *A. paphia*, but has an irridescent white area at the base of the wings, and is slightly larger. Two

other members of the *Charaxes* genus are known to fly about 25 miles from Port Elizabeth; both these are large, shining blue-winged insects. *P. cardui* is very common in October, the larvae covering nettle and thistle beds. *P. cebrene* is another local species of great beauty, known as the Yellow Pansy, due to its resemblance to this flower. It is extremely difficult to catch, as the yellow colour blends in perfectly with the yellow earth, and it is a very fast flyer.

The Pieridae are well represented by a number of Whites, Orange Tips and Purple Tips. *P. florella* is very common, and is one of the largest of the Whites, the female being either white or yellow, the male always white. *C. croceus* is also common, and occurs in any grassy area, the larvae feeding on lucerne. The Orange Tips are very similar to the English species, but the very beautiful Purple Tip is not often seen. This and another species which has black and white striped wings both feed on a tree which has, unfortunately, been cut down in building new townships.

By far the most common family, and the one with the most representatives in the area, is the Lycaenidae. Some of these are very closely related and very difficult to distinguish and for someone not familiar with them, impossible to differentiate in flight. When the foodplant is learned, however, it is soon noticed that the ova are quite different. *L. boeticus* is one of the commonest butterflies in South Africa, flying everywhere, the larvae feeding mainly on broom. It is amazing to see one of the rare migrants to Britain so common, and I have not yet become used to the idea.

A sub-family of the Lycaenidae, called *Lepidochrysops*, is a large one, most of the larvae of which are cared for by ants, in most cases feeding on ant larvae. Other members are difficult to rear unless ants are in the vicinity.

There are several species similar to the English Hairstreaks, the larvae feeding inside beans and flower heads. A particularly beautiful member of this family is *M. ficedula*, whose larva feeds on wild fig. This species has a brilliant metallic blue patch on the upper surface of the wings and magnificent long tails.

There is only one member of the Danaidae, *D. plexippus*, closely related to *D. chrysippus*, and feeding on milk-weed. It is a common species and very easy to catch, as it has a slow flight and frequently rests.

The Satyridae are as common as in England, and the species very similar, all of them having the characteristic eye spot and varying only in shades of brown. I have not as yet reared any of this family.

One of the advantages of breeding in South Africa is the warmth of the winter, and several species are continuously brooded, so that one is able to rear throughout the year. The species which do hibernate are only dormant for two or three months, usually June-August.

C. J. Taylor (3239).

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COLLECTING INSECT BOOKS

I am one of the many people (some very peculiar) who are drawn to second-hand bookshops as by a magnet. Some of my kind just browse, others are veterans in search of rare works. I, personally, make straight for the Natural History section and search avidly for insect books.

Second-hand book collecting, irrespective of the sort of book collected, can be raised almost to the level of a fine art. Local shops can be visited every so often; if one is ever in London, the Charing Cross Road affords a good start to a beginner. Going to the requisite section, we look at the titles. Do not forget that book pushed nearly to the back of the shelf; nor that one from which the title has all but faded; either might be a rarity! Some shops keep special sections for books in a series such as the "Wayside and Woodland" or the "New Naturalist", and these may be far away from the Natural History section. Then there is that mixed-up jumble on the shelves outside on the pavement. This method of obtaining books one wants, at slightly inferior condition, but often markedly lower price than the first-hand copy, is the best I know—always provided one doesn't mind a book of slightly inferior condition. In this way I have obtained most of the "Wayside and Woodland" series; after obtaining new covers at 3d. each, they look good as new. Thus also may one obtain books

now out of print, such as the English translation of Fabre's immortal "Souvenirs Entomologiques".

Usually one finds (alas!) that the booksellers know their job, and one does not often come across a cheap rarity. But in a scruffy-looking shop down a dark alley in London, I found a cheap copy of Reitter's "Fauna Germanica, Käfer"; in another, Tutt's "British Lepidoptera" (though the set was incomplete). Of course, there are disappointments. One or two books I have were new to me when I saw them, but looked old enough and odd enough to be worth buying; they weren't. That was in my earlier collecting days; since then I formulated the golden rule: Never, never buy an expensive book unless you know exactly what you're doing. It has saved my pocket on more than one occasion.

But the chief danger in collecting books lies not in paying exorbitant prices. As with a collection of insects, the chief delight is in finding out more from one's captures, of discovering fresh and exciting fields of knowledge. Mere collection, as such, is worthless and unrewarding, save possibly to the materialist who claims that the value of his books goes up while the value of money goes down. So never let collection, as such, get the better of you; it is only a means to the end of relating each fragment of knowledge to the sum of the whole.

R. G. Thimann (2924).

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WICKEN IN LATE SPRING

On 29th and 30th May 1960, I spent two days at Wicken Fen. Although the primary object of this expedition was to make some colour slides of birds, some of the time was, of course, devoted to the pursuit of entomology, both day-collecting and night-hunting with the aid of sugar, sheet and lantern.

The dates I had chosen for my two previous expeditions to Wicken—so richly rewarding a terrain for both bird-watcher and entomologist—had been late August and early September, my object on both those occasions having been the collecting of wainscots; but this time I chose late May as being a more suitable season to study the breeding habits of birds and try to obtain some photographic shots of nesting scenes. I was, therefore, immediately struck with the great disparity of the entomological results of a visit three months earlier.

I arrived with my companion at about 2 p.m., and decided that, after picnicking in a field just outside the village, we should make our way to the fen for an afternoon's operations before supper at the Maid's Head Inn, where we would be staying. There was plenty of solid work to be done searching and beating the sallow, sloe and other scrub for larvae, putting up day-flying geometers and butterfly-hunting in the more wooded part of the reserve, beyond the old mill, and looking for tell-tale holes in the stems of wainscot-tenanted reeds.

The cuckoo was in evidence the entire time we were exploring the fen in daylight; its tireless voice I, personally, found very cheerful. Towards five o'clock it was answered by a second cuckoo from across the far side of one of the dykes, and this cuckoo duet provided a most pleasant background theme to the fugue of assorted bird voices all around us. We heard—and saw, in broad daylight, the nightingale, whose pure liquid melody has to be heard to be appreciated; words cannot convey any adequate impression of it. The wood warbler and grasshopper warbler joined in, and thrushes, blackbirds, robins and sparrows swelled the symphony, with the occasional discordant note of rook, crow or jackdaw, and the high-pitched call of the martin on the wing.

The main butterflies of the dykeside flats included the Small Copper *Lycaena phlaeas* L.), the Small Heath (*Coenonympha pamphilus* L.) and the Wall (*Pararge megera* L.), while day-flying moths were put up at every few steps, or were seen disporting themselves in the sunshine or resting awhile on the reeds. Species seen included the Common Heath (*Ematurga atomaria* L.), (including a very fine var.), the Latticed Heath (*Chiasmia clathrata* L.), and *Aspilates strigillaria* Hb. (Grass Wave). There was a vast assortment of micros, mainly Crambidae.

We searched assiduously for larvae; the temperature was high enough to deter us from the more strenuous task of beating, in addition to which we were trying as far as possible to avoid making any noise that would frighten away the birds I was hoping to use as camera subjects.

On arrival at the wooded portion at the back of the second intersection of the fen, we found an immediate increase in the number of species of butterflies. The Brimstone (*Gonopteryx rhamni* L.) (including an exceptionally brilliant, very deep yellow male which unfortunately managed to elude me), the Large and Small Whites (*Pieris brassicae* L. and *P. rapae* L.), the Orange Tip (*Euchlöe cardamines* L.), the Red Admiral (*Vanessa atalanta* L.) and *V. urticae* L. (Small Tortoiseshell) now joined the fray, and a fritillary flashed suddenly along the path and up and away out of reach at a great speed. It was going too fast to be identified with certainty, but we are inclined to believe that it was a High Brown Fritillary (*Argynnis cydippe* L.). The Holly Blue (*Celastrina argiolus* L). was also in evidence, though not in any great numbers.

On our return for supper we saw a water rat disporting itself in the dyke, disappearing after a short while into his hole under the overhanging bank vegetation on the far side. We also witnessed the fascinating spectacle of a male *Aeshna* dragon-fly flying a few inches above the water surface gripping his mate, supporting her while she gracefully looped her abdomen and deposited an egg here and there on the water-weed just below the surface, her mate executing adroit dips to enable her to do so.

Evening operations were begun shortly after 8 p.m., when we chose our pitch and prepared our gear. The approach of dusk brought out such attractive species as *Xanthorhöe ferrugata* Cl. (Red Twin-Spot Carpet), *Electrophaes corylata* Thb. (Broken-barred Carpet), *Melanippe montanata* Borkh. (Silver-ground Carpet), *M. sociata* Borkh. (Common Carpet), and *Rumia luteolata* L. (Brimstone moth), including several good variable forms. Micros were abundant, large Crambidae frequently being mistaken for 'pugs' or other small geometers.

We sugared the few sparse trees and posts, but without result, so turned our attention to light-collecting with sheet and Tilley; however, this, too, proved a failure. An occasional moth circled within range of the bicycle-lamp with which we inspected the sugar, including one or two of the geometrid species mentioned above, and two noctuids, *Xylophasia crenata* Hufn. (Clouded-bordered Brindle) and, unexpectedly, *Apamea ophiogramma* Esp. (Double-lobed), which I have never before taken so early in the year. (I last took this species at Wicken on 27th August 1955, and on referring to my records I find that I have never taken it earlier than July. Can someone enlighten me as to whether this species is double-brooded? Or was it just a chance early emergence induced by the comparative forwardness of the season?)

We decided to "call it a day" at one o'clock, and wended our way back to where we had left the car, the results of our efforts having proved somewhat disappointing. Although the day had been warm enough, we found the night decidedly chilly for the time of the year—so much so, in fact, that we were grateful for the overcoats which we had thoughtfully left in the car. The night was cold and clear with a million stars, the plangent note of the tawny owl now replacing the erstwhile cuckoo, while the nightingale continued unabated into the small hours. A mist was rising over the fen, swirled by the cool wind, and on measuring the ground temperature we found this to be only 38°F. Small wonder, then, that moths which had been active in the crepuscular shadows had sought shelter with the falling of the thermometer and the rising of the wind.

JOY O. I. SPOCZYNSKA (751).

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XIITH INTERNATIONAL CONGRESS OF ENTOMOLOGY—LONDON, 1964

Administrative machinery for the XIIth International Congress of Entomology has now been set up.

At a meeting held in the rooms of the Royal Entomological Society of London, it was agreed that the Congress should be held in South Kensington, probably in the buildings of the Imperial College of Science and Technology, from 15th to 23rd July 1964.

Professor O. W. Richards, F.R.S., Imperial College, London, S.W.7, was elected President of the Congress, and Dr. Paul Freeman, British Museum (Natural History), London, S.W.7, Secretary.

REARING *AUTOMERIS ILLUSTRIS* (WALKER)

In 1960 I was able to rear this species for the first time after waiting several years trying to obtain it. What attracted me was the vivid orange colour of the hind wings contrasted centrally by a huge, white pupilled, black spot. However, I am still not quite sure whether they turned out to be *A. illustris* or *A. coresus* Boisduval, with which they are commonly confused, since when I compared my specimens with the descriptions in *A Silkmoth Rearer's Handbook*, they appeared to have attributes of both species.

I began with a dozen small white eggs, all stuck together in a ball—a factor which always makes me suspicious. My scepticism was confirmed when only six larvae hatched, the inner ova of the bundle having the appearance of being infertile. Nevertheless, six were better than none, which I had expected, for the eggs had taken at least three weeks to hatch and looked quite infertile from the size of the depressions in the shells; though I should have known better seeing that the micropyles had remained black.

The tiny yellow larvae were very slow starters. It was two days before they had eaten a hole of any noticeable size in the side of their plum leaf. All six remained tightly bunched together on the upper side of the leaf and they would stay on one leaf until they had either eaten all the leaf away, working backwards as they did so, or else the leaf shrivelled until it was uneatable. Then and then only would they traverse to a new leaf in follow-my-leader style. Almost invariably the two largest would nominate themselves leaders of the line. They fed determinedly close together right up to the final instar except when disturbed, when the little group would break up, but even then only momentarily before drawing together again. In the later stages the larvae were very handsome, but although their spines were very dense and long (10 mm.) they were not so severely urticating as I had expected. Only a couple of times was the sting strong enough to leave a mark, but more often than not there was no effect when I touched them. This may have been due to the fact that when the larvae were at rest the spines lay flat as if they had been brushed forward, and only when danger threatened were they caused to stand out stiffly.

Four larvae reached the final instar, the other two having died in the first instar without taking much nourishment. It was at this last stage of their maturity that I became somewhat confused, since all four larvae appeared to be of equal growth and yet one changed its skin for the last time whereas the other three grew larger still and changed a further skin. Unfortunately, I did not at the time keep a note of the dates of skin changing, but I am positive that the first larva moulted four times while the other three moulted five times. I noticed that immediately after shedding the skin in the more mature stages the new spines were very soft and fairly short. It would be about an hour before the spines had grown to their full length and had become hardened. I assume that the spines grow after having blood pumped into them while they are still soft.

For most of their lifetime, the larvae were kept at room temperature. They were enclosed throughout their life, in the latter part of it being housed in transparent sandwich boxes. They were very clean and easy to look after. The only trouble I had was when they decided to spin their web for moulting purposes on the lid. At spinning time the larvae assumed a bruised light brown appearance. The cocoons were very soft and flimsy and yet they took several days to complete. The first larva to pupate, the one which I presumed to have moulted one skin less than the others, appeared as a pupa about a fortnight before the other three. Immediately after transformation the pupa was a dark brilliant emerald green, but when hardened, it was very dark brown to black with a dull texture comparable to the pupa of a Poplar Hawkmoth. The spines of the cast-off larval skin had turned from green to bright yellow. They, of course, did not sting when sloughed off. The antennae on these pupae are very frailly outlined in both sexes, and also the sexes are fairly difficult to discern even from anal abdominal structure, though the females are usually fuller and a little more robust over all. One particularly interesting feature about the pupa itself is that over the thoracic and facial regions there are a few sparsely scattered stubbly bristles. However, they are very fine and short and appear to be of little significance. As far as I am able to judge from the few that I have reared, the pupa always seems to attach itself firmly to the cocoon silk by the terminal cremaster.

Unfortunately, one larva, a female on subsequent analysis, died while attempting to complete the transformation to a pupa. Five to six weeks later, two males and one female emerged as moths and developed successfully, and I at once considered the female to be far more beautiful. Not only was her wing span much larger (11 centimetres), but the colouring of her forewings was a wonderful combination of intermingling soft purplish greys and pinkish browns. The forewings of the males were quite different, being coloured in a drab khaki brown monotone. Their span was only nine centimetres.

As the wings are smallish and clean cut, the wing beat is much more rapid than that of the larger silkmoths, but not so rapid as *Cricula andrei* Jordan for example. Although the moths were all out at the same time, somehow I did not expect to secure a pairing. They were left together in a muslin cage of a foot cube and had not paired by midnight. I was awakened during the night by much activity of the fluttering moths and the next morning was annoyed to see that the male's wings had already spoiled at the edges. They were nowhere near the female and there was no evidence of a pairing.

There was one peculiarity that I noticed in this species, and that was, on coming to rest after a flight of some duration, the moths did not stop still immediately, but swayed from side to side three or four times in a curious quick fidgeting movement, as if making themselves comfortable while settling down to their triangular "penthouse" attitude. I believe this action has been described as a simulation to swaying leaves.

The female revealed herself to be a lazy egg layer. Most of the time she would just let them exude in balls and half dozen bundles, sometimes taking a few scales and hairs from her body as they dropped. In time the micropyles of the eggs went black, proving that a pairing had indeed been achieved. Nevertheless, being imagines of the same brood, the larvae only partially matured in their eggs—none of them hatched. Still, the life cycle had been completed and I was satisfied.

J. H. Drake (2967).

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NOTES AND OBSERVATIONS

1. One often reads in books that 'the good Coleopterist (Hemipterist, Hymenopterist, etc.) is never without a collecting tube in his pocket'. All very well, but glass tubes, with their tendency towards breakage, are not the best of things to carry in one's pockets. Watkins and Doncaster supply plastic tubes, but these are rather small, being only $2\frac{1}{2}'' \times \frac{1}{2}''$. Members may be interested to learn that *polythene tubes*, $3'' \times 1''$ and other sizes, can be bought from most large branches of Boots. Mine were obtained from the surgical counter, where they had previously been used for pills.

2. *Oxyomus silvestris Scop. in Notts.* Last May I obtained this small Scarabaeid from vegetable refuse in my district. Britton (*Handb. for the Ident. of Brit. Ins.*, Vol. V, No. 11—Scarabaeoidea) states that it is found in S.E. England only. It has been recorded from Notts. before, though not recently, so far as I am aware.

3. *Insect cabinets* are a perpetual headache to the young collector, who, unless he comes by a bargain through the A.E.S. "Wants and Exchanges" List, cannot afford the (to him) fabulously expensive price of a new cabinet. Second-hand furniture shops are a wonderful source of supply, if one is prepared to tramp round a bit in search. They are, or seem to be, invariably low-priced, and though of course not in as fine condition as a new cabinet, it is remarkable what a good dusting and polish can achieve! As an example of the bargains one can get, I have three cabinets, all obtained in this way: one, six large drawers, with door at front, £2 15s; two, eleven large drawers (wait for it) 30s.!; three, a beautiful cabinet in oak, with door, seven drawers, over 70 years old and in perfect condition, £4 15s.

Those anxious to obtain cabinets might try this method. I should be interested to learn of profitable results, as I believe there are far more cabinets about than most people think.

R. G. Thimann (2924).

EARLY OCCURRENCE OF SYRPHIDAE (DIPT.)

On the warm Sunday of 19th February 1961 I caught two females of *Eristalis pertinax* (Diptera: Syrphidae), and saw others, in Holland Park, London, W.11.

Other species of this genus are known to hibernate as imagines, so that although the specimens might have been freshly emerged, it is more likely that they had just come out of hibernation.

M. Speight (3044).

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NOTES ON *APAMEA OPHIOGRAMMA* OCHS.

As one of the long-standing devotees of this attractive and interesting but somewhat—to me, at least—elusive species, I feel that the following notes may, possibly, be found helpful to members wishing to add the breeding of this species to their pleasanter occupations.

The larva of *Apamea ophiogramma* Ochs. feeds on ribbon-grass. The ornamental striped variety which is grown extensively in town gardens is, for all practical purposes, the same plant, and a thorough search of clumps of this grass in May could reveal that the top shoots in several places are dying. A further search of the affected stems may reveal a small round hole either just above or just below ground level. By cutting off these stems as low as possible, larvae can be obtained.

The following is a description of the larva at this stage in its career: About one inch long; slender body, thickest at the third segment, tapering rapidly towards the head, and very gradually towards the anus. Head small, dark shining brown in colour. Dorsal area dirty flesh-coloured, slightly darker towards the spiracular line. Ventral area creamy-white; spiracles black.

There is a brown plate on the second segment, having a lighter indentation down the centre, and another brown plate on the last segment bearing a similar indentation. On the last segment is another brown plate also, divided by a transverse fissure for about one-third of its extent from the direction of the head.

The twelfth segment has four indistinct black spots arranged in the form of a square, and similar marks are also to be traced on the other segments. The whole surface of the head and body is set with minute setae.

The larva feeds on the interior of the stems and roots of the ribbon-grass, its presence being indicated, as mentioned above, by the dying top shoots of the plant. The best time for collecting them is between the first and third weeks in May. Cut off all the affected stems well below ground level and stick them into a large flower-pot half full of earth. The larvae are full-fed by about the end of May, and pupate about the first week in June.

The pupa is rather slender and very active, and is a bright reddish-brown in colour, slightly darker on the back of the abdomen. The wing-cases are yellowish-brown and semi-transparent. The pupa has two long curved spikes at the tail, and is enclosed in a slight silken cocoon on or just below the surface of the ground.

In captivity the majority usually spin up against the sides of the pot at ground level, but a few occasionally go down about an inch under the surface of the soil.

Average emergence dates, abstracted from records in my possession, range from about the 10th July to the 15th, so that, judging from this, one may reasonably infer that *ophiogramma* emerges within a fairly defined and limited season, and that if good specimens are wanted, the exact date must be chosen, a theory which seems to be confirmed by the records.

With regard to the time of day at which these recorded specimens emerged, the majority appeared between noon and 7 p.m.; only one emerged during the night, and none during the morning.

Sugaring for the perfect insect may be commenced from the beginning of July till the middle of August, although I have, on two specific occasions, taken this species both earlier and later. Recorded dates for captures of *A. ophiogramma* at sugar (*not* including the two unusually early and unusually late dates referred to immediately above) range from: July 9, one specimen; July 15, two specimens; July 18, four specimens; July 31, one specimen; August 1, one specimen; August 7, two specimens; August 8, two specimens. All the August specimens were somewhat worn. These dates would appear to corroborate those of the emergence of the bred specimens, and would seem, therefore, to show that from the beginning to the middle of July is the best time for imago.

Although I have only taken this species at sugar and at light, the methods of capture recorded by various collectors are diverse, eight having been taken at sugar, three on the wing in the collector's garden flying over various plants, one in a conservatory, one at light in the collector's bedroom, and five at honeydew.

The time of flight of *ophiogramma* appears to vary somewhat according to the time of the year. Some of the recorded July specimens were taken at 9.30 p.m., while the August specimens appeared soon after 8.30 p.m. When these times are compared with the times of the sunset for the appropriate days, it will be found that *ophiogramma* comes out about half an hour after sunset (a lighting-up time signal for the motorist who is lucky enough to catch one?) As regards the duration of flight, it is difficult to make any generalisation on the basis of such scanty records, but the average time on the wing would appear to last until about 10.45 p.m., with the exception of the two specimens I took very early and very late in the season, in 1955 and 1960 respectively, both of which were taken between 12 midnight and 1.0 a.m.

Ophiogramma would appear, on the evidence, to be more partial to sugar than to any other attraction, and it is probably only owing to the absence of much information about its habits that it is not taken more commonly. It either hovers without settling, or settles as far from the sugar as possible, as though to conceal itself completely on the opposite side, reaching its proboscis round the corner, as it were, to the nearest drop of sugar. It is also very wary, and if startled by your lantern will throw itself backwards when you are still some distance away and fall down among the herbage, where it will be perfectly concealed.

A double dose of rum in the sugar is said by one collector to facilitate the capture of this species: "After applying this procedure", he says, "I took four the next evening without any trouble. When it first settles it keeps its wings half raised and slowly vibrating, but as soon as the rum takes effect down go its wings, and it then sticks close to the bark".

When at rest it is rather hard to see on the dark bark of trees, the peculiar 'festoon' marking obliterating the triangular appearance of the insect. On the wing it is easily seen and captured. Its flight is steady and fairly slow, and it seems to have no special destination in view, but flies along rather aimlessly. The light undersides of the wings, however, make it look much smaller than it really is, and it may easily be mistaken for *Caradrina morpheus*. All the specimens I have taken behaved in a similar manner, so I feel I may safely conclude that this is its usual habit. In conclusion, I feel that this species is not nearly so uncommon as it is reputed to be, and its resemblance while on the wing to other commoner Noctuids, causing it to be ignored, may well account for so few being found in the majority of collections.

Joy O. I. Spoczynska (751).

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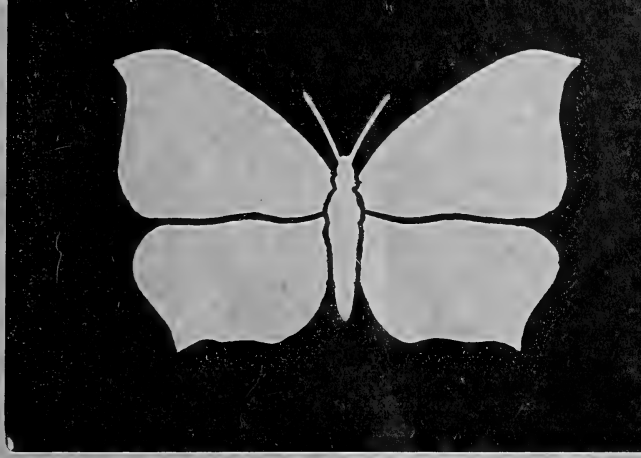

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A E S BULLETIN No. 246 JUNE 1961

COLLECTING HINTS — June

Macrolepidoptera

This month I will concentrate on an interesting group of noctuids commonly known as the pod feeders. The imagines of all species described appear on the wing during June. Apart from coming to mercury vapour light and sugar, they are easily collected by visiting their respective foodplants at dusk.

Hadena bicuris Hufn. (Lychnis), *H. cucubali* Fuessl. (Campion), and *H. lepida* Esp. (Tawny Shears) are generally distributed throughout the British Isles and are associated with most of the commoner Campion and Catchfly species. A second brood which is often only partial occurs in August.

H. capsophila Dup. (Pod-lover), which is found in Ireland and the Isle of Man is considered by some authors a distinct specie. It is, in my opinion, only a form of *H. lepida* Esp., as it is possible, by selective breeding, to produce dark examples of this specie which are indistinguishable from *capsophila*. It would, however, be very interesting to hear members' views on this subject.

H. caesia Borkh. (Grey Coronet), although local, is often quite frequent where found. It inhabits rocky coasts in the Isle of Man and Southern Ireland. Bladder and Sea Campion are its favourite foodplants.

Although occurring in South Devon, *H. albimacula* Borkh. (White-spot Coronet) can only be taken with some degree of certainty on the shingle at Dungeness. Here, during the first week of June, it is quite frequent at dusk flying over *Silene nutans* (Nottingham Catchfly). It may be obtained during the day by carefully searching posts and fences in the vicinity of its foodplant.

H. conspersa Esp. (Marbled Coronet) occurs all over England, but appears to be far commoner in the south and south-east especially near the coast. I have seen it abundantly at Dungeness in company with the predescribed moth.

B. F. Skinner (2470).

The Coleoptera

The family Coccinellidae which contains about fifty British species can be conveniently divided into those which are quite glabrous and, therefore, look smooth and shining, and those which are pubescent and appear duller. The former are the insects popularly known as ladybirds and of these we have about thirty species. The following notes refer to these so-called ladybirds.

They can be collected by beating various trees and shrubs and by sweeping herbage during the summer months. As they are mostly conspicuous insects displaying warning coloration, they do not hide themselves away and many species can be taken as they walk or rest in the open, on the ground, on trunks and fences, etc.

During the winter they hibernate and several of them are frequently found, sometimes in large numbers, in heaps of vegetable refuse, in moss, in grass-tufts and similar situations.

By employing the methods mentioned, the collector should soon get about half the species unless he happens to live in the north of Scotland where many of them do not occur.

Ladybirds and their larvae feed chiefly on aphids, but some have very special tastes and are attached to plants on which a particular species of aphid lives. Others will eat aphids of many different kinds and are, therefore, found on a wider variety of plants. The details of which ladybirds eat which aphids have not yet been fully worked out, so any note of the exact identity of any ladybird's prey may be an addition to entomological knowledge.

Next month I shall list the British species with their habitats and distribution.

K. C. Side (2140).

The Diptera

Each month seems to have particular significance for at least one family of diptera. In June, the family of predatory flies, the Asilidae, have many species on the wing.

Rhadiurgus variabilis Zett. is found on stones on bare ground about Nethy Bridge, Forres and Nairn, in Scotland. *Pampomerus germanicus* L. has been taken at Barmouth and Porthcawl. *Dysmachus trigonus* Mg. is morewide-spread on scrub, heathland, both coastal and inland. *Eutolmus rufibarbis* Mg. seems to prefer sandy, inland areas. *Machimus atricapillus* Fln., possibly the commonest Asilid, occurs over a wide area in the south of England in open woodland and along hedgerows and marginal woodland. *Neoitamus cyanura* Lw. is a woodland species mostly southern but also found in Scotland whilst *N. cothurnatus* Mg. seems confined to the woods of Oxford and Berks. *Laphria marginata* L., another species of deciduous woodland, is distributed throughout the British Isles. *Isopogon brevirostris* Mg., with its thread-like matatarsus to the hind leg of the male, is chiefly a dweller of the chalk areas. *Lasiopogon cinctus* F. inhabits sandy open woodland and I have found it with a dragonfly as prey, and Colonel Yerbury saw others with Tipulidae. All the species of *Dioctria* occur in June. Well worth watching is the display of the 'shimmer stripes' on the thorax. Dr. B. M. Hobby's observations at Oxford on *D. rufipes* Deg. showed its preference for Ichneumonidae and for *Empis trigramma* Mg. Both species of *Leptogaster* fly during this month, *cylindrica* Deg. in the south, flying in tall grass whilst *guttiventris* Zett., generally overlooked amongst its commoner relative in the south, extends its range to Scotland as far north as Nethy Bridge.

This is also the chief month for collecting Dolichopodidae. Several genera such as *Chrysotus*, *Dolichopus*, *Gymnoternus* and *Hercostomus* have species superficially alike. Collections should be made from a large number of micro-habitats and localities to obtain a representative selection. Obtain coupled pairs when possible and stage them together on the same pin, label as 'in cop.'. Watch and note the courtship displays of the males—some have ornamented wings or legs.

The fresh leaves of quick-growing plants are an attraction for the very many species of Agromyzidae which mine the leaves. The studies of Dr. E. M. Hering of Berlin, and in this country of Mr. K. A. Spencer of London, have caused the list of the species in Britain to be raised from 89 in 1945 (Kloet & Hincks' List) to 243 by 1954 (Spencer's List of 1956). Most of the species are widespread and many have been bred. As so many of the family are confined to one genus of plant, even a single species, future work should produce more discoveries as the less common plants are examined and the mines studied. Several species also attack the stems of plants. Several Chloropidae feed in stems. The Chloropinae sub-family needs revision as far as the British species goes. Our greatest amateur dipterist, Mr. J. E. Collin has monographed the British Oscinellinae; cannot another amateur tackle the remainder?

L. Parmenter (895).

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JUNIOR NEWS SECTION

Editorial

I have been sent quite a number of spring records of butterflies from Juniors and more senior members, but should welcome others before bringing these together for comparison as I did last year.

In the past few weeks a number of Juniors have accompanied me on fresh-water collecting expeditions, when quite a lot of insect material has been collected. It is not always possible to make very accurate determinations of the specimens collected, but with the aid of two volumes by John Clegg, published by Warne, we can go a fair way in identifying them. These volumes are the *Observer's Book of Pond Life* and *Freshwater Life of the British Isles*. Other popular books we have found useful are *Dragonflies of the British Isles*, by Cynthia Longfield, *Beetles of the British Isles*, by Linssen, *Land and Water Bugs of the British Isles*, by Southwood & Leston (all published by Warne) and *Life in Fresh Water*, by E. S. Brown, published by the Oxford University Press.

News from Members

M. J. Foreman (3079*) shows a welcome attitude to original observation, and writes to tell me of interesting beetles he took during January.

"I took several specimens of *Carabus granulatus* L. in an old willow trunk, near a small river, in the Hanworth area. It was in the company of other smaller Carabids. I believe this beetle has not been taken in Middlesex before.

In a small copse in the Teddington area I took several good specimens of *Typhoeus typhoeus* L. They were in cow dung, which is different to all the books I have consulted. Most of these say that this beetle is found in rabbit dung. From this, I concluded that they have adapted themselves to cow dung because of the myxomatosis epidemic. I found that while digging up their holes, they often twisted about for the first eight to ten inches, then were fairly vertical for the rest of the way. The holes were generally about three feet deep. The majority of the reference books, including the Royal Entomological Society's handbook on Scarabaeoidea, vaguely referred to the holes as "about a foot deep". I am trying to breed Typhoeus and, so far, it appears that I am going to be successful".

These observations are excellent, but I think more caution is required in reaching conclusions—for example, that myxomatosis has led to an adaptation to cow-dung in Typhoeus. This might possibly be true, but I think it more likely that this is a long-established habit. In North-West Middlesex I find rabbits quite widespread, though less numerous than formerly, and should like to know whether this is also so in the Teddington area. I think most Entomologists—Junior and Senior—are too anxious to draw conclusions, often on insufficient evidence.

We should like to hear whether the breeding experiments are successful.

D. H. R. Keen (3309) although not a Junior Member, refers to my note in *Bulletin* (No. 242, February 1961) on the occurrence of the Large White Butterfly (*Pieris brassicae* Linn.):—

"You may be interested to learn that during the whole of 1960 I have only five definite records of *Pieris brassicae* in the adult stage. No specimens were captured, but the following were seen: two at Oxshott Clay Pits, Surrey, 17.vii.60 and 12.viii.60; two at St. Albans, Hertfordshire, 2.viii.60 and 3.viii.60; one at Oxshott, Surrey, 25.vii.60.

"I also found one larva, which was caught at Thames Ditton in May. It pupated on 22nd June, and a very large female specimen in excellent condition emerged on 9th July.

During 1959, several dozen specimens were seen at Thames Ditton alone, which proves that this species is becoming far less common in this part of Surrey".

I still expect to see a rapid recovery of this species—probably this season—and am looking forward to its abundance later this year.

Correction

On p. 28 of *AES Bulletin* (No. 243, March 1961) appears a note from Brian Sheen, with my comment. Unfortunately, my inverted commas closing the quotation from Brian Sheen's letter were omitted, and it is not clear where this quotation finishes and my comment begins.

Inverted commas should be placed closing the quotation after the word "resemblance" and question-mark on line 20 of page 28. The text following this is my comment on Brian Sheen's observations.

T. S. Robertson (2417), *Youth Secretary.*

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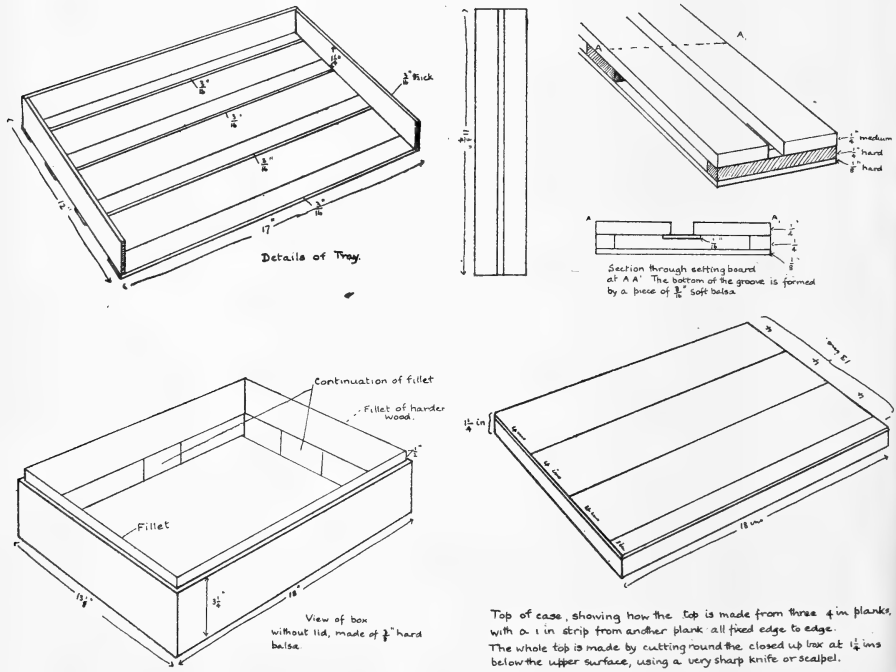
A BALSA-WOOD TRAVELLING CASE FOR SETTING BOARDS

Most travelling cases are like a double-sided store box, made of deal, and contain one row of boards at the top and one at the bottom. This is quite inadequate for a large summer holiday catch abroad, and is also expensive to buy and heavy to carry around.

My first home-made case was also of deal, measured 18 ins. by 14 ins. by 6 ins. deep and had a top and bottom of plywood. The lid was corked and papered and there was also a fitted sheet of corked plywood, so that a large number of set or pinned specimens could be stored. This box held three layers of setting boards, which were enough to accommodate up to 350 specimens. This has been an extremely serviceable case, but its drawback was its weight, which was about 14 lbs. As I like to carry my own entomological apparatus, and usually have other things to attend to as well, this burden became far too heavy, so the case was abandoned for use abroad, and is now used at home during our so-called summers. As a travelling case, it has been replaced by one made entirely of balsa-wood. This is not quite as large, but will still accommodate 250 specimens, with plenty of room in the lid for pinned, set, or carded specimens.

The balsa-wood for the case was dove-tailed, but the tools used had to be extremely sharp. Less sharp tools merely tear the wood. Since balsa is usually sold in strips measuring 36 ins. by 4 ins., this to some extent determined the measurements of the box. The one I made measures 18 ins. by 13 ins. by 4 ins. It is made of $\frac{3}{8}$ in. wood, with $\frac{1}{4}$ in. top and bottom. To get 13 ins., a strip 1 in. wide had to be cut off a 4 in. plank, and fixed alongside three 4 in. planks, all cut to 18 in. lengths.



The lid is not hinged, as balsa does not take hinges very well unless it is very thick. There is a thin fillet of harder wood so that the lid fits securely. As the wood for the fillet is not nearly so wide as the side of the box, it is fixed so that it projects $\frac{1}{2}$ in. above the side, and part of the space below is provided with a continuation so as to prevent the trays from being caught under the edge of the fillet. Of these trays there are two, each carrying as many setting boards as can be made to fit within their compass. The trays have one side missing, so to speak, so that the maximum possible length of setting board can be fitted (in this case, 12 ins.).

The setting boards themselves are made of two grades of balsa, medium for the tops, and hard for all the remaining parts, and are constructed as shown in the figure. Hard balsa was used for the whole of the case, as, however careful

All joinery was done with Britfix cement, and the only other reinforcements to this were a few screws to fix the fillet in place, and a number of panel pins to help fix the top and bottom.

An extension to the box could be made, so that another tray of boards could be accommodated, and, of course, the inside of the top can easily be used for the storage of pins as well as for the pinning of insects.

This case weighs about 2½ lbs. It fits nicely into a small part of the back seat of a car, and any other not too heavy entomological equipment can be placed on top of it. It has been used for three successive summer holidays, two of which were abroad, in Switzerland in 1956, in the South of France in 1957, and the last in Wales. It has proved its worth in every way. Some of the travelling, especially in Switzerland (e.g., over the Simplon Pass), was on really terrible roads, and all the specimens survived the many bumps, and the continuous vibration over the best part of 1,000 miles of the journey home by car and sea without a single breakage.

Diagrams are provided to help make the method of construction clear. The total cost, including setting boards, was in the neighbourhood of 35s.

NOTES ON SETTING SMALL COLEOPTERA

Coleopterists are familiar with the influence of the size of a specimen on the method chosen to prepare it for a place in the collection, the widely-accepted general rule being for those more than a half-inch in length to be pinned mounts while smaller species are more effectively carded. We also become painfully aware of the increasing delicacy of the task with the decreasing size of the beetles. At 5 mm. we can still hold the fellow reasonably still with, for example, a bristle from a nylon hairbrush, while the appendages are being teased into position with a setting needle or fine brush, but the difficulties multiply with an insect of smaller proportions, 2 mm. or less. One inadvertent flick with the brush can send an interesting specimen flying off at a tangent at a speed beyond the quickness of the eye, often losing it irrevocably.

The experts, though all respect is due to them, tend to skate rapidly over the thin ice of this problem, their usual suggestion being to lower the more globular species into a plasticine bed, ventral parts uppermost and, with it held thus "firmly", to proceed with the setting of the limbs, etc. Within its limitations the method succeeds, but what of the less globular species, such as the Lathridiidae or Cucujidae?

The essence of the problem is, clearly, the actual holding of the specimen, gently but firmly, while the mouthparts and legs are arranged in their natural attitudes. The solution can be found in *the use of two adhesives, one soluble and the other insoluble in benzene*, in which a set, dried specimen is usually immersed for 24 hours, as a normal stage in the whole setting procedure, to dissolve out the body fats which would otherwise cause ultimate putrefaction and ruin the specimen. The writer has successfully used ordinary tyre-repair-outfit rubber solution as the soluble adhesive and a well-known tubed glue of West German origin, a comparative new-comer, as the insoluble one. Though such tubed glues are frowned upon by leading coleopterists this brand shows flexibility and is colourless.

Our setting procedure, which must still be conducted with meticulous care to attain best results, is as follows:—

1. Transfer the specimen from the relaxing tube (where it should be reposing inside its screw of paper bearing details of capture) to the work bench.
2. Lay a strip of paper (typing paper, ½″ × 1″ is very suitable) on the bench and place on it a small blob of rubber solution, towards one end.
3. Carefully lift the specimen, either with fine forceps or with the hairs of a fine brush caught lightly in the tarsi, and lower it upon the rubber solution blob so that the pronotum and elytra are immersed, the appendages remaining free.
4. Transcribe the capture details towards the other end of the paper strip. This ensures that correct identity is retained.

5. Replace the specimen, on the paper strip, in a separate relaxing tube, long enough to set the rubber solution without losing the relaxed condition of the beetle. (24 hours should not try the patience of the notoriously patient coleopterist).

6. After such period, remove from the tube and arrange the legs, antennae and palpi as required. This can be carried out as traditionally, with brush and setting needles, on a dissecting stage, or with watchmaker's eyeglass, or binocular, according to the equipment available. On this occasion, however, the beetle will remain reassuringly still while the task is done.

7. Select a piece of Bristol board, similar in size and shape to the paper-strip, and transfer the capture details to it, again towards one end. Near the opposite end place a tiny blob of the adhesive which is insoluble in benzene. Take the paper strip, cut away all but a small square remaining attached to the beetle, hold it with forceps and carefully bring the ventral part of the insect into contact with the adhesive on the card. The specimen is thus sandwiched between the small paper square and the card, its limbs, etc., set in an orderly manner. The importance of this fact for proper examination and accurate identification is self-evident.

8. Place the beetle-sandwich in the drying box and leave for the usual period of time, depending upon the size of specimen.

9. When completely dried, transfer the 'sandwich' to immersion in the benzene jar for the standard 24 hours. The square of paper will float off at an early stage, the rubber solution having dissolved. Traces of rubber can be lightly brushed away just before the specimen is withdrawn from the fluid. After drying off the benzene the card can be cut to size round the beetle, the label prepared and the whole incorporated into the collection.

W. J. Eeles (3127).

MICROLEPIDOPTERA RECORDS OF THE COVENTRY DISTRICT

During 1960, 57 species of micros were recorded in the Tile Hill Nature Reserve, Coventry. Since records were first kept in 1931, 124 species have been listed, the total last year included 17 new records which are marked with an asterisk in the list below. The numbers following names are numbers of specimens found.

Pyralidina

Salebria fusca Haworth 1

Crambidae

Crambus culmellus Linn. Abundant
C. hortuellus Hueb. Abundant.
C. perlellus Scop. Few
C. pinellus Linn. Few
C. pratellus Linn. 2
C. tristellus Schiff. Common.

Pyraustidae

Nymphula nympheata Linn. 3
Notarcha ruralis Scop. Common
Phlyctaena lutealis Hueb. Common
P. prunalis Schiff. 6
**Pyrausta olivalis* Schiff. 1
**Schoenobus forficellus* Thunb. 1
Scoparia basistrigalis Knaggs Common
S. truncicolella Stainton 2

Pyralidae

Pyralis costalis Fabr. 4
**Eucosma demarniana* Fisch. 1
**E. tedella* Clerck. 1
Evetria pinicolana Doubdy. 1
Gypsonoma dealbana Froelch. Common

Tineina

Anacamsis populella Common
Camsolechia temerella Few
Monopis rusticella Clerck 1

Oecophoridae

Borkhausenia pseudospretella Stainton Common
Chimabache fagella Schiff. Abundant
Carcina quercana Fabr. Common
Depressaria applana Fabr. Few
D. aranella Schiff. Few
D. assimilella Treitsch. 1 larva

Hyponomeutidae

Argyresthia brockella Hueb. 4
A. goedartella Linn. Few

TORTRICIDAE

Batodes angustiorana Haworth 2
Capua favillaceana Hueb. Few
Cacoecia podana Scop. Few
C. xylosteana Linn. 1
Euxanthis hamana Linn. Common
Eulia ministrana Linn. 2
Pandemis ribeana Hueb. Common
P. corylana Fabr. 2
Peronea contaminana Hueb. Few
Tortrix unifasciana Dupon. Common
T. viridana Linn. Abundant

EUCOSMIDAE

Argyroploce betuletana Haworth 3
A. corticana Schiff. Common
A. branderiana Linn. 1
A. capreana Hueb. 1
A. lacunana Schiff. Common

PLUTELLIDAE

Ypsolophus parenthesellus Fabr. Common
C. nemorella Linn. 2

GRACILLARIDAE

Gracilaria alchimiella Scop. 2
Lithocolletis cramerella Fabr. 2

ADELIDAE

Nemophora swammerdammella Linn. Few
N. piliella Fabr. 1
Adela viridella Scop. Common

ERIOCRANLIDAE

Eriocrania semipurpurella Steph. Common
Mnemonica subpurpurella Haworth 2
M. unimaculella Zett. 1

In addition, the following species were found in the Coventry district, species which have not been recorded in the Coventry Nature Reserve.

PYRALIDINA

Phycita spissicella Fabr. 2

CRAMBIDAE

Crambus geniculeus Haworth 3

PYRAUSTIDAE

Scoparia lineola Curtis 2

EUCOSMIDAE

Notocelia rosaecolana Doubdy. Few
N. roborana (auctt.) 3
Eucosma cana 1
E. fulvana 1
Hemimene petiverella Linn. 2

EUCOSMIDAE

Endothenia gentianaeana Hueb. 1

TORTRICIDAE

Tortrix paleana Hueb. 2

HYPONOMEUTIDAE

Hyponomeuta cognatella Hueb. 3

TINEIDAE

Tinea cloacella Haworth 6

ADELIDAE

Adela croesella Scop. 1

A. N. THOMAS (2687).

●

A HEAD-MOUNTED LAMP

The head-mounted lamp is a device which long ago proved itself to those people who spend long periods working in dark places, such as miners, pot holers, and, with all due respect, dentists.

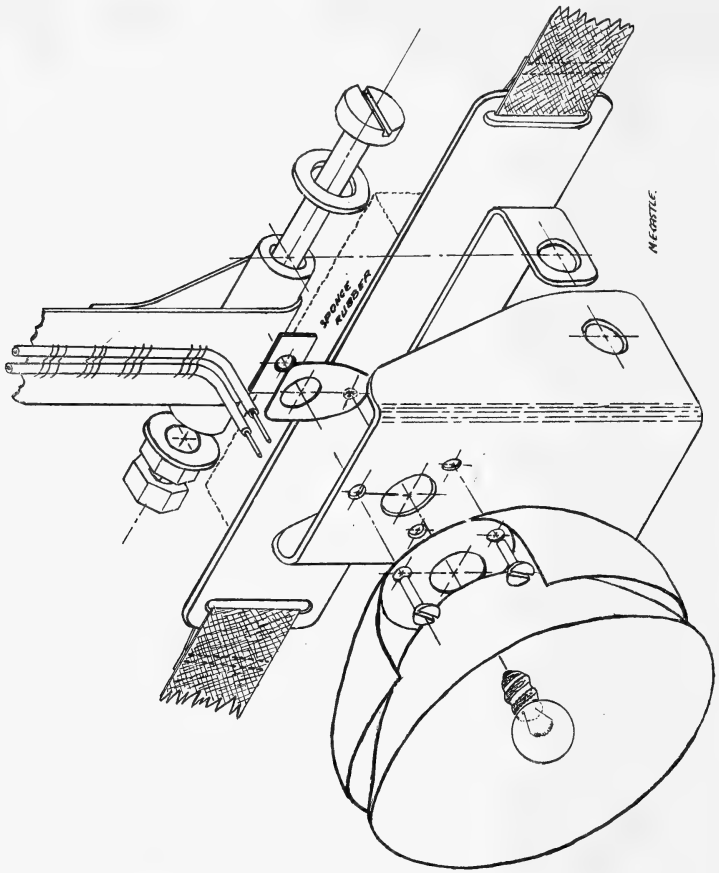
The advantages of a head-mounted lamp are two-fold: the beam of light automatically stays in line-of-sight and both hands are left free to do useful work. Both these attributes are of great value to the night working entomologist, and it is my own opinion that they make the head-lamp a far superior piece of equipment to the pressure paraffin lamp in all but attracting power.

The following constructional notes based on my own lamp, which was displayed at the 1959 AES Exhibition are, of necessity, only general. The materials available and one's ability with tools will determine the dimensions of the lamp, but whatever materials are used the resultant bracketry should be rigid.

Lamp House and Bracket Assembly—

The lamp housing, which in my case was cut from an old battery-powered cycle headlamp, is secured to its mounting bracket by three 6BA counter-sunk head screws through $\frac{1}{8}$" dia. fixing holes, the stem of the bulb passes through the hole situated centrally with respect to the other three and this must be large enough to allow clearance.

In the sides of the bracket are two $^3/_{32}$" dia. holes, which will be used to form part of the hinge, and care must be taken to ensure that they are in line.



Electrical connections are made to the rear of the bracket; one wire goes to the bulb via an insulated contact whilst the other is secured beneath the head of one of the lower lamp-house fixing screw or is soldered in place. The insulated contact which connects to the stud on the bulb base is secured under the uppermost screw and insulated from it with rubber cycle repair patches as follows: —

The fixing hole of the contact is $\frac{1}{4}$" dia. and can, therefore, be positioned over the screw without actually touching it. To isolate the contact a large rubber patch is cemented to the rear face of the bracket over the fixing hole and when secure two cuts at right angles to each other are made in the rubber and over the fixing hole. The contact is now cemented in position and over this is secured another piece of rubber to sandwich it. To prevent the washer fitted beneath the nut of the fixing screw from cutting into the rubber a rectangle of wood is interposed between it and the rubber. After the nut has been tightened over the contact fit a bulb and check that it is not shorting out.

The Head Mount—

This consists of a metal strip approximately $3\frac{1}{2}$" long by 1" wide, slotted at either end to take $\frac{3}{4}$" elastic. The elastic band which fits round the head should be fitted with an adjustor and used at minimum tension.

On the front of the strip is soldered the other half of the hinge and in each arm is drilled a hole $^3/_{32}$" dia. On the rear of the strip is cemented a piece of foam rubber to give a snug fit against the forehead.

The two parts of the lamp are held together with a long 4BA screw which runs through the holes in the lamp-house and bracket assembly. In order that the hinge may be tightened sufficiently to provide enough friction to prevent the hinge slipping, a metal tube is fitted over the screw, so that it just fits between the two arms of the head mount hinge. The tube also acts as an anchoring point for the non-flexible head strap, which is also sewn onto the head band at the rear.

Two wires (plastic-covered flex), long enough to reach from the head-lamp over the head and down into the hip pocket are solder- or screw-connected to the lamp housing, sewn onto the non-flexible strap and fitted with crocodile clips at the loose ends.

In use, I run the wires down my back and connect to a 6-volt. long-life dry cell battery in my pocket. If I am wearing a raincoat, it is put on after the lamp is connected, thus covering the wires and preventing them from fouling on bushes, etc.

An increase of battery life is achieved by fitting bulbs of successively lower voltage as the battery runs down and the light gets dimmer.

The lamp in use—

One of the simplest and most profitable ways of collecting which gives good results even in bad weather is searching for moths at rest. When the eyes of a moth are illuminated by a beam of light virtually in line-of-sight they reflect back as bright red dots easily visible some 20 feet or more away. Although detection depends to a certain extent on the attitude of the moth with respect to the light beam, tests have proved to my own satisfaction that the pressure paraffin lamp is inferior to the head-lamp when it comes to finding moths at rest. Cryptic colouring means very little when the eyes are detectable, and one virtually homes on a reflection visible long before the wings can be seen. Another advantage when searching is that a smaller area is illuminated and it is easier to concentrate.

When sugaring, a larger bulb is fitted to reduce the light output and fewer moths are frightened off the sugar patches to fall and get lost in the undergrowth.

Larvae hunting is far easier as one can work in thickets or investigate overhead branches without undue fatigue due to holding up a heavy lamp.

In general, the effort put into making a lamp of this nature is well rewarded by the decreased weight and increased versatility of the light source.

M. E. Castle (2490).

●

LETTERS TO THE EDITOR

With reference to Mr. Kruy's (2896) letter in the January *Bulletin* on collecting in Nigeria, I would like to make a few comments thereon.

I was collecting in the Ibadan area, which is some 120 miles from Lagos, with Mr. John Riley, who is a Senior Scientific Officer of West African Stored Products Research Unit, and who, I must say, helped me a great deal; also with Mr. Sutton, the collector for the Ibadan University Entomological collection.

Every Sunday we left in the morning, and had lunch, with our nets by our sides. We found the Olokimeji Forest was the best collecting spot and we used a dead snake or lizard for bait. This attracted Charaxes and seemed the only way for catching these insects as they were very strong fliers and swerved when we attempted to catch them. Likewise the *Epitola porthionas* F. which is a high-flying species, and I only caught a pair when they started their courtship flight. As for snakes, it is unlikely that one would find them very often. I wore long trousers as a protection against the sandflies, which I found were numerous and preferred new meat to the toughened skin of the "Old Coaster". I found that the hypodermic syringe was the best method of killing Saturnids and Sphingids.

The butterflies, the hardier species such as *Euphedras* and *Charaxes* were best pinched to quieten them down for a few minutes whilst getting the killing bottle open. My killing fluid was a weak solution of trichlorethylene by which

death is almost instantaneous. I had two bottles, one for killing and one for storage, the latter also having a supply of killing fluid in it.

When we returned from our trip I used to paper my insects. My Sphingids, which I collected when using a mercury vapour lamp, I find to be quite satisfactory in the papers. As for preservatives, I used naphthalene and drop of phenol to prevent mould.

Every morning at 9.30 I would be dropped off by my father at a laboratory, and I would set any insects which I had caught on the Sunday morning, afternoon and the night at the mercury vapour lamp. I only had eight boxes, due to the difficulty in carriage, and getting the hooks, eyes, hinges and cork, as I had them made out in Nigeria.

My insects were named from Mr. Riley's and the Ibadan University's collections. Those which I could not name from either, I took to The British Museum (Natural History), London, which I have recently visited, and I have an insect *Boarmia potaenia* of the Geometridae Family, which is a very interesting specimen.

The insects I enjoyed catching most were *Papilios*, as there are many looking the same on the outside but, on closer inspection, it would be found that a rear wing of one had a larger green patch than any other. That is *Papilio sosia*. The undersides are black with gold spot in a line down the margin wings.

I also enjoyed collecting *Lycaenidae*. These small, medium and large insects vary greatly and the two sexes may sometimes only be distinguished by the undersides. I also enjoyed collecting *Charaxes* and *Pallas*. As these fast-flying insects were hard and awkward to catch, I had great enjoyment in stalking these insects. It may be possible that some members will have seen part of my collection on the B.B.C. Television programme "All Your Own" on 19th March. All interested who may be visiting Plymouth will be welcome at the hotel, which my parents own, to see my collection.

R. G. Haynes (1545).

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A USEFUL SMALL BREEDING CAGE

Noticing some cigar display cases in my tobacconist's, I was able to acquire a couple, as they are only thrown away when empty. These cases are cylindrical in shape, half of single-plywood and a fitted top half of talc. The largest is 5″ deep and 4½″ in diameter; the other slightly smaller.

For rearing small numbers of larvae to maturity, or for early stages, these seem well worth a trial. They could be used with or without perforated and gauze covered tops, with or without soil or water bottle in the base.

Incidentally, I would be interested to hear of members' experiences in using polythene for constructing breeding cages.

R. M. Whittington (3181).

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CATOCALA NUPTA IN DEVON

One male, fair condition, street lamp, Newton Abbot, 20th September 1960 (11.0 p.m.).

One female, extremely tattered, street lamp, Newton Abbot, 23rd September 1960 (11.0 p.m.).

I understand from the Devon authorities that previous records of the above moth in Devon total five single specimens during the past fifty years.

S. H. Medland (3273).

COLLECTING THE BRITISH MACRO-LEPIDOPTERA

Having this month (April 1961) completed 29 years of collecting, breeding and observing our British Macro-Lepidoptera, I felt that an account of some of my experiences might be found useful by the beginner who finds himself fascinated by the potentialities offered by the study of our native butterflies and moths and anxious to put his (or her!) interest in them to a practical use.

I started out, like most 10-year-olds, with the aim of amassing an attractive and interesting collection; but by the time I became what is now popularly dubbed a teenager, this aim had undergone a radical change, to wit, not merely to have a good collection to show off, but to study and record the absorbing life-histories of these fascinating creatures.

By the time I had been collecting and breeding for some years I discovered that specialising in a certain group or groups opened the door to a new world; but even now, specialising as I do in one group (Leucaniidae) and, to a subsidiary extent in the breeding of hybrids (or, at least, trying to!) among Hawks and Thorns, I still have not thrown overboard, as some do at that stage, the continuation of the collection of all the Macro-Lepidoptera; I find, personally, that the specialised study of certain groups only tends to enhance the enjoyment and interest of collecting the Macro-Lepidoptera as a whole. And so, while it may be that I have longer and more representative series of some groups than others, I still keep a minimum series of every species on the British list—or a minimum series of blank spaces in the cabinet drawer ready, as the case may be!

I always remember the boy I met one year at our Annual Exhibition. Thirteen years old, he informed me that he collected only "Blues"—nothing else. At thirteen! I felt truly regretful for him, for what he was missing. Not for him the joys of sugaring (I have never yet heard of Blues coming to sugar, have you?) . . . . By specialising exclusively in one limited group before he had even had time to do any serious collecting at all, he was depriving himself of a great deal of enjoyable experience. By now he is grown up, and I hope his collection has grown up with him; for only by a study of all the various groups can the entomologist gain the wide knowledge and experience which he will find essential before he can think of starting to specialise in the study of any particular group.

Now as to your collection itself. To start with, I cannot emphasise too strongly the importance of order and method in your collecting right from the outset. When I first started, having got past the jam-pot, gauze and rubber-band stage, I began with four double-sided cork-lined store-boxes and one glass-topped display case, which my father made for me. (The display case, by the way, was covered with a piece of black cloth when not in use, to exclude light; I ran this up with a piece of elastic round the edge to make it fit the sides of the box). For rearing the early stages my father made a series of oblong wooden boxes, each with a sliding glass door on one side and a rustless copper wire gauze back opposite, the bottom of the box having previously, of course, been knocked out.

I still have all these early relics, which are still in good condition after 29 years; and these simply-constructed larvae-cages are, in many respects, superior to some of the more elaborately-designed apparatus I now use. But more on the subject of breeding-cages at a later date; in this first article I will confine myself to a few remarks on the permanent collection itself.

The word "permanent" is used advisedly. No real collection stays permanent, in the sense that one is constantly adding to it, enlarging its scope, and replacing specimens with others either in better condition or with more interesting data. Which brings me to the question of condition.

First and foremost, no worn or otherwise imperfect specimen should ever be admitted to your collection, unless it be (a) an extreme rarity which it is unlikely you will ever have again (but never give up hope!) or (b) an uncommon species, which you can reasonably hope to be able to replace with a better specimen either this season or next (a little extra effort usually takes care of this problem!) Otherwise—"out" is the operative word. Nothing, but nothing, looks worse than a hodge-podge of tatty specimens—and that includes specimens minus one or both antennae, a ship out of one wing, an ugly bald patch on the thorax, or semi-transparent marks on the wings, most probably caused by junior fingers (moral: *always* use forceps for handling specimens) or insects

have set your captures, write out the appropriate labels straight-away, and pin them at the side of the specimens on the setting-board. I pin mine (on the right-hand side of the board) through the middle so as to avoid unsightly additional pin-holes; the pin on which the spjecimen is mounted then goes through this same hole when the insect is put into the cabinet.

Data labels must bear locality, date and name (or initials) of the collector. "Locality" means what it says—not just "Sussex" or "Hampshire", nor merely "Six Acres Field" or "Shepherd's Cross", which could be anywhere from John crawling over one another in a killing-bottle (memo: dump your communal killing-bottle into the nearest dustbin and use the individual killing method which I shall describe in a later article).

Secondly: *always* label every specimen immediately. A specimen without data is practically valueless for scientific purposes. And no entomologist ought ever to be accused of being unscientific. The best way is: as soon as you o' Groats to Land's End. The date should come next, underneath, and then your name.

It is usual these days to have labels printed with your main regular collecting localities and a dotted line ..... 19 ..... for the date, followed by your name or initials. Thus, one of my most frequently-used labels reads: —

Harlestone Firs, N'hants
..... 19 .....
J.O.I.S.

One of yours might read: —

Woodwalton Fen, Hunts.
..... 19 .....
J. Smith

You should also, of course, have some blanks for odd localities where you do not collect regularly, e.g., on holiday.

As a rule, the smaller the label the better. I use the very smallest size, except for hawks and large Noctuids, which can stand something bigger—but not *too* big, please! I once had the rather unenviable task of rearrangng someone else's collection. The collection had been made about 70 years previously, and, while the specimens themselves were in impeccable condition with full data, the labels, for the most part, had a visibility potential of several yards! In the case of the smaller moths some of the labels were bigger than the specimens! By the time I had spent several hours removing labels, cutting anything up to half an inch off and putting them back on again one at a time, I was nearly round the bend! The one consolation was the collector's beautiful copper-plate handwriting—unfortunately, a rarity these days!

Now as to the number of specimens to collect in a series. When I started I used to keep four of a species—butterflies, one male and one female upperside and one male and one female underside; moths, two males and two females. Later, I included varieties and aberrations, and by the time I had become interested in regional distribution, and acquired my cabinets and started cataloguing my collection, I found I needed an average series of 8-12, according to the species. Very variable species, of course, needed even more to a series. But with ordinary "stock" species that vary seldom or not at all, or so little as to be practically "standard" everywhere, eight is quite enough. Butterflies can have two of each sex upper and under sides, or three males and three females (upperside) and one of each sex underside, if you like. Moths can have four of each sex. Males come first and females below them in your vertical columns, with the scientific and English names of the species at the bottom, followed by varieties and aberrations, if any, with the name of the var. or ab. beneath. The name of the family comes at the top of the first specimen of that family; it is quite unnecessary to repeat it at the head of each column.

(*To be continued*)

J. O. I. Spoczynska (751).

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(e) By taking just that extra bit of trouble required to record happenings of note for the *Bulletin*.

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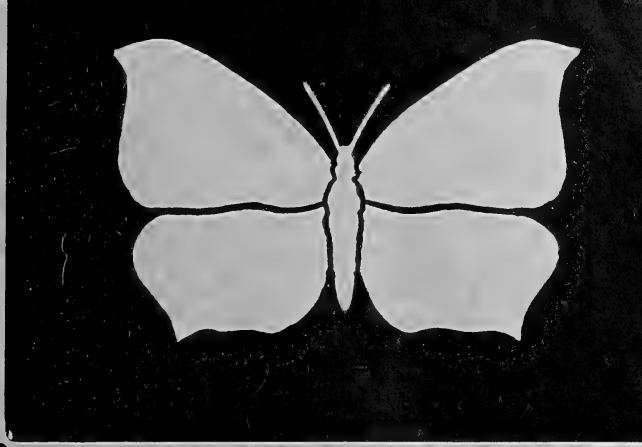

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EDITED by W. N LAWFIELD

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A E S
BULLETIN
No. 247
JULY 1961

COLLECTING HINTS—July

Search the flowers of Stinking Groundsel growing near the coast for larvae of *Heliothis peltigera* Schiff. (Bordered Straw). There are several localities in the south where this migrant appears to occur every year. The coastline between Dover and Eastbourne is often favoured with the species.

Larvae of *Cucullia lychnitis* Ramb. (StripedLychnis) are to be found feeding on Black Mullein in suitable places in Wilts., Surrey, and Hants. In captivity, the larvae will feed on garden buddleia, as well as other species of mullein.

Towards the end of the month, pupae of *Nonagria typhae* Thunb. (Bulrush Wainscot) and *N. sparganii* Esp. (Webb's Wainscot) will be found by carefully splitting the stems of the Reed-mace. Pupae of *N. geminipuncta* Haw. (Twin-Spot Wainscot) and *N. dissoluta* Treits (Brown-veined Wainscot) are also found in a similar habitat as the last two species in the stems of the Common Reed. Both the pupae of *N. sparganii* and *N. geminipuncta* pupate head upwards, whereas those of *N. typhae* and *N. dissoluta* are usually found pointing downwards. There are, of course, exceptions to every rule.

Among the many interesting moths attracted to light this month are *Lophopteryx cucullina* Schiff. (Maple Prominent), *Leucoma salicis* L. (White Satin), *Agrotis vestigialis* Rott. (Archer Dart) and *Apamea sublustris* Esp. (Reddish Light Arches).

B. F. Skinner.

The Diptera

This month brings out the Tabanidae in variety and numbers. H. Oldroyd has given us an interesting account of this family in "British Blood-Sucking Flies", published by the British Museum (Natural History) and it is illustrated with large coloured plates. Although clegs and Tabs. are often numerous, they fortunately do not reach the score of 'over a hundred on a person' recorded from north Russia. The details of habits collected from many sources by Oldroyd, however, do not form a complete picture and whilst collecting, observation of their habits should provide much fresh knowledge on the Tabanidae which should be recorded in this or a kindred journal. Whilst the females will only too quickly find us, the males are less often seen. Those of *Haematopota* and *Chrysops* may be found visiting flowers for nectar especially early in the day. The males of *Tabanus* and *Hybomitra* (=*Sziladynus*) will fly down to water, taking a drink 'on the wing'.

Another family numerous in species and numbers on the wing in July is the Dolichopodidae. Many genera have species superficially very alike. It pays to collect a fair number from different habitats in the area studied, to obtain a representative series. The species of *Neurogona* and *Medetera* are found on tree trunks. The courtship display of *Neurogona quadrifasciata*, in which the male waves his ornamented tarsi at the female, is one of a number of similar patterns of behaviour found in this family, especially in the genera *Dolichopus* and *Poecilobothrus*. Search damp mud at the edges of ponds, ditches and pools in sunny weather. The areas of *Phragmites* and other marsh plants about the Norfolk broads and East Anglian fens, form the homes of several local species. Others are restricted to saltings. *Liancalus virens* Scop. is to be found on the wet, dripping cliff rocks of the sea coast. *Dolichopus strigipes* Verr. I have found most plentiful about the salt pans in beds of *Spartina* grass.

The Tachinidae and the Syrphidae have many species emerging this month in the beflowered marshes, woods and chalk and limestone downs. In fact, the variety of species of flies about in this month will keep the collector busy. Always take a notebook and a large magnifier with you and use them. Aim at finding out some interesting fact about each species met with and do not be content with mere captures. With so much field work to attempt, do not forget your breeding jars. Emergences are worth watching and we need to know the length of each stage in the life history of each species.

L. Parmenter (895).

The Coleoptera

In popular language ladybirds include all those species of the family Coccinellidae which are shiny in appearance because they are quite glabrous, approximately hemispherical in shape and patterned with spots of various shapes and sizes. Using this definition, the following is a list of the British ladybirds with notes on their habitats and distribution. Methods of collecting them were discussed in last month's notes.

Hyperaspis reppensis (Herbst) is a very local species usually found in moss. It occurs throughout the British Isles but there are many countries for which it has not yet been recorded.

Hippodamia 13-punctata (L.) is another very local species which, apparently, does not extend to the northern half of Scotland. It should be looked for in marshy areas.

Adonia variegata (Goeze) is also very local and is usually found near the coast. There seems to be no record for the mainland of Scotland, but I see no reason why it should not occur there.

Anisostica 19-punctata (L.) is very common on aquatic vegetation in the south but is absent from the northern-most counties of England and the whole of Scotland.

Aphideita obliterata (L.) is common on pine trees throughout the British Isles.

Micraspis 16-punctata (L.) is a common species of marshy places. It is frequently found in grass-tufts and litter as well as by sweeping. The south of Scotland is its northernmost limit.

Adalia conglomerata (L.) var. *bothnica* (Payk.) is on the British list but the only record I can find is the one quoted by Fowler of a single specimen taken in Scotland .

A. 10-punctata (L.) is very common everywhere.

A. bipunctata (L.) is another extremely common species, but it is not found in the northern parts of Scotland.

Coccinella 7-punctata L. is very common everywhere.

C. 5-punctata L. is a northern species. It is found locally in Scotland and the north of England. There are also records from S.W. England.

C. divaricata Ol. occurs in association with the Wood Ant (*Formica rufa* L.) and is confined to Southern England.

C. hieroglyphica L. is common throughout the British Isles wherever heather grows in any quantity.

Harmonia 4-punctata (Pont.) has been known in this country only for about twenty years. Its headquarters are the plantations of conifers in Norfolk and Suffolk. It seems to be spreading and has now been taken in Cambs., Hunts., Oxon and Surrey.

Halyzia 16-guttata (L.) is local but widespread.

Vibidia 12-guttata (Poda) is very rare and reliable records are few.

Myrrha 18-guttata (L.) is local but widespread.

Thea 22-punctata (L.) is common in England and Ireland but there appear to be no Scottish records.

Calvia 14-guttata (L.) is common throughout the British Isles.

C. 10-guttata (L.) is very rare and known only from Ireland.

Propylea 14-punctata (L.) is very common in the south, less so further north where its range extends only to Southern Scotland.

Neomysia oblongoguttata (L.) is local. It can usually be found where there are pine trees.

Anatis ocellata (L.). The remarks applied to the previous species apply equally well to this.

Chilocorus renipustulatus (Scriba) is local in England where it is found chiefly on sallows.

C. bipustulatus (L.) is another pine species. It occurs in England and the south of Scotland.

Exochamus 4-pustulatus (L.) is yet another pine-dwelling species and it is known throughout Great Britain.

K. C. Side (2140).

HOME-MADE PHOTOMICROGRAPH

The apparatus was made with a view to simplicity, ease of construction, efficiency and cheapness. To suit these aims, the equipment was made upright to facilitate supporting and loading of plates. The disadvantages are that plenty of headroom and a somewhat bulky support are needed.

The basic idea is to use the microscope as the "lens" of a "camera", and focus the image on the film. To form the body of the "camera" I made a set of bellows—the basis of the apparatus.

I used a piece of linen-backed paper c. 2 ft. × 3 ft. to make the bellows, giving a finished article of $5\frac{1}{2}$″ internal measurement with a maximum extension of about $2\frac{1}{2}$ ft. The bellows are ruled and folded as shown (see fig. 1), and it is a good idea to make a small "mock-up" to get some idea of how this works. This is the most tedious part of the construction. When the bellows have been folded (linen side in), unless you used black paper to begin with, it is necessary to paint the bellows black. Water-soluble paint will unstick the linen (as I found to my cost!), and model aircraft dope is too brittle when dry, so I used a *matt* black metal-finishing paint from the handicraft shop. The bellows should be left to dry slowly (no artificial heat) and then glued up the seam when folded with something like "Copydex". The folds may be induced into position with the aid of an old kitchen knife.

The end frames are made in my version of "Masonite" composite wood, each $6\frac{1}{2}$″ sq. In one board a circular hole is cut in the middle to take the microscope (see fig.), and in the other, a 2″ × 3″ hole to take the plates. Along two sides of this hole are positioned two thin slats to facilitate positioning of the plates. Round the edges of the end pieces are nailed, screwed or glued pieces of 1″ × 1″ to take the bellows fixing, but a piece 2″ × 1″ is attached on one side of the top frame for the attachment of the main support. Four pieces of mild steel or aluminum are then cut, being c. $\frac{1}{4}$″ × 5″, and drilled at each end to take a short nail with a large head. With the aid of these strips, the frame may now be fixed to the bellows (see fig.). (Some of the better workmen amongst you may be horrified at this method, but I did mention ease of construction as one of my aims, and I do not think that this in any way impairs the efficiency of the equipment). The stand is from 2″ × 1″ for the upright, drilled at intervals to take the 3″ × $\frac{1}{4}$″ carriage bolt in the piece of 2″ × 1″ in the top frame, firmly fixed (e.g., by brackets) to a wood, lead-ballasted base, which may be further weighted by positioning the microscope there when in use. It is imperative that the support is as strongly rigid as possible to eliminate any movement when taking long exposures.

The only other equipment now necessary is a source of bright illumination, a monochromatic colour filter (a luxury), a ground-glass focussing screen, a watchmaker's lens (optional—see below), and photographic plates, etc. The illumination need not be of the brightest (I have to make do with a 40 watt. bench lamp and no condensers), the only difference being that longer exposures are needed.

Unless you possess a plate carrier, the apparatus has to be set up in a darkened room to stop premature exposure of the plates. Once the object is in the required position, it must be focussed. For greater accuracy, I cement with canada balsam a thin hair or silk thread under a micro cover-slip on the rough side of the focussing screen, taking care to exclude any air bubbles. I then roughly focus the image on the screen, and place my watchmaker's lens (in plastic holder) on the surface of my screen. The image is in focus when both it and the hairline are seen to be in focus together through the lens. This method is very sensitive. A plate may now be substituted for the glass screen, and the exposure made. For all developing, I use D163, and acid hypo for fixing. I am, however, not a photographer, and these are not necessarily the best suited for the purpose.

The degree of magnification depends on the lenses used and the length of the bellows. It may be calculated by multiplying the initial magnifying power of the microscope by either—

$$\frac{\textit{bellows length in cm.}}{25} \quad \text{or} \quad \frac{\textit{bellows length in ins.}}{10}$$

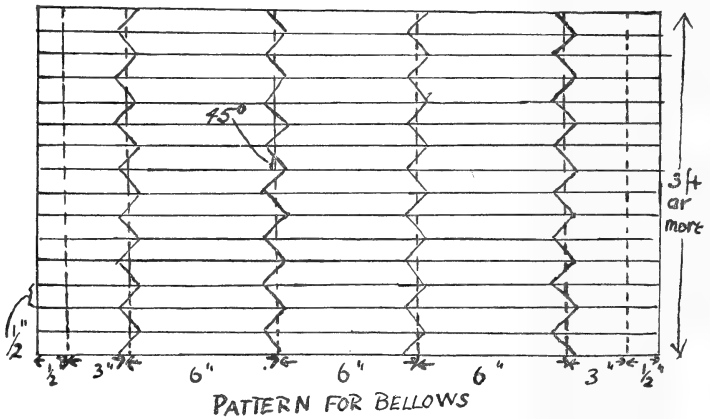
If required, when the degree of magnification has been determined, a line representing a known length (constant for all exposures, or labelled separately) may be scribed on the plate while it is still wet. The resulting scale will appear black on the print.

Materials needed for Bellows (prices approximate):—

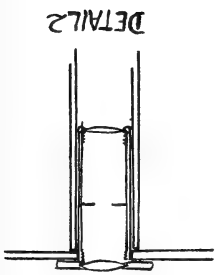
1 sheet c. 25″ × 36″ linen-backed paper	3 0
1 tin matt black paint	2 6
2 pieces 6½″ × 6½″ masonite	1 0
3 ft. 1″ × 1″	0 9
4 ft. 2″ × 1″	1 0

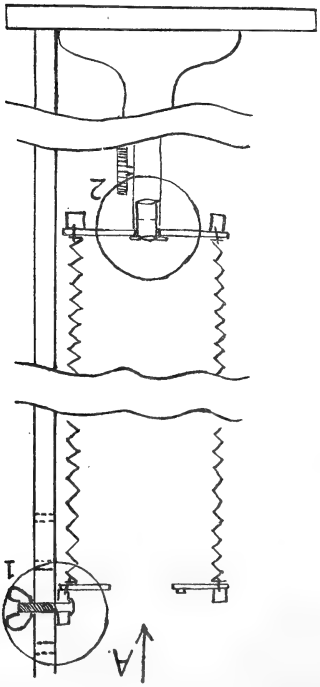
plus nails, metal, glue, patience, etc. Total: 8/3, plus about four hours' work.

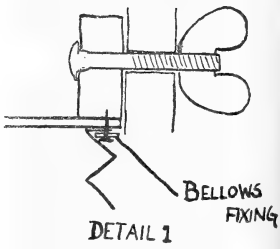
Fig. 1



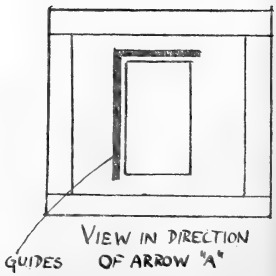
PATTERN FOR BELLOWS







DETAIL 1



SOME OBSERVATIONS ON THE WHITE ADMIRAL IN HERTFORDSHIRE

At one time Herts. was a magnificently wooded county, this being borne out by a Lepidoptera List of 1937, which I have, showing that seven of the resident English fritillaries were to be found in most of the large woods of the county. Since then, however, Herts. has been used as the experimental testing ground for the "New Town concept; Welwyn Garden, Stevenage, Letchworth, and Harpenden, to name but a few, have usurped huge areas of Hertfordshire to the detriment of its flora and fauna.

However, this makes the work of the lepidopterist much easier; instead of there being large areas of woodland there are now well defined woods which can be explored, one by one. This I have attempted to do and although it is obviously a monumental undertaking for just one person (Hertfordshire members, please help!) I have, nevertheless, managed to accumulate some interesting material. I have confined my comments to *L. camilla*, so that this article may be considered complementary to previous notes by members on the distribution of *camilla* in Middlesex and Worcestershire.

Ford's book, *Butterflies*", has a very interesting series of distribution maps at the back. In one of these the spread of *camilla* during the last 30 or 40 years is indicated. According to this, the insect in question has spread quite widely east and south over the southern counties.. I noticed that from the large woods near Oxford, where I have found it quite a common butterfly, it has spread due east through south Bucks and into south Herts.

Generally, due to variation of climatic conditions from year to year, and taking into account when these maps were compiled, one must guard against being too dogmatic about the information derived from them.

If Dr. Ford is reading this article he will realise exactly what I mean and understand that in no way do I mean to criticise his maps. Indeed, it would be highly presumptuous of me, a mere amateur, to do so.

Therefore, in the summers of 1959 and 1960, I had a look at as many Hertfordshire woods as I could. I do not pretend that my findings are in any way exhaustive and once again I would like any Herts. entomologist to write to me if he is at all interested.

In 1959 I observed *L. camilla* in Whippendell Wood, near Watford (one or two specimens) and in Wormley Wood, near Hertford (about 10 specimens). The last named colony is an interesting one. One reads about this insect flying along "sunny rides and in large glades". Wormley Wood, however, is large and dense. There are no rides at all, only very narrow bridle paths; also very little sun can penetrate the thick foliage. However, there are areas—one cannot really call them glades—in which the trees are about 10 yards apart and the ground is covered thickly by bramble. The sun penetrates in narrow beams of light and it was in one of these areas—about 100 yards square—that I discovered about 10 *L. camilla*. The reader will realise how delighted I was at this observation, this wood being only about two miles north of Enfield, which marks the northern outpost of London. I revisited this spot this summer and only two or three Admirals were observed—a reflection of a shocking summer. This summer I found the insect also in a wood near South Minims (one) and in Symondshyde Great Wood (four or five), near St. Alban's.

These four woods correspond very well with the localities on Dr. Ford's map, and they are all in South Herts., Symondshyde being the most northerly wood in which I found the insect. I then consulted my 1-inch Ordnance Survey Map (an indispensable companion, I find) and decided to visit four North Herts. woods—Hitch, West, Wain, and Westbury—all largish and all in the Hitchin area. I found that all of these woods had the "classical" ingredients—wide rides, large glades, plenty of honeysuckle and bramble, and yet *camilla* was absent from all four. Obviously, one person's observations are not a great guide, and I may have been too late or too early (July 2nd and 15th), although I very much doubt it. I tentatively suggest that, so far, my observations bear out to a remarkable extent Dr. Ford's map, and I intend to continue this investigation next summer. (Not alone, I fervently hope!)

It seems strange that this butterfly should have chosen a wood such as Wormley which seems so alien to its requirements and ignored woods just a few miles north, which seem far more suitable. I think this bears out what Dr. Ford says about our knowledge of the environmental requirements of lepidoptera being very limited.

Dennis Dell (3040).

JUNIOR NEWS SECTION

Editorial

As I mentioned in an earlier article, I am now finding that I cannot answer all the letters I receive personally, but will acknowledge them through this Junior News Section. There is, of course, a long delay between my sending in the article and its appearance in print—so please do not be too impatient if your letter does not get a mention for some time.

News from Members

J. Vincent (3027*) joins battle with Brian Sheen in these terms:—

"With reference to a letter by B. Sheen (2596*) (*Bull. amat. Ent. Soc.*, **20**: 28) commenting on an article by Mr. Stallwood (*ibid.*, **19**: 79) on the Small Pearl-bordered Fritillary, I should like to point out the following:—

Firstly, Mr. Sheen uses sadly faulty logic when he asks from what predators does camouflage protect the insect during the night when predators in the main do not use sight (itself a debatable point); and then goes on to say that the butterfly is exposed, inactive, to several hours of daylight morning and evening! In fact, the butterfly's most likely predators, birds (which hunt by sight) will still be active at this time of day! Hence the need for camouflage! Moreover, a resting place in reeds would appear to me to be most admirable. Birds will have to be small to thread their way in and out, and other predators are unlikely, since they will be either too clumsy in the light and easily-disturbed reeds, or not quick enough in the bid for food. Hence it would pay the insect to rest there overnight, natural selection taking its toll, and producing insects more difficult to recognise.

As for the "slow and expensive process" of selection, may I cite the Comma butterfly as a beautiful example of what natural selection can do in the way of camouflage, and perhaps even more impressive, the Grayling, which apart from 'knowing' the right resting place, also leans over on one side to reduce its shadow, and render itself virtually invisible!

I think Mr. Sheen has his answer!"

Yes, Brian must admit there is something in this criticism, and I am sure he will welcome it, and not regard it as a personal slur.

A joint letter comes from P. Trigg (3271*) and G. J. Walder (3335*) which I intend to follow up in future Junior News Sections.

"When some polite but non-entomological friend asks something about the 'insides' of insects, do you, as we are forced to, blush, mumble something about spiracles, and hurriedly pass on to the next drawerful? We have found that in our meagre entomological experience comparatively little attention is given to the anatomy. What little we do pick up is mainly due to blowing larvae or the odd unfortunate accident. In our humble opinion, every entomologist should have a vague conception of this sphere (an AES leaflet would certainly help here), and some might like to take up this subject more fully. If any member could put us on to some reasonably-priced book which would take us up from the very beginning and not wallow in assumed-understood technical terms on the very first page we would be most grateful".

Book Review

BUTTERFLIES. Arthur Smith and Vernon Shearer. Pp. 29. Puffin Picture Book, No. 115. Penguin Books Ltd., Harmondsworth, Middlesex. 1961. Price 7s. 6d.

This slim but beautifully-produced volume comprises alternate black-and-white and colour-pages of pictures and text. At each opening a family of butterflies is portrayed with typical foodplants, or some topic of butterfly natural history is displayed. These topics include—the egg, the caterpillar, the chrysalis, the adult butterfly, local rarities, hibernation, parasites, aberrations and rearing butterflies. I do not recall having anywhere seen better insect drawings than those done in black-and-white, and the colour plates almost, but not quite, reach the same standard. One suspects that the mode of colour printing limits the accurate representation of some insects and a few of the pictures—notably the Blues—suffer accordingly.

It is a pity that so many books must copy the information contained in others, particularly when this information is false. The Clouded Yellow butterfly on plate 27 has been depicted and described as a hermaphrodite in several books, when, in fact, it is not hermaphrodite but wholly female. In

any case, I doubt whether such a specimen exists. However, this book owes comparatively little to earlier pubications, and where the observations and illustrations are from life the benefit is immediately apparent.

It has been suggested by a friend that the price is a little high for so small a book, but I personally would not begrudge the cost when for many years I shall have the pleasure of lifting it off the shelf to scan through, and capture from the so life-like illustrations the memory of some favourite "bug" in its natural setting.

T. S. Robertson (2417), *Youth Secretary.*

I am now in a position to correlate the records so kindly sent by correspondents over the past few months. My thanks are due to the following members:—N. W. Archer (2875*); J. R. A. Birtwhistle (3558*); H. V. Danks (2907*); T. David (3137*); D. Hall (2295†); J. S. Korn (2295†); J. Muggleton (3253*); D. Neville (3186*); G. M. Newman (3319*); and R. Woodbridge (2295†).

Speckled Wood (*Pararge aegeria* Linn.).

11/4/61 Watford, Herts. (T.S.R.)
Oaks Park, Surrey (T.D.)
13/4/61 Bromley, Kent (J.R.A.B.)
18/4/61 Shoreham, Kent (N.W.A.)
21/4/61 Northwood, Middlesex (T.S.R.)
[Earlier years: 19/4/59; 11/4/60]

Small Tortoiseshell (*Aglais urticae* Linn.)

26/2/61 Sunbury, Middlesex (G.M.N.)
2/3/61 Oaks Park, Surrey (T.D.)
3/3/61 Harrow, Middlesex (R.W.)
4/3/61 Croxley, Herts. (T.S.R.)
Staines, Middlesex (J.M.)
Raynes Park, Surrey (H.V.D.)
5/3/61 Surbiton, Surrey (H.V.D.)
8/3/61 Coventry, Warks. (D.N.)
14/3/61 Bexley, Kent (N.W.A.)
14/4/61 Stockton, Co. Durham (T.S.R.)
[Earlier years: 10/2/59; 28/2/60]

Red Admiral (*Vanessa atalanta* Linn.)

15/3/61 Oaks Park, Surrey (T.D.)
21/4/61 Northwood, Middlesex (T.S.R.)
10/5/61 Bath, Somerset (J.R.A.B.)
[Earlier years: 23/4/59; 15/5/60]

Peacock (*Nymphalis io* Linn.)

5/3/61 Croxley, Herts. (T.S.R.)
8/3/61 Bath, Somerset (J.R.A.B.)
15/3/61 Stanmore, Middlesex (J.S.K.)
16/3/61 Sunbury, Middlesex (J.M.)
11/4/61 Oaks Park, Surrey (T.D.)
12/4/61 Shoreham, Kent (N.W.H.)
[Earlier years: 28/2/59; 28/2/60]

Comma (*Polygonia c-album* Linn.)

19/2/61 Bath, Somerset (J.R.A.B.)
3/3/61 Stanmore, Middlesex (D.H.)
5/3/61 Watford, Herts. (T.S.R.)
Sunbury, Middlesex (G.M.N.)
11/3/61 Staines, Middlesex (J.M.)
25/3/61 Surbiton, Surrey (H.V.D.)
6/4/61 Bexley, Kent (N.W.A.)
11/4/61 Oaks Park, Surrey (T.D.)
[Earlier years: 14/5/59; 14/4/60]

Holly Blue (*Celastrina argiolus* Linn.)

11/4/61 Watford, Herts (T.S.R.)
14/4/61 Bromley, Kent (J.R.A.B.)
5/5/61 Surbiton, Surrey (H.V.D.)
Bath, Somerset (J.R.A.B.)
11/5/61 Dancersend, Bucks. (T.S.R.)
[Earlier years: 22/4/59; 6/4/60]

Small White (*Pieris rapae* Linn.)

16/3/61 Harrow, Middlesex (T.S.R.)
24/3/61 Surbiton, Surrey (H.V.D.)
6/4/61 Bexley, Kent (N.W.A.)
11/4/61 Watford, Herts. (T.S.R.)
Oaks Park, Surrey (T.D.)
12/4/61 Bromley, Kent (J.R.A.B.)
18/4/61 South Lancs. (J.R.A.B.)
Shoreham, Kent (N.W.A.)
21/4/61 Northwood, Middlesex (T.S.R.)
[Earlier years: 21/4/59; 7/4/60]

Large White (*Pieris brassicae* Linn.)

14/3/61 Sunbury, Middlesex (J.M.)
15/3/61 Oaks Park, Surrey (T.D.)
13/4/61 Surbiton, Surrey (H.V.D)
14/4/61 Stockton, Co. Durham (T.S.R.)
Carlisle, Cumberland (J.R.A.B.)
11/5/61 Dancersend, Bucks. (T.S.R.)
[Earlier years: 21/4/59; 17/4/60]

Green-veined White (*Pieris napi* Linn.)

5/4/61 Bexley, Kent (N.W.A.)
11/4/61 Oaks Park, Surrey (T.D.)
13/4/61 Bromley, Kent (J.R.A.B.)
[Last year: 19/4/60]

Orange Tip (*Euchloë cardamines* (Linn.)

13/4/61	Oak Park, Surrey (T.D.)
18/4/61	Shoreham, Kent (N.W.A.)
2/5/61	Bromley, Kent (J.R.A.B.)
11/5/61	Dancersend, Bucks. (T.S.R.)
13/5/61	Watford, Herts. (T.S.R.)

[Earlier years: 23/4/59; 3/4/60]

Brimstone (*Gonepteryx rhamni* Linn.)

3/3/61	Oaks Park, Surrey (T.D.)
4/3/61	Coventry, Warks. (D.N.)
	Bath, Somerset (J.R.A.B.)
5/3/61	Bexley, Kent (N.W.A.)
12/3/61	Tring, Herts. (R.W.)
15/3/61	Staines, Middlesex (J.M.)
6/4/61	Bromley, Kent (J.R.A.B.)
18/4/61	Wrotham, Kent (N.W.A.)

[Earlier years: 27/2/59; 28/2/60]

The close correspondence of first appearance dates with those of earlier years is worth mention. Some species appear to me to have been less numerous this year—notably the Holly Blue and Speckled Wood, which I saw only in small numbers in the Spring brood. On the other hand, the Large White seems to be recovering from last year's very low numbers. Records of it are quite widespread, and I saw it in fair numbers in the Berks. locality recorded above. The pupae I have at home and which over-wintered in a garden shed have not yet emerged, although to-day (14th June) the first of them is just colouring up ready to emerge in the next few days.

T. S. Robertson (2417), *Youth Secretary.*

LETTERS TO THE EDITOR

DYTISCUS MARGINALIS

With reference to Hugh Caiger's (2908) article in the April issue on the abundance of *Dytiscus marginalis* L., I began studying and collecting the Coleoptera four years ago, and for three years I spent many week-ends dragging ponds in the neighbourhood of Guilden Sutton, near Chester, without finding a single *Dytiscus* imago, and only about a dozen larvae. However, last spring we moved to Little Sutton in the Wirral, only nine miles away, and soon after we moved the 1960 rains began to take effect and a nearby field was flooded.

About three weeks later, I was out 'bug hunting' in the woods with a friend and on the way home I plunged my net into the pond and brought it out full of *Dytiscid* larvae, and lots of other water beetles. Within five minutes I had brought to light hundreds of larvae and several fine adult specimens. The adults I noticed were all female and, as yet, I have found only one male specimen of *D. marginalis*, which flew into a bowl of water left overnight on a friend's lawn. People often bring me female specimens but no males. I should be very interested if Mr. Caiger or any other reader has any ideas on this.

May I also ask if members with records of Chrysomelidae: Cassidinae could please let me have details of their captures for an article and survey.

Martin C. Birch (3048).

QUEEN WASPS

Replying to Mr. D. T. Chapman's letter in the April *Bulletin* concerning the numbers of wasps in any given year, I agree that cold, wet springs are against the survival of queens, although I do not think extreme cold in winter—if dry—affects the issue.

Surely the weather of the previous summer plays an important rôle, as on it depends the potential number of queens capable of hibernating. A hot dry summer must produce larger and stronger colonies through longer working hours, than a cold, wet one. My local observations may be of interest—in spring, 1959, after a fairly normal winter, I caught 13 queens at blossoms of *Cotoneaster horizontalis*. After the hot summer of that year and another not too severe winter, I caught 43 queens in the spring of 1960. The atrocious weather of that year showed very few wasps in autumn, in spite of the spring glut, and this year, after an exceptionally mild winter, I have not seen a single queen. One incidental point intrigued me—while wasps were visiting the blossoms honey bees shunned them, but this year the bees are swarming. How do they know?

P. J. Burton (1199).

OBSERVATIONS ON THE CARRION BEETLE

During last summer, I found a dead hedgehog. I brought it home, and left it in the garden to rot, so that I could salvage the skeleton. I found, later, several *Necrophorus* spp. These I marked with light blue "dope", and released at varying distances upwind and downwind from the carcass. Not one specimen returned out of some eight or nine released. The carcass was pretty "high" during this time, and could be smelt quite easly from a distance of 10 yards. For this, I have three explanations:

(i) My method of marking upset them in some way—doubtful, since I observed no obvious bad effects.

(ii) There were other carcasses in the district, to which the beetles were later attracted—very possible in the country.

(iii) The beetle has a poorer sense of smell than it is attributed with having.

I think the explanation may be sought in a combination of the last two factors—in previous experiments, the carcass used was possibly the only one for some way around. Thus, any active insect would be bound to pass fairly close if released in the vicinity and would not need such a superb sense of smell as that with which dung and carrion beetles are supposed to be invested. Further experiment under far more controlled conditions only could decide. Has anyone yet tried to find the threshold of smell for these beetles?

J. Vincent (3027*).

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SCARCITY OF THE LARGE WHITE

I was very interested in H. N. E. Alston's letter (*Bulletin*, January 1961). I agree that the Large White was indeed scarce in 1960. I live in central Hampshire in the south, and having captured 30 larvae at the end of 1959, two pupated. This was a very hot year. At the same time during 1960 I captured 20, all of which pupated. They have not yet hatched in a breeding cage, but all are healthy and show no signs of parasites. Perhaps it is because the parasites dislike the rain more than the caterpillars.

A. J. H. Pott (3241*).

•

MEETINGS SECRETARY'S LETTER

Those of you who attended last year's Annual Exhibition will remember that it was very well attended, so well, in fact, that it was a struggle to see most of the exhibits. This was mainly because too few of those members attending had brought along exhibits themselves, and to a lesser extent due to the fact that the hall was a little on the small side for the vast numbers of members who turned up.

In the past the Meetings Secretary has written in the *Bulletin* urging and imploring members to exhibit, and I am somewhat reluctantly asking you this year to do likewise. Please bear with me.

In order to overcome the problem of space, I am endeavouring to book a larger hall for the exhibition this year, but this does mean that we want more exhibits—or the Exhibition will remind one of the proverbial swarms of bees around too few and widely spaced honey-pots.

I am writing this early in the year, so that each and every one of you intending to come can rack your brains and try and bring something along—whether it be a single specimen, dead or alive, or indeed a cabinetful. All of you must have something that will interest other members, and I do urge you to make an effort and try an exhibit this year. It is not only set specimens that we want—insects in all stages, books, maps, literature and apparatus —all will be very welcome.

I am *hoping* to arrange the Exhibition this year for Saturday, 30th September, and I would ask anybody who intends bringing an exhibit, or would like to help, to please contact me.

If there are any members who would be willing to give a lecture or talk, or an entomological demonstration of any kind, I would be pleased to hear from them.

Kenneth J. Fox, *Meetings Secretary.*

COLLECTING THE BRITISH MACRO-LEPIDOPTERA

By not taking more examples than are reasonably required, one can help to avoid over-collecting of uncommon species, and also the unnecessary waste of life of even common species, which look much better alive and beautifying our countryside and gardens anyway than in the huge rows of twenty or thirty specimens, all identical, which were so beloved by Victorian collectors.

When you have only a few storeboxes, as I had to start with, it is best to divide these up into the main groups, in their proper order, so as to keep some semblance of the correct scientific sequence in your collection; but when, later, you acquire a cabinet or cabinets, then it is best to allocate a place for every species on the British list, label the lot, and then put your specimens in as you acquire them. You will allow, say, eight spaces for each common species not subject to variation, with proportionately more for species subject to variation, according to the extent of such variation; six spaces for less common ones; four for very uncommon ones; and two only for extreme rarities.

For neatness, the columns should be divided with black cotton stretched taut between small black pins (do not use headless points for this purpose, or the cotton will slip off).

In my own collection, several drawers containing light-coloured specimens, such as "Whites", or brightly-hued moths, such as the Jersey Tiger or Green Silver Lines, have been lined with matt black paper and white cotton used to divide the columns, making a very attractive and striking contrast.

The next question that now unavoidably presents itself is: To catalogue or not to catalogue?

Having now collected and bred the "macros" for 29 years, my collection is, naturally, not a small one, and about two years ago I decided that the time had come to catalogue it, especially in view of my specialised interest in certain groups. I, therefore, decided on the card index system as being the most practical, because my collection is a continually-developing one with frequent replacements, especially in certain groups.

Each specimen has its own card, size 3″×5″, ruled on one side only. The cards are kept in long boxes each holding 700 to 750 cards, and coloured tabbed dividers are used to separate the groups and families. The numbers start at 1 with *Papilio machaon* L., the Swallow-tail, and just carry on, in scientific order, each specimen having the next number, and varieties and aberrations being allowed for. When I come to blank spaces for a species I have not yet got, they just get the next numbers and carry on, thus:—

Notodonta dictaeoides Esp. 2886-2897
Notodonta phoebe Siebert 2898-2899
Notodonta dromedarius L. 2900-2913

and so on.

(*Phoebe*, of course, is still a blank space with me!)

My catalogue cards are not choc-a-bloc with a lot of irrelevant notes, which are quite unnecessary; observations on breeding, larval habits, etc., should be entered up in your nature diary or notebook (of which, more anon). All that is needed for the catalogue is a neatly-typed record of the genus and species (with author, please) followed by the English name (and please do not fill half the card up with synonyms!) the catalogue number, the locality, date and name of the collector, and, if bred, brief details. Here are two of my cards to give you an idea of the layout:—

Leucania impura Hb. 3337
Smoky Wainscot.
Northampton.
21.7.1959.
J. O. I. Spoczynska.

Phragmatobia fuliginosa L. 2498
Ruby Tiger.
Northampton (Bred from ova)
Emerged 14.7.1957.
J. O. I. Spoczynska.

If you start cataloguing right at the outset, you will not have to spend two years cataloguing your collection about thirty years after you have started collecting! Unless you are mad keen on typing, you will also probably not enjoy typing out about 15,000 cards. The catalogue number of each specimen can then be written on the back of each label before you put it on the pin—much better than taking all the labels off again to do it later—usually very much later, by which time your specimens will, of course, have become very much more brittle with the passing of the years, and, therefore, much more liable to be damaged during even the most careful handling.

Cabinet drawers (or storeboxes, as the case may be) should always be examined at regular intervals for any sign of mould, grease, mites, museums beetle or other pests, and relined when necessary. If this examination is carried out regularly and thoroughly, you should never have any trouble from any of the above. Paradichlorbenzene (PDB) only should be used in the cells; do not use messy chemicals, loose camphor balls stuck on pins, or other abominations. PDB needs renewing at least every six months and preferably oftener. Glass drawer-tops must be tight-fitting—preferably in wood frames—and should be kept sparklingly clean, dust-free and polished with a soft duster; any obstinate finger-marks can be removed instantly with one of the new window-spraying fluids.

Last, but not least, I come to the vexed question of nomenclature. I personally prefer to stick to the old nomenclature and eschew the new-fangled versions. Please yourself, of course; but just think: if you were christened John Brown, why should somebody suddenly decide to call you William Johnson? Or, worse still, John (William) Brown (Johnson)? If anyone can give me any good reason for suddenly renaming *Eubolia limitata*, for example, *Ortholitha chenopodiata*, I'll eat my typewriter! At that rate, I might as well be called Wayne Scott. . . .

The order of the groups, too, I prefer to keep as they were originally according to Kirby, whose authority is quite good enough for me without added complications. To-day's change-mad nomenclatists also seem to have completely jettisoned the sub-groups and families, lumping as "Noctuidae", for example, several different groups, and as "Geometridae" even more different groups! They might as well call English not only the Welsh, Scots and Irish but also the French, the Italians, the Germans and all the other European nations!

One would have thought that, with their craze for re-naming species and even transferring these to entirely different groups and re-arranging them into new sequence, they would have gone to the opposite extreme and subdivided the existing families still further into sub-groups, sub-families, super (or not-so-super) families, and so on. At the rate they are going on, I expect that before long they will go the whole hog and put *atropos* among the Pugs on the grounds that it has characters in common—the female moth lays eggs; the egg hatches into a larva; the larva pupates . . . .

FURTHER OPINIONS ON THE WYRE FOREST ARGYNNIDI

I was interested, and not a little peeved, to find another AES member writing on the fritillaries which occur in Wyre Forest (W. J. Tisbury, April Bull.), since material from this expanse of woodland forms a very large proportion of the butterfly collection of Messrs Gadd (3033) and Plester (2968). We have studied 'the forest' butterflies for five years (1956-60) on our almost weekly trips to the area, which lies about one mile from my home.

Firstly, I would like to add that we have taken several specimens of the Dark Green fritillary (*A. aglaia*) in the exact location Mr. Tisbury mentions. Presumably, it is the section which we call "Colias Row", since we once took a male *C. croceus* there. Secondly, I personally would fail to agree with Mr.

Tisbury's hypothesis that the season's prevailing weather conditions effect any major proportion of the Argynnid population, from the variation point of view. It appears to me to be much more likely that specimens are influenced by their immediate individual environment. I now produce my evidence for this in the form of a table.

	Date	*No. of specimens in coll.*	*Ground colour*	*Spots*	*Situation of capture*
A. SELENE					
1958	15 June	3	Normal	Normal	Railway track
	15 June	1	Light	Normal	"Colias Row"
	15 June	1	Dark	Normal	
			Wing bases blacker		Railway track
	6 July	1	Normal	Darker	Deep woodland
1959	24 May	1	Normal	Normal	Deep woodland
	22 May bred	1	Normal	Normal	
A. EUPHROSYNE					
1957	19 May	3	Normal	Normal	
	19 May	1	Light	Normal	
			Wing bases blacker		
	19 May	1	Light	Normal	
	19 May	1	Light	Large	
	19 May	1	Normal	Large	
	25 May	1	Normal	Normal	
1958	11 May	1	Normal	Small	
	8 June	1	Light	Large	
1959	7 May bred	1	Dark	Large	
	30 April bred	1	Patchy, Light/ Dark	Large, but pale	

The reader's first comment will doubtless be that I have not considered enough specimens. In fact, Mr. Gadd and myself are keen "variety hunters", and we must have examined dozens of Selene and euphrosyne each season, retaining any that were lighter or darker than normal. In each year, I think we may safely say, the predominant form of specimens noted was the usual type specimen. The *A. cydippe* in our collection are also extremely variable regarding ground colour of wings and extent of spots. For example, on 6th July 1958 we took four normals and one very dark specimen along "Colias Row". Our *A. paphia* are equally variable in this respect. Thus, it appears to me that the number of individuals varying from the normal colouration is not directly dependent upon the weather conditions of a given year, but rather that it is dependent upon the prevailing factors in the immediate area in which the insect grows up. For example, a larva living on the hot, dry bank of the railway line would tend to produce a lighter imago than would one reared among the damp vegetation of the deeper Oak glades.

Finally, I would state that Mr. Gadd and myself have not found any great decline in the numbers of *A. paphia* in Wyre Forest in the past five years, though Mr. Tisbury may have found this elsewhere—in July the woodland brambles literally swarm with specimens, and Mr. Tisbury was unfortunate to note only a half dozen specimens. To conclude, I add a few observations made by Mr. Gadd and myself in Wyre Forest:

(i) *A. selene* and *A. euphrosyne* females lay ova on vegetation, both living and dried, in the vicinity of Dog-violet, and not upon it, as stated by South.

(ii) *A. paphia* larvae pupate on the undersides of large fallen branches near their foodplant.

(iii) *A. paphia* larvae emerge from the egg, but do not feed, in the same season as the ova are laid.

(iv) We have two specimens of the partial *A. selene* second brood, taken in 1957 and 1959 respectively, at another local habitat, but have no record of it in Wyre Forest.

I hope these observations will be of use to Mr. Tisbury in solving this interesting problem.

LEIGH S. PLESTER (2968).

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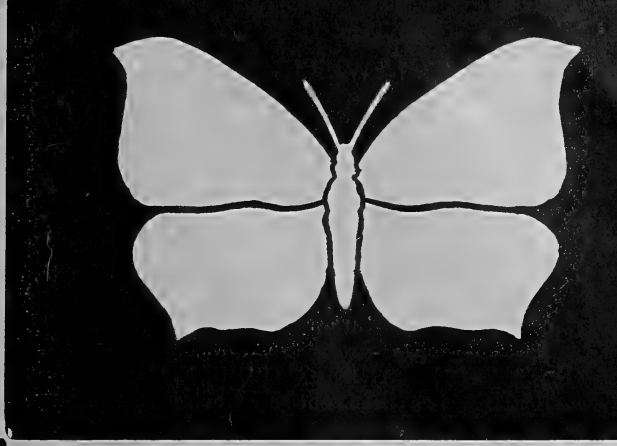

THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc.*

EDITED by W. N LAWFIELD

AES NOTICE
WHERE TO WRITE

Membership applications, offers of help to: D. OLLEVANT, *3 Salcombe Drive, Morden, Surrey.*

Advertisers to: R. D. HILLIARD, *54 Gyles Park, Stanmore, Middlesex.*

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Youth matters to: T. S. ROBERTSON, *38 Repton Way, Croxley Green, Herts.*

AES BULLETIN

No. 248

AUG./SEPT. 1961

ANNUAL GENERAL MEETING

The Annual General Meeting was held in the Linnean Society's rooms at Burlington House on the afternoon of Saturday, 25th March 1961.

It was preceded by a conversazione and Mr. J. H. P. Sankey gave a lecture on "Why Collect Invertebrates", illustrated by colour slides. Mr. Sankey emphasised the not-so-popular Orders and explained the many problems of habits and distribution which the Amateur could study and try to solve.

The AES Council for 1961 is now constituted as follows:—

President	D. Ollevant (1514)
General Secretary	Vacant
Assistant General Secretary	B. F. Skinner (2470)
Treasurer	G. D. Trebilcock (2976)
Assistant Treasurer	K. H. Bobe (912)
General Editor	R. W. J. Uffen (1660)
Bulletin Editor	W. N. Lawfield (2971)
Publications Secretary	C. B. Pratt (784)
Meetings Secretary	Dr. K. J. Fox (1459)
Advertising Secretary	R. D. Hilliard (99)
Youth Secretary	T. S. Robertson (2417)
Registrar	Vacant

Councillors: N. Wilding (2528J), N. C. Miller (3189J), A. R. Middeton (2482), M. J. Friend (2786), L. S. Whicher (1345), B. L. J. Byerley (788)

D. Ollevant.

COUNCIL'S REPORT FOR 1960

The number of subscriptions paid for 1960 was 761, and adding those members joining from the 1st September, whose subscriptions cover 1961, the final membership for the year was 815, made up of 560 ordinary and affiliate, 248 junior, and seven honorary members.

These figures show an increase in membership of 29 since the previous year, and 78 since 1958.

The *Bulletin* was published twelve times, including the special Silver Jubilee number, edited by Mr. E. Lewis, which was published in August. The Treasurer was pleased to report that members subscribed generously towards the extra cost of this number.

During the summer the Council agreed to raise the subscriptions to 10/- for Juniors and 15/- for other members. This became effective for new members joining after the 1st September (whose subscriptions covered 1961) and for the existing members on 1st January 1961. As the size of the *Bulletin* was increased to twelve pages from September, members benefitted before they had to pay the increased subscription. Due at first to a change in *Bulletin* Editors, and later to printing difficulties, it was not always possible to publish the *Bulletin* on the 1st of each month.

At the Annual General Meeting in March members were able to enjoy two films, "The Ruthless One" and "Sardinian Project".

The Annual Exhibition was held at Buckingham Gate School in October. The attendance was good, but the number of exhibits was poor. An excellent exhibit was staged by an affiliate Society, St. Ivo School, and other affiliate Societies would be very welcome if they did the same. A talk was given by Mr. M. V. Laburn on behalf of the Nature Conservancy, and setting demonstrations were given on Coleoptera by Mr L. S. Whicher, on Macrolepidoptera by Mr. T. S. Robertson, and on Microlepidoptera by Mr. M. E. Castle. The Council has since discussed the sparcity of exhibits and criticisms of the Exhibition venue, and has made plans to improve the situation in 1961.

By kind invitation of Mr. D. G. Hall, many members took the opportunity of attending the Field Meetings held by the Entomological Section of the London Natural History Society.

Under the chairmanship for the first quarter of Mr. J. C. Hobbs, and for the rest of the year of Mr. R. W. J. Uffen, the Council has met six times with little absenteeism.

In May the Society had a table at the School Nature Study Union Exhibition at St. Mark's College in London. Thanks to the co-operation of some of the members, photographs of insect life histories, the larvae of several species of Saturniidae, a larva of *Apatura iris* Linn. (the Purple Emperor), and many living invertebrates were exhibited. The Society's publications were offered for sale.

The year 1960 concluded the first twenty-five years of the AES and it showed an improvement in the *Bulletin* and in the membership numbers.

It is anticipated that the second twenty-five years will commence with the weakness of the Exhibition being cured and the Society can then look forward to another twenty-five years of advancement.

This Society is the only national entomological Society which sets itself out to cater for both the beginner of any age and the more experienced collector. and there is no reason why, with the active co-operation of its members, it should not greatly increase in size and in value to its members.

D. Ollevant.

TREASURER'S REPORT, 1960

The financial position of the Society during the past year has remained satisfactory. The Society's credit balance on January 1960 stood at £472 6s 6d; this has now been increased to £745 2s 5d. However, this increase must not be taken to mean that the Society has made a great advance. It must be remembered that the Society holds the Walz account, which on December 31, 1960, stood at £187. This and other items must be taken into account. This is reflected in a comparison of the amounts transferred to the General Income and Expenditure Account. Last year the total carried forward was £55 19s 6d; this year it amounts to £35 18s 6d.

Because of this position, and other reasons, it has been necessary to increase subscriptions. Without any increase, the Society would only be able to carry out its present commitments, and this, as time passes, would become increasingly difficult. With the additional money, the Society will be able to cover the cost of the present larger *Bulletin* and it is hoped add to the money available for publications which the Council is anxious to produce.

When one considers the extra expenditure the Society has incurred by introducing the twelve-page *Bulletin*, and the special August *Bulletin*, the latter being well supported by donations, I feel the Society's year has been satisfactory and I am confident that it will continue to be so.

G. D. Trebilcock.

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THE ANNUAL REPORT FOR 1960-1961 OF THE SOCIETY'S REPRESENTATIVE ON THE NATURE CONSERCANCY'S ENTOMOLOGICAL LIAISON COMMITTEE

Your representative attended the two meetings of this committee held during the last twelve months.

Reports were made by some of the entomologists present and by the Conservancy on several of the surveys carried out in some of the reserves.

The question of collecting in reserves was brought up and particular mention was made by the Conservancy of the lack of support given by collectors to the Conservancy's request for information regarding material collected in nature reserves. In order to help visitors to give the necessary details a questionnaire has been drafted which, *if there is co-operation*, should enable the Nature Conservancy to obtain much useful information that will help in the management of the reserves. In future these questionnaires will be issued with permits by the regional officer with the request that they be filled in and

returned as soon as possible. *All* our members who visit nature reserves are particularly asked to co-operate in this matter.

The committee's views on the use of mercury vapour light traps within reserves was sought and the opinion was given that under properly controlled conditions not much harm need occur and it was generally agreed that under these conditions there was no objection to their use.

Details were given of the useful work done by the Conservation Corps in various reserves during the last year and it is again pointed out that there is always much work to be done in which our younger members are asked to take part.

The Conservancy revises periodically its lists of Sites of Special Scientific Interest (S.S.S.I.s) and any member who knows of any area which, in his opinion, should be included in this list is asked to get in touch with your representative. At the moment the Conservancy is asking for information in the following counties: Anglesey, Bedfordshire, Caernarvonshire, Cornwall, Kent, Shropshire and Wiltshire.

In conclusion, it would not be out of place to mention here the fact that during the time your present representative has held this office—a period of several years—he has *not* received a single communication from any member concerning this all important matter of conservation in spite of numerous offers and appeals. This poses a question: "Do our members, who are unable to attend the A.G.M., and others, know that they have a representative on the above committee? If the answer to this is "No", then perhaps if this report is published in the *Bulletin*, as it was last year, there might be more response. If, however, the answer is "Yes", then it would seem as if there is a complete lack of interest in the subject—an extraordinary state of affairs in a society such as ours! It is hoped that this next year will prove this to be fallacious and that interest in the conservation of our insect populations is not moribund.

T. G. Howarth (196).

COLLECTING HINTS—September

The Coleoptera

In Joy's *Handbook of British Beetles* it is stated that the two species of *Epitrix* are to be found in August and September. This is not the whole truth, for all my captures of both species have been made in June and July. They are very local insects, but when a colony is discovered the beetles are usually abundant.

Epitrix atropae Foudras feeds on the Deadly Nightshade which is itself a very local plant found chiefly on the chalk of southern England. Where the plant grows in any quantity the beetle should be looked for. A fair amount of damage to the leaves often indicates the beetle's presence. An alternative food-plant is Henbane, but as this plant is usually a casual, growing for only a season and then disappearing, there is less chance of its being colonised by the beetles. All the recorded occurrences of *E. atropae* are in the southern half of England.

Epitrix pubescens (Koch) lives on the much commoner plant, Woody Nightshade. This plant occurs throughout the British Isles, but the beetle is restricted to East and South-East England. My own captures have been made on Woody Nightshade growing in reed-beds and other damp places, but I cannot say whether this has any significance. There is an alternative food-plant, Black Nightshade, a weed of arable land and waste places.

K. C. Side (2140).

The Diptera

These notes are mainly for those still on holiday. A great variety of diptera are confined to the tidal edge or its vicinity. *Helcomyza ustulata* Curtis is the one species of Dryomyzidae found on the sand beaches—silver-haired and resembling the sand itself. About the heaps of rotting seaweed will be found the Coelopidae joined by the smaller species of Sphaeroceridae, *Thoracochaeta brachystoma* Sten. and *T. zosterae* Hal. Sand dunes attract other species such as the silver-haired *Thereva annulata* F. and the asilid *Philonicus albiceps* Mg. on the blown sand.

Several muscids are about the dunes: *Delia albula* Fall., *Helina protuberans* Zett. and the species of *Dexiopsis* and *Lispocephala rubricornis* Zett.

The species of flies change as we proceed inland from the tidal edge, leaving the sand and shingle, passing over the fixed dune grassland or saltmarsh to the grazings beyond with the variety of maritime plants to be examined for certain Agromyzidae and Trypetidae.

The wet areas of the cliffs, where algae grows as the water drips and trickles down, has its own fauna: *Liancalus virens* Scop., *Limonia goritiensis* Mik and the species of *Thaumalea*. Here, too, are to be found *Limnophora exsurda* Stein and *Medetera petrophiloides* Par.

There are many more species to be found, some like the four species of *Chersodromia*, the flightless Empids that run over the sand at the shore edge, whose early stages are unknown. The grasses of the dunes and saltings house Chloropidae, Chamaemyiidae and Ephydridae, almost unknown except in the adult stage.

The maritime flowers attract numbers of Tachinidae, Muscidae, Syrphidae, etc., many as yet unrecorded as sippers of nectar or devourers of pollen of these flowers. There is plenty of useful watching and recording to be tackled.

L. Parmenter (895).

Macrolepidoptera

Keep an eye open this month for *Leucania albipunsta* Fabr. White-point Wainscot). In recent years it has been taken all along the south coast at light and sugar. The moth can be readily distinguished from *L. lethargyia* Esp. (Clay Wainscot), which it vaguely resembles, by the prominent white dot in the centre of each forewing and by its smaller size. Captured females should be kept for eggs as the larvae are not difficult to rear, provided they are kept warm and fed regularly with fresh grass. Larvae maintained this way should produce imagines later in the Autumn.

Many of the hibernators will now be emerging, such as *Lithophane socia* Rott. (Pale Pinion), *Graptolitha ornitopus* Hufn. (Grey Shoulder-knot) and *Jodia croceago* Fabr. (Orange Upperwing). The larvae of *J. croceago* were very common this year in the Dorking area, so perhaps the moth will prove equally as abundant on the sugar patch.

Larentia clavaria Haw. (Mallow) is to be found from dusk onwards flying around its foodplant, the common mallow. In a similar way *Chesias legatella* Schiff. (Streaked Carpet) may be obtained from broom. *C. legatella* can also be flushed out during the day.

Beating produces a good assortment of interesting larvae throughout this month. Those desirous of obtaining *Colocasia coryli* L. (Nut-tree Tussock) and *Drepana cultraria* Fabr. (Barred Hook-tip) are well advised to concentrate their efforts on beech.

B. F. Skinner (2470).

JUNIOR NEWS SECTION

Editorial

Several members have sent additional records of Spring butterflies since I compiled the list already published. I am keeping these for the time being to form a complementary list later.

News from Members

N. W. Archer (2875*), whom I met at last year's Annual Exhibition, has written me a long and interesting letter. I have already extracted from it some of the records, and these were incorporated in the fuller analysis last month.

However, some other observations of his are very interesting, and I include them here.

"Last season was not a very good one for me. I had no real luck, except, perhaps, the occasions when I had narrow escapes from adders on the North Downs. On one collecting trip with a friend from school I spent the morning and early afternoon tramping up and down the chalk slopes looking for unusual varieties of the Chalkhill Blue (*Lysandra coridon* Poda), without luck, of course.

In the late afternoon we moved round to the end of the slopes and here we found a few very blue female Common Blues (*Polyommatus icarus* Rott.). Then I disturbed a Geometer I had never seen before—a Straw Belle (*Aspitates gilvaria* Schiff.), so I went chasing over the hillside after it.

I gave up the chase when I had to sidestep smartly to avoid an adder coiled up on a tussock of grass on an ants' nest. Many times before I have chased Dark Green Fritallaries (*Argynnis aglaia* Linn.), the whole length of this field without a thought for adders, so I can count myself lucky that I have not had any close meetings with them. I have also met two more in the same field, and one at Westerham.

On a heath in Kent I spent several afternoons examining the Lady's Bedstraw for Small Elephant Hawkmoth larvae (*Deilephila porcellus* Linn.), and I was eventually rewarded with two, and also a Hummingbird Hawkmoth larva (*Macroglossa stellatarum* Linn.). Unfortunately, this died on the morning we went away for our holiday.

The most notable observations about last season were the great abundance of Holly Blues (*Celastrina argiolus* Linn.) in South London and N.W. Kent and the dearth of Large Whites (*Pieris brassicae* Linn.) ova or adults, but I found about five larvae at Wembley, one of which I kept and it is about to emerge, and about fifty fully-grown larvae on some nasturtiums in a garden overlooking the harbour at Shaldon in Devon.

I stayed with my parents for a fortnight in early September at Combeinteignhead, overlooking the River Teign in Devon. The garden of the house at which we stayed had a large bed of Nicotianus and on these I saw my first Convolvulus Hawkmoth (*Herse convolvuli* Linn.). On a walk near Haytor through a mixed deciduous and coniferous wood I had my first glimpse of the powerful but gracious flight of the Silver-washed Fritillary (*Argynnis paphia* Linn.) as it flew past us at a distance of about ten yards. I also saw about five Clouded Yellows (*Colias croceus* Fourcr.), near Watcombe. I was not fortunate enough to find any Long-tailed Blues (*Lampides boeticus* Linn.), although I spent several afternoons where Mr. W. L. Coleridge found his specimens.

On a Buddleia bush in the garden of the house where we stayed I captured a Jersey Tiger Moth (*Euplagia quadripunctaria* Poda) which provided me with 41 ova. When I received the February *Bulletin* I read Mr. R. G. Haynes' article and was surprised at the difficulty he had in rearing the larvae (*Bull. amat. Ent. Soc.*, **20**: 19). At that time I had about 32 larvae, entering the last moult. This last moult takes about ten days, and during this time many of the larvae seem to contract an unusual disease, which results in the twelfth segment turning black. All those which developed this malady died; two more have died from some common cause, and one died because it lost its power of locomotion. I now have 19 larvae, all of which are healthy, and some of which are preparing for pupation".

Those are some extracts from N. W. Archer's letter. He has described also two walks, of 23 and 29 miles respectively, he made in the Easter holidays. I expect to include some extracts from these accounts in a future *Bulletin*.

T. S. Robertson (2417), Youth Secretary.

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PAIRING OF *SATURNIA PAVONIA* LINN. IN THE WILD

Though not particularly keen on breeding non-native Lepidoptera, I was interested to read the account of an American, Mr. Bruce A. Feller, of "Pairing *Samia cecropia* in the wild", and I am certain other members must have found the article interesting.

I must say my somewhat hazy ideas of Long Island, New York, have now been pleasantly revised. In his opening sentence, he mentions that houses are rapidly covering the area. In my ignorance I had already surmised that such was an accomplished fact. I hope he derives some consolation from the thought that though the several species he mentions may be crowded out of his locality by man, they will, I trust, still be thriving in more rural areas of the United States.

On the other hand, we, in this country, only possess one member of the great family Saturniidae or Silk Moths, the species being *Saturnia pavonia* Linn., an attractive, but not very large insect, the females spanning only about $2\frac{3}{4}$ inches and the males much less. Happily, this species appears to be in little

danger of extinction, but perhaps our readers abroad and, indeed, some of the less experienced ones here, may find my recent efforts in assembling and, subsequently mating the Emperor Moth in the wild of interest.

Let me begin by saying I had never previously seen or handled living material of this species and had never before tried my hand at "assembly" with any species, though I have witnessed natural assembly in other species in the wild. Therefore, as an inexperienced amateur, I avidly re-read all reports on this and any other species whose females attract males in numbers, that I could find. I then purchased a female pupa from a dealer in December 1960, and sat back impatiently to await what I hoped would be a successful emergence in the coming spring. She duly obliged, emerging at mid-day on 13th April 1961, and I made arrangements to meet a friend two days later, at a location in the New Forest, Hampshire, where he had seen a male of this species last spring. The two days were allowed to elapse, partly because it was the first opportunity I had of visiting the spot and partly because I had gleaned the information that an unmated female in her second day is at her most attractive!

On the afternoon of the 15th we met on the chosen site, in a lay-by on the A31, the time 3 p.m. B.S.T. Our arrival was greeted by a light spattering of rain on our car windscreens, and the sun, which had been shining fitfully during the morning, now gave up the unequal struggle and disappeared behind thin grey cloud.

The area chosen, under these circumstances, appeared most uninviting, being of an undulating nature, covered with ling, *Calluna vulgaris* Linn., which in itself is not attractive at this time of year, giving a grey-brown cloak to the open ground which was relieved (?) by small clumps of rather stunted pines; as some of these were dead, they did not enliven the scene much. With some trepidation, I emerged from my car to pass on to my companion my conviction that any moth would be wise to give a place as desolate as this a wide berth.

I had not, however, allowed for the power of attraction by the female, as by the simple action of opening my car door, I had released a concentration of scent, which had built up over my two-hour journey, and, before I could voice my thoughts, a male arrived, to be quickly followed by a second and yet a third. By this time I had taken the female in her perforated zinc-sided box from the car and placed it on the ground. In the following hour 25 males were secured, all of which could be seen approaching low over the ling from down-wind, as they neared the captive female, and the scent path was presumably more narrow, they tended to zig-zag more, as it was not so easily followed. A stiff rather cold breeze was blowing, but the still overcast sky was not shedding any more rain, though I confess we were so occupied that nothing short of a cloud-burst would have registered with us during that hour.

In fact, more males than 25 came in, but the confusion resulting from three or more arriving together, and our resultant attempts to box them, caused several to pass up-wind of the female, when they lost the scent and went careering on, to be caught as often as not in the slipstream from the continual procession of cars passing on the nearby road. On this same road, on which I used to cycle a dozen years ago, it was a pleasure to see a car or two to relieve the monotony; now one has to wait several minutes before a gap occurs in the traffic to enable one to cross. We, too, it would seem, are not without our march of progress, though ours, thank goodness, hasn't really got out of hand yet.

At 4 p.m., with the males not coming in quite so regularly, it was decided to allow a previously taken male access to the female, with the purpose of obtaining a mating. On introduction to her box he sat doing nothing; directly another male flew into the now open box, however, he appeared to wake up, and, climbing the side of the box to the waiting female, coupled instantly. The intruding male then made off. I wonder who it was said: "a little competition is a good thing".

With a pairing secured, we now turned our attention to the two dozen males which we examined for variety, a dozen of the finest being selected to grace our collections, and the remainder released beneath a thick Gorse bush, to hide them from the prying eyes of a number of Black-headed Gulls which had been quartering the area, on the search for any tasty morsels.

We carried on collecting in the area until dusk, taking larvae of several other species. On returning to the cars at 8.30 p.m. an inspection of the now closed box showed the pair to be uncoupled, the male now sitting quietly on the

side, whilst the female fluttered about most energetically.

I took her home with me and found in the morning that 90 ova had been plastered to the wire gauze in two batches. The next evening none were laid, but on the following day 37 more were deposited. During the next day the moth died, its shrunken abdomen showing it to be "laid out". The ova hatched on 20-21 days after laying, and the 75 larvae I retained are now thriving on bramble, *Rubus fruiticosus* Linn., though the foodplant in the New Forest must in most cases be Ling.

The remainder of the larvae are being reared by two friends, and with luck we hope to return a percentage of these as moths to the locality which gave us so much pleasure, next season, and hope their offspring give pleasure to other entomologists in years to come.

E. A. Sadler (2966).

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AUTUMN PRELUDE

Draped from plant to plant a gossamer chain of spiders' webs ranges across the garden, each saucer of fairy silken thread is weighted down with tiny morning dew-drops set there by the cool and early mist which now glides eerily away through the trees like a serpent, as it seeks to escape the warming rays of the rising sun. The light is bright yet dull, luminous and ethereal, and everything is cool and damp. But soon the mist will vanish to reveal another glorious day. At the height of late September noon the air is still and warm; cidery rotting apples carpet the ground, their earthy odour filling the air to attract insects of all kinds. Winged Admirals of velvet black slashed with flaming scarlet, and blotched with white, cavort gaily over the rotting fruit. One flip of their dazzling jewelled wings sees off the fiercest wasp, the most persistent fly, to leave them drinking greedily at the fermented juice; a butterfly bacchanalia. They come from everywhere to play hide and seek amongst the shady undergrowth. It is their last joyous fling before the chill days of the oncoming season numb their nerves and limbs.

What sweeter pastime is there than to laze in the grass on a serene and sunny afternoon, to think one's thoughts and whims while all about the steady drone of bees supping the last of the summer honey from the flowers makes the mind grow drowsy, and the worries of the world seem far away. In the far-off distance the cries of children ring out, mingling with all the other sounds at first unnoticed. Their joyous shouts announce the harvest of the chestnut tree. Soon the large, hard, glossy red-brown nuts come rattling down through the labyrinth branches to rest at last, gleaming in the grass . . . . Though the sun is warm, the pangs of Autumn hang in the air, and in the field the withering yellowed grass rustles drily as a sudden chilled breath of wind plays lovingly over it. The last vagrant Tortoiseshells of summer cluster on the wild, faded michaelmas daisies, soaking the warmth in their worn wings and sipping the nectar earnestly ready for the long hibernation ahead. . . .

The first discoloured leaves lie on the ground; the sap is gone from their veins and soon a puff of wind will swirl them away all rustling, dried, and brown. The shadows lengthen, cast by the late afternoon sun in a cloudless blue and glaring sky. The insect murmur dies; the sun is nearly down now, and everything is shadow. A fresh breeze springs up to send a shiver through the spine; and night draws in. So each succeeding day grows shorter, each day the sun more wan and watery, each day the flowers fewer and more faded. More leaves fall and acrid bonfire smoke drifts aimlessly. One morning early in November all the leaves are on the ground; all the trees laid bare. Now there are dull mornings, crisp mornings, dreary mornings; summer mournings: winter is here. . . .

Yet though the flood of plant and insect life is at its lowest ebb; seemingly gone forever, we grieve only a little for we know that with the coming of spring the tide of life will rise again to approach in an all consuming wave over the entire land. And when the winter weather is wild, so that it seems that the sun will never shine again, or when some trifling annoyance in the daily rush and turmoil has soured my temper, it is then that I look at my butterflies; and as my gaze wanders over each and every one, a great peace of mind flows within me, for my thoughts are far away with the happy summer days that saw them living.

John H. Drake (2967).

NOTES FROM MALAYA AND JAPAN

I had always cherished the idea that one day it would be possible to visit the Far East, so it was with great excitement that I received orders to join a ship destined for this area.

The journey from England to Singapore was of little interest to the entomologist, for only an occasional butterfly or moth alighted on our red-hot decks, or was seen to skim the unruffled surface of the blue water. A locust was discovered amongst some lettuce which had been delivered at Aden and stowed away in a refrigerator, at a temperature of 35-40° F. for some days. It was seen when the lettuce was washed out and did not seem to have suffered much from its previous treatment, for some minutes later it was very much alive and kicking. A similar incident took place later when some cauliflower—stowed under the same conditions, but originally from Australia—produced two caterpillars which, when thawed out, continued to consume the cauliflower, pupated and emerged, two perfect moths, not unlike the Golden Y in appearance.

The days were hot and uncomfortable, the only reaction was to find a shaded position on the upper deck and scan the water for anything of interest that might show itself. Porpoises swam ahead of the ship, jumping clear of the warm water, in leaps and turns rivalling the most versatile of circus performers. Flying fish in fear streaked away from the ship, keeping about a foot above the water for a distance of some 100 ft., before seeking the sanctuary of the sea. It was off the coast of Ceylon that the first whales were seen, this being the hunting ground of the huge white whale. Here, also, sharks became prominent, although only small ones were seen. Eventually, we reached the first main stopping place, Malaya.

With nearly one thousand different species of butterflies and possibly a larger number of moths, Malaya must be one of the world's most exciting hunting grounds. The possibility of discovering an unknown specimen is within every collector's reach, for little is known of Malayan entomology; indeed, there is but one standard text book, and this deals only with butterflies. But this lack of information did not hinder me, nor for that matter did the thought of snakes. Malay sports one hundred and eleven types of land snake, of which sixteen are poisonous. My main enemy has not been the leeches, centipedes, or scorpions, but mosquitoes. Luckily, one can buy a bottle of oil which, when rubbed into the exposed parts of the body, keeps all insects at bay.

Singapore has been my base whilst in Malaya, and sports most of the lepidoptera found in the Federation, with one or two variations.

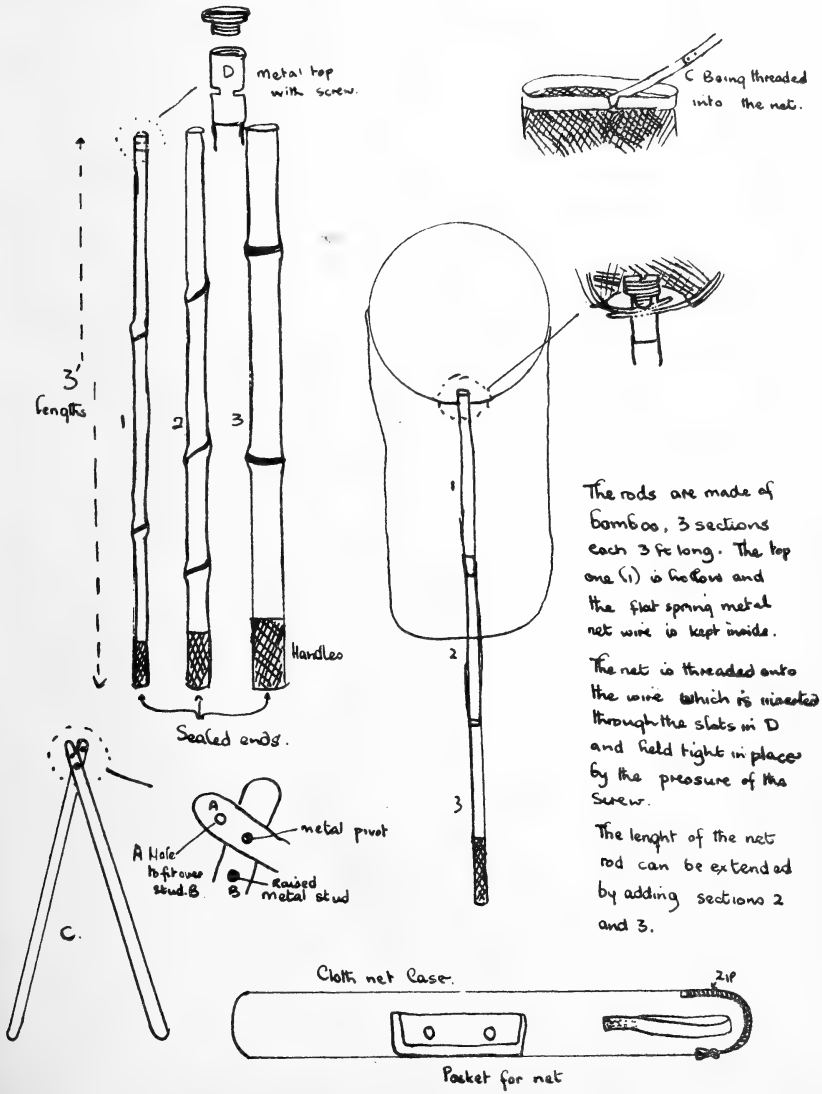
But my first day's hunting was with a friend, in an area reached by crossing the causeway joining Singapore island to the Malayan Mainland, and travelling some ten miles inland. The chosen spot was of secondary jungle bordered by coconut, pineapple and rubber plantations. The banks of a stream were followed so as not to get lost and also because so many specimens can be found in the moist patches on the river banks. It has been said that the vast number of butterflies who frequent water areas are male, but as yet I have not had the chance to look into this.

For the collector of Odonata there was interest here in the form of red-winged specimens with other dragonflies, whose clear transparent wings reflected the beauty of their brilliant red, green, and blue bodies. They darted across the surface of the stream, landing on the water flora and turning the bright green spikes into flames of colour.

Small blue butterflies (*Zizina otis lampa*) flitted from the wild flowers and, drowning themselves in the warmth of the sun, seemed to be completely oblivious of our presence.

The stream teamed with life, including small, flat brown worms, which on closer inspection were considered to be leeches. Luckily, there was little wet undergrowth, which is the usual home of the leech. Land crabs were seen, which, having been disturbed, scurried to the safety of a nearby murky, black pool; many more were noted after this burrowing into the mud banks, leaving no trace of their former existence. The first large butterfly to be seen was the Striped Blue Crow (*Euploca mulaber*), a beautiful insect with brown/black wings, which show purple when in the sun. It moved with a somnolent flight, appearing to glide rather than fly, its broad wings hardly moving, as with grace and elegance it crossed before our enthralled eyes.

We journeyed on, the trees became thicker, the sun now unseen, except for the occasional beam which managed to steal between the overhead lattice of leaves and branches. The darkness was suddenly brightened by a number of small, delicate Common Grass Yellow (*Eurema hecabe contubernalis*) weaving their way amongst the trees like drops of liquid colour against a black backcloth. We were startled by tree frogs, which are not very big, but can jump quite high from the ground into the branches of the trees. A gleaming object caught my eye and, pushing forward, ignoring the spiked twigs and thorns which barred the way, until the gleaming jewel that had attracted my attention was held in my hand. Nature is sometimes indescribably ugly, and sometimes overwhelmingly beautiful. This small bright object came under the latter category, turning out to be a pupa of the family Danaidae. The brilliant, opalescent, metallic-coloured pupae are an attractive feature of this Family.



The highly-polished, reflecting gold surface gave the pupa an almost transparent look. Unfortunately, it turned out to be parasitised.

As the path now became difficult, we made our way back, but interesting things were to be seen in every direction. Many large spiders set in their silken traps were quickly passed, but we stayed a while to look at the ant nests. These were clumps of earth set in the tree branches, out of which a trail of ants poured. They made the laboriously long journey to the earth in order to collect food, or some small scrap of vegetation to take to the home high above the ground. Keeping to one side of the traffic moving in the opposite direction, they followed in an endless chain. Odd trumpet flowers with lids were noticed. The flowers were joined to the stem by a twisted spiral. On cutting one open we found it to contain a large collection of flies, beetles and moths which had died in their vain effort to get out.

Several catches of Satynidae and Nymphalidae completed the day's catch. Subsequent days hunting have brought many new additions to my collection, including the beautiful Painted Jezebel (*Delias hyparete metarete*). The male of this species looks like a large white on the upperside but on the underside is white, bright yellow, and red. The Malayan Lacewing (*Lethosia hypsea*) the male of which has a warm pinkish bloom on orange, with black markings on the edge of the wings, the underside has the same colour scheme but marked in smaller areas, with various shades of brown and white in ragged formation, in all, a most exciting catch.

As far as moths are concerned, most catches have been small and, consisting of the smaller types, most of these being caught on board, presumably attracted by light. The number does include one large moth, however. This was some four and a half inches in wing span, tailed with white and grey markings. A trip later to the Raffles Museum in Singapore showed it to be of the Uranudae family. The Raffles Museum, named after the founder of the island, contains a very good collection of butterflies, and a few moths. This collection has proved an excellent source of information in identification of species.

Singapore being only a little north of the Equator, provides a climate which is very hot and moist, but one that does not change all year round. This provides a continuous cycle for the insect life, some species completing their life history in just six weeks.

Hunting for pupae has been disappointing, but larvae have been more prominent, and at the moment the process of painting each catch is in progress, in the hope that the whole life cycle can be recorded, bringing a little more knowledge of Malayan Lepidoptera to life.

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JAPAN

Japan, land of the rising sun, a terrain of rugged landscapes, mountains, lakes and rocky islands. Beautiful, awe-inspiring and delicate, a country of gardens, palaces, temples, shrines and, of course, butterflies.

My port of arrival was Kobe, second largest port in Japan, and surrounded by mountains and woodlands. The first day out hunting, I was surprised to see so many children carrying nets and small cages full of butterflies, whilst others had jars of beetles, dragonflies and frogs. A call at a local department store showed me the reason for this mass enthusiasm, for there was a counter set aside for the entomologist. Collapsible nets for 6s. (see diagram), with nylon mesh nets for 4s. Sets containing a hypodermic needle and syringe, one bottle of poison, setting needles, two bottles of liquid (possibly relaxing fluid and mite prevention)—all for 1s. 5d. There were glass and wood exhibition cases, ten inches by ten inches, for 6s.; cages, three inches by six by four, costing 2s.; bottles, test tubes, cut papers, and a wonderful little book in colour showing nearly all the insects to be found in Japan, beautifully printed and costing 2s. 6d.

These aids to the collector may be due to the high industrialisation of Japan, in which butterflies and other forms of insects play their part. You will find butterflies set in trays, clock faces, stuck on cards, book markers, and I saw one bank with a large display forming part of an advertisement. You will also find many types of small insects beautifully set in plastic paper weights. And, of course, we must not forget the part played by *Bombyx mori*, the common silk moth.

You might think with this onslaught of collectors snapping up every insect in sight that there would be nothing left, but I found the bushes covered with

larvae and the air filled with lepidoptera. The most common of the butterflies are the white family: they are to be seen everywhere, closely followed by the browns, of which there are many ringlets as well as large and small browns. On a wooded hillside overlooking Kobe, I saw dozens of moths similar to our magpie, but with a body much longer than the wings, also many orange and blue underwings. Clouded and Pale Clouded Yellows were in abundance, whilst blues of many descriptions were much in evidence. The Nunobiki Falls are situated on the same hillside, these are a series of water falls around which are several tea gardens, each of these having azalea bushes. These bushes are a great attraction for swallowtails, tortoiseshells, peacocks, and commas, which can often be picked off the flowers. But most surprising was the large amount of larvae to be found in the area. Unfortunately, it was impossible to keep any on board for food reasons, but most appeared to belong to moths.

I was very lucky in being able to camp on Mt. Fujiyama for three days. The lower slopes are pine forest mostly, and in these many specimens were seen. I made several attempts to catch some, but with a large and heavy pack on my back and the fact that time was against me, it proved impossible. There were several Fritillaries, Camberwell Beauties, Large and Small Tortoiseshell, Painted Ladies, Large and Small Commas, and Swallowtails. Further up the mountain, which is volcanic ash-covered, there were small patches of grass and bushes. On these, several White Admirals were seen. These patches gave way to ash and snow. And yet butterflies were still to be seen even on the snow areas, although it is only fair to say that the sun was very hot. Towards the top, which is 12,391 ft., I noticed a Large Tortoiseshell, which was about to make the descent. I wondered if it felt as tired and sick as I did at that moment.

My stay in Japan will be a very memorable one. There is an old saying that if you leave Mt. Fujiyama without being able to see it, you will return again. I hope that this is true, for the day I left it was obliterated by clouds.

Brian Moody (1570).

BRAHMEA JAPONICA

While reading through the March "Wants and Exchanges List" I noticed *Brahmea japonica* larvae for sale at a very reasonable price. I had often thought of trying some, and this offer made my mind up. I ordered two dozen —little knowing what I was in for.

A few days later a huge parcel was delivered to my door. I immediately expected each larva to be in a separate container, but no. When I lifted the box lid, there were twenty-four yellowy-green, spiky monsters staring me in the eye indignantly. I was caught quite off my guard, but not for long. I quickly composed myself and set to work cutting some privet. What a strange diet for a monster!

After keeping them for a few weeks, I realised that I had made a mistake in calling the larvae "monsters" so early in their lives. They seemed to double their size after each leaf they ate, and eventually grew to about four inches in length. But even so, they seemed to lose their habit of childish showing off by emerging into their final instar minus those ridiculous appendages, and I thought that there would be no more nonsense.

However, I was wrong. Instead of crawling politely under a large leaf to pupate, as the dealer assured me they would, the larvae turned bright orange as if out of spite. But that was not all. Besides the ridiculous change of colour, they assumed the most repulsive odour (to put it politely) which I had ever experienced. I was quite overwhelmed, and could not resist placing the larvae in a box which had previously contained bath cubes, the scent of which clings tenaciously to the box.

Was the battle won? Had *Barhmea japonica* finally admitted defeat? No! After becoming immobile, it faded from orange to green, rather like a set of traffic lights. Unlike many species, it did not shrink to microscopic size, but stayed the same size, only shorter and fatter. But the *coup de grace* was the pupation stage. It turned an even darker green, and when the pupa slid out of its skin, began to ooze a green liquid and it displayed a tail of the most ridiculous nature. And that is the stage at which it is now.

L. R. Staines (3238*).

LETTERS TO THE EDITOR

A LETTER FROM THE FOUNDER

I was very interested to read Mr. Maggs' article recalling his "Memories of an Old-Timer", as I, too, must now claim to belong to that category. In fact, from the point of view of membership, I suppose I am the oldest of the lot, being No. 1 in the List!

His recollections very vividly parallel my own, and many a time I look back over some sixty years to my first excursions with a net on the South Downs as a boy of ten. I shudder to think of what my specimens looked like after I had duly ammoniated and pinned them, with no regard to classification or the finer points of setting!

Nevertheless, in all the subsequent years of hunting and field work (when I was able to do it) nothing has eliminated the memory of those summer days and the excitement of the chase after some extremely common insect.

In those sixty years—and even in the last twenty—what a change has come over the entomological scene. Not only have the everyday species in many cases become almost non-existent, but the whole insect population (at any rate as far as the Lepidoptera are concerned) has been decimated. In my boyhood, every field and woodland glade was replete with butterflies and day-flying moths, and a day's wandering in the New Forest, for example, would produce a storebox full of specimens. Now, one can walk through field after field and see little but a few Meadow Browns and an occasional Wall or Ringlet if near the woods. The woodland rides, once bright with Fritillaries, are now almost deserted.

So also with the night. My bedroom window in the far-off days of youth, if left open, with an old paraffin lamp alight, would usher in a dozen or more moths in an hour. Now, the odd one may arrive during a whole evening.

All this, I suppose, must be laid at the foot of the altar of progress, with its spraying of orchards and crops, the supplanting of forest and field by housing estates, the multiplicity of street lighting and so forth.

The tragedy of all this is that the youngsters of to-day can never feel quite the thrill that Mr. Maggs and I once knew, as we plied our nets in an insect world which was full of life and activity; what they see now is but a phantom of the scene of our boyhood, and it may well be that this is one factor in what appears to me to be a decreasing interest in natural history among the age groups of fourteen onwards. To spend a day with net and bottle, and to return home with a very meagre haul, if often repeated will discourage anyone, and if this is reinforced by the more exciting pursuits open to youth to-day, one can hardly wonder that after the age of about eleven, the entomological picture becomes blurred and interest dies.

For many years now I have been in close touch with young naturalists, but the great majority of these are of very tender years—eight to twelve, or thereabouts. The enthusiast of sixteen is a rarity indeed, and I am more than ever convinced that one of the most valuable features of our Society is the Youth Section, and I can only hope that it will continue to bring together those "teenagers" (ghastly word!) who still love the simple joys of nature and are not entirely blinded to the marvels of insect life by the more refulgent brilliance of the mechanical, nuclear and jet age.

L. R. Tesch (Founder, AES).

LOBSTER MOTH AT LIGHT

I was very fortunate enough on the night of 24.v.61 to have attracted to my light trap a perfect male specimen of the Lobster Moth. It was found resting on the pane of a small window near to where the trap was operating. There are quite a number of beech trees in the Sutton, Surrey, area, although from what I have found out, it seems that it is an uncommon visitor to a light trap and new to this area. Could someone tell me if this is correct, as I would be interested to find out.

M. M. Grout (3245).

CORRECTION

On pages 69-70 of the June *Bulletin* is a letter from Mr. Adrian Hooper (3307*). This was, owing to an editorial oversight, wrongly attributed to Mr. R. G. Haynes (1545). The Editor offers his apologies for the error to both Mr. Hooper and Mr. Haynes. Mr. Hooper's address is: Akabo Private Hotel, 20 Woodland Terrace, Greenbank, Plymouth.

The Amateur Entomologists' Society

ANNUAL EXHIBITION

1961

SATURDAY, 30th September, from 2 p.m. to 5.30 p.m.

HUGH MYDDELTON SECONDARY SCHOOL, Corporation Row, London, E.C.1.

ADMISSION FREE

EXHIBITS. The Hall will be open from 11.30 a.m. for receipt of Members' exhibits. Bring along your specimens (any Order, living or set), equipment, apparatus, photographs, drawings, etc. If you require a large space, notify Meetings Secretary in advance. Please label clearly.

TALKS. Entomological talks will be arranged.

DEMONSTRATIONS. Members will demonstrate setting of insects of several Orders.

GROUPS. Members of Groups who have been corresponding will be able to meet for discussion.

SURPLUS TABLE. If Members have spare ova, larvae, imagines, equipment, books, etc., for sale or exchange, bring them along labelled with name, price or exchange wants. No charge for use of this table.

ENTOMOLOGICAL TRADERS will be in attendance.

Light Refreshments will be available.

Offers of help and enquiries to Hon. Meetings Secretary, Dr. K. J. Fox, St. Mary's Hospital, Luton, Beds.

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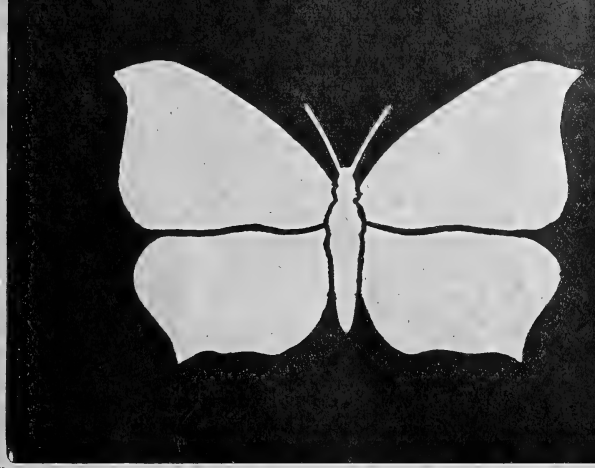
OCTOBER 1961



THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : *Bull. amat. Ent. Soc*

EDITED by W. N LAWFIELD

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A E S BULLETIN No. 249 OCTOBER 1961

THE ARTHROPODS OF A CHALK TUNNEL

PART 1.

The following is a brief account of a survey of the arthropod fauna of a man-made tunnel in the cliffs near Rottingdean, 5¼ miles east of Brighton, O.S. map ref. 1" 7th Series TQ393014. Whilst not being strictly entomological, it is hoped that it will be of general appeal to all interested in Natural History, and will show how detailed collecting can prove rewarding in almost any habitat, however barren it may appear at first sight.

The tunnel is shown in plan and elevation in the accompanying sketches: some 240 feet long, it had an average height of 5 feet, and a width of 4 feet, with a small recess cut into one side towards the far end. The mouth was situated about 4 feet above the base of the chalk cliff, which was itself some 25 feet from the high tide mark.

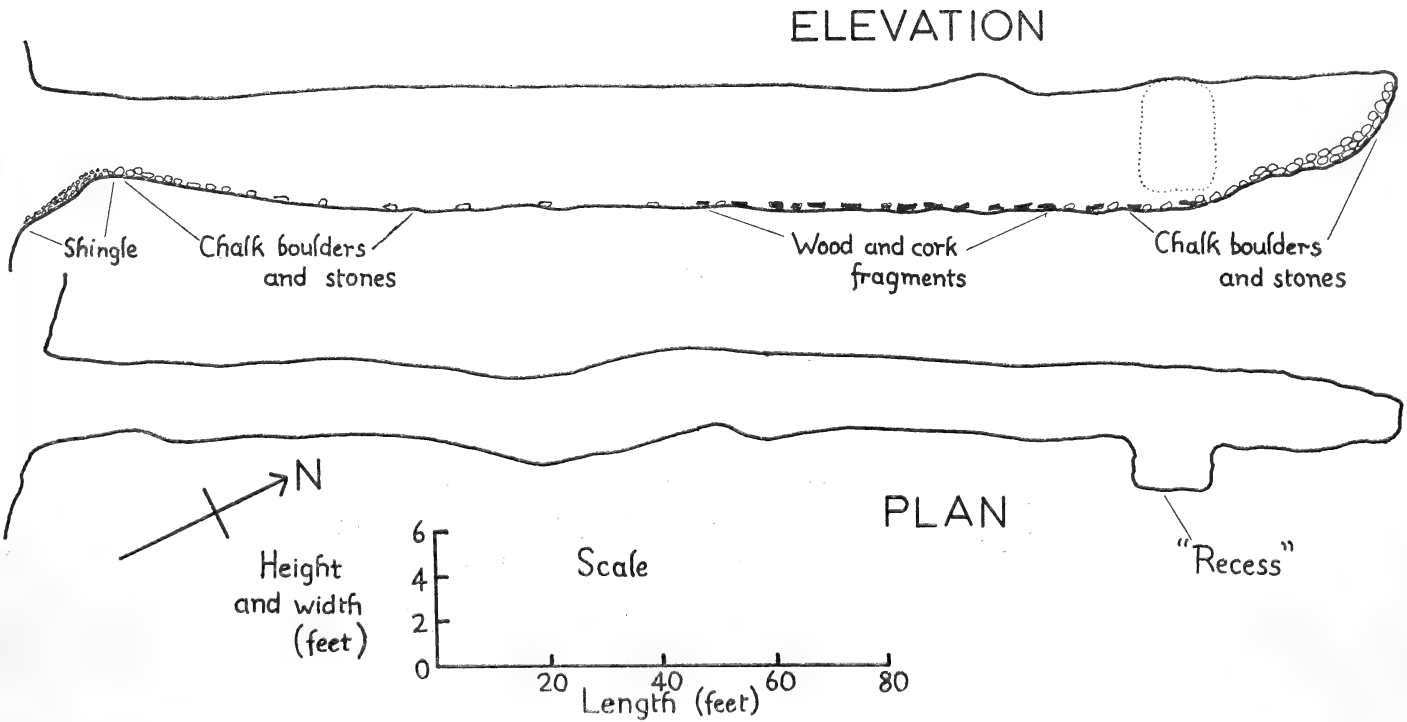
The floor of the tunnel was chalk, covered with shingle near the entrance, then with only a few large stones between the 50 ft. and 130 ft. marks, and then with an increasing number of cork and wood fragments (presumably washed in this far by storm waves) up to the 200 ft. mark, where many boulders marked the fall of roof which blocked any further exploration of the tunnel.

Collecting was done by searching in the shingle at the mouth, turning over stones, pieces of wood and cork, etc., in the tunnel, and examining the walls and roof closely for any signs of animal life. Towards the mouth of the tunnel the walls were covered with powdery grey-green coloured algae, but these were absent further inside, and the only other plant life was patches of mould-like fungi, more frequent towards the inner end of the tunnel, often growing on what were presumed to be rat droppings.

The animal life of the tunnel exceeded all expectations: over 20 species were caught representing eight orders, with at least eight species of insects from four orders. A detailed list of captures will be published later; at this stage it will suffice just to mention the main types found. The shingle at the tunnel mouth was rich in a somewhat limited fauna, with amphipods (*Orchestia gammarella*—often occurs above high tide in moist conditions), only one woodlouse (*Philoscia muscorum* Scop.—found in damp situations generally), many centipedes of the family Geophilidae, mites of the families Cryptognathidae and Eupodidae, and the Carabid beetle *Nebria brevicollis* Fab. The walls and roof at this point were rough with many crevices, and in these were sheltering Tipulids, spiders, and at least two species of small midge-like Diptera.

Further into the tunnel, at the 30 ft. mark, the shingle was replaced by chalk stones and boulders, with comparatively few animals; Geophilidae were still present but in smaller numbers, and a different isopod was found for the first time—*Halophiloscia couchii* Kin. (a coastal species, widely distributed). Continuing further in, this species became more frequent until by the 130 ft. mark it was the commonest animal in the tunnel. Another isopod, *Porcellio laevis* Latr., was found at the 60 ft. and 100 ft. marks, but not further in. Diplura were found at the 60 ft. mark, and also the first Collembola in any numbers; the latter remained common up to the end of the tunnel, under the wood cork fragments in this zone. An interesting species found at the 130 ft. and 240 ft. marks was the millipede *Brachydesmus superus* Latz. (Polydesmidae), a species apparently common in all British caves, and the only typically cavernicolous animal found in this small tunnel.

All the fauna mentioned so far, apart from some of that near the entrance, was collected from under stones or pieces of wood, etc., but examination of the walls also yielded some specimens: among these were dipterous larvae, as yet unidentified, and masses of dead mosquitoes; these last began to be found at the 30 ft. mark, and by the 60 ft. mark the roof was literally covered with


ELEVATION
Shingle
Chalk boulders and stones
Wood and cork fragments
Chalk boulders and stones
N
PLAN
"Recess"
Height and width (feet)
Scale
6
4
2
0
20
40
60
80
Length (feet)

thousands of these corpses; the numbers dwindled further in, but they were still quite frequent even at the end of the tunnel. The reason for their presence seems uncertain; possibly they chose the tunnel as a hibernation site, and then some unusual combination of conditions killed them all, leaving their remains for us to find.

Thus the tunnel yielded a variety of animals, with representatives of typically marine groups (e.g. amphipods), terrestial moisture-loving groups (e.g. Collembola and woodlice), cave dwelling forms (*Brachydesmus*) and several species typically found under stones everywhere (e.g. *Nebria*, Geophilidae. In addition there were the species presumably sheltering in the tunnel (e.g. the Tipulids and the dead mosquitoes). All this, moreover, from what appeared at first sight to be bare rock and muddy debris, which could not possibly support any life.

The only equipment needed for this survey other than the usual collecting gear was a measuring tape, head mounted torch and thick outer clothing. A word of warning, however: one must be careful in all such tunnels to check that the roof is safe and not likely to collapse, and one should not try to explore anything alone, or without emergency candles and matches, and simple first-aid equipment; preferably, one member of the party should have experience of more serious caving, and then there is little danger in exploring tunnels of this nature if the elementary precautions are observed. Collecting the fauna of natural caves is a more serious proposition however, and anyone intending to try it from scratch is advised first to study "British Caving" (edited by C. H. D. Cullingford) and to contact the caving organisation in the area to be investigated, from whom help and advice can be obtained.

M. L. Luff and L. Christie (710).

WITH A BEATING TRAY IN ZULULAND

If the average South African were asked what is the chief difference between a walk over the countryside (the veldt) out here, and one over a moor in England he would almost certainly reply "snakes". It is surprising how prevalent is the fear of these reptiles, yet although I have hardly missed a weekly walk over the veldt during the past twelve years, I have only seen two snakes in all that time. It is true that for the first ten minutes or so I am on the look-out for them but after that, as the real hunting begins, I seldom give them a thought.

I think the greatest difference is in the terrain over which one has to walk. For several miles around my home the veldt consists of fairly steep slopes covered with coarse grass, which may be anything from two to six feet high, but what makes it far worse is that the hillsides are strewn with stones of anything from six inches to three or four feet in diameter. It is the smaller ones which make walking so difficult as they are not seen among the grass, so that one may easily twist one's ankle. Thank goodness I am not a lepidopterist, for I certainly cannot see myself following the swift, erratic flight of a Swallowtail under these conditions. I am out after beetles and so only have to do this kind of walking in order to reach patches of trees and brushwood.

The other difference is the greater variety of insects and other animalcules which fall on to the tray. Bugs almost equal the beetles in the number and variety which are beaten out; some of them are really beautiful, while a certain number have to be looked at carefully in order to decide whether they are bugs or beetles. I confess that on more than one occasion I have found when examining my catch at home that I have been had.

It seems to me also that many more of the other orders fall on to the tray than did so in England. Wasps, Ichneumons, earwigs, sawflies, moths and, above all, ants. These last are sometimes a real nuisance, for at times from certain bushes the tray becomes almost black with them; one cannot shake them off as to do so would dislodge the beetles as well. They take advantage of this by finding their way along the handle on to one's hand and forearm.

Turning to the beetles themselves there is little doubt that they are present in greater numbers than in England; there is a Chrysomelid of the Galerucid type which is sometimes beaten out in dozens and there is a small black apion which must be present in millions on wattle trees growing by our local stream, for they fall on to the tray almost literally in hundreds.

I suppose the Chrysomelidae are the most numerous; they are not always easy to pick up as they recover quickly from the shock of the fall and fly very readily, especially in the brilliant sunshine. Incidentally, I wonder why most of us use white canvas for our trays since, especially out here, the sunlight reflected from them can be quite dazzling. I have only once seen a black tray used. The smaller Halticidae are usually easy to pick up with a tube but the larger ones, of which we have several species, jump very quickly so that one misses many of them. The Chrysomelidae are a group on which I have rather concentrated so that I must have several hundred species; among the Clytrinae and the Cryptocephalinae alone I have well over a hundred species, 10% of which cannot be named at the British Museum.

Next in numbers to the Chrysomelidae come the weevils; these rarely fly as they are all very sluggish, while some of them are wingless. Longicorns, which are also quick off the mark are moderately plentiful. Lamellicorns, Elateridae and Heteromidae are all rather sluggish, while Carabidae, mostly of the small brightly coloured kinds, tend to run rather than to fly. Clavicornes do not fall very often, the most plentiful being very small Phalacridae. Buprestidae are not often taken by beating, mostly I pick them off flowers or take them with the sweep-net. Staphilinidae naturally are seldom taken by beating but curiously enough I once beat out several of the large *Paederus natalensis* Last from some bushes.

I occasionally hunt in a patch of primaeval forest about forty miles away. Here, naturally, insect life is different from that of the veldt. Weevils are definitely the predominant group; some of them are really grotesque. Longicornes and Heteromera are more plentiful. Here I find curious Praying Mantids, one in particular always amuses me; it is short and fat and walks with its abdomen turned up over its back so that the tip touches the base of the thorax. Stick insects are not uncommon, varying in size from two to five inches, some green, some brown.

It is in this forest that I find things other than insects on the tray. After rain, small snails drop plentifully, tree frogs are not uncommon, mostly little green ones a little larger than one's thumb nail; once I found a little green one with bright yellow feet, but the most curious one of all was one which I at first took to be a lamellicorne of the cetonid type. It was sitting on a leaf, was about one and a quarter inches long, its legs were completely tucked under it making its outline exactly that of a Cetonid, it was black with narrow, longitudinal white stripes. Only on touching it did I discover it to be a frog.

In spite of what I said previously about snakes, it is possible that one of these days a snake will fall on to the tray or on to my shoulders.

A. H. Newton (1140).

●

A NOTE ON *PIERIS BRASSICAE* L. (LEPIDOPTERA)

I was interested to read Mr. Pott's note on this butterfly in the July *Bulletin*. I too, found, as I think did practically everyone, that the species was drastically reduced in numbers during 1960, but this year I have been in particularly favourable vantage point for observing the problem close at hand, since, as part of a University course, I have been working on a farm until the end of August.

While there were no startling ravages by *brassicae* larvae upon the plants, the insects were by no means uncommon. Looking back upon the first generation period, I must have seen at least 20 or 30 batches of larvae. Of those batches which I collected for rearing, rather fewer were parasitized than usual (about 45%), though this figure may be artificial since about 40% succumbed to virus (a much lower proportion than last year) and some of these may have been parasitized as well. The remainder emerged safely. I hesitate to draw any far-reaching conclusions from these figures, since I did not rear enough batches to do so. But it would be interesting to hear from other readers to see whether or not virus disease has, in fact, been reduced.

R. G. Thimann (2924).

POPLARS IN NORTH LONDON

Some eighteen months ago, I read of the A.E.S. in an entomological book for young people. I was keenly interested in entomology, especially lepidoptera and so I became a Junior Member. After receiving many *Bulletins*, I noticed a lack in any observations on the more common insects found on poplar trees, which abound in North London, where I live. And so I decided, do or die, I would find something of interest to fill the gap.

My first inspection was in mid-May 1961 when I searched a line of Lombardy Poplars (*Populus italica*), and a solitary tree about fifty yards away. However, I did not find anything except one or two palisade Sawfly larvae *Pteronidea compressicornis* (Fab.), with the unmistakable bumps of saliva on the eaten leaves. After that, school exams interfered with my observations, and it was not until July 10th 1961, that I was able to do any more searching. I set out rather pessimistically for the poplars, but after looking for five minutes or so on the line of trees, I found several Puss moth larvae *Cerura vinula* (L.), a few days old. Then I found a half-grown larva. As in former years, I did not find any sign of the Poplar Hawk moth *Laothöe populi* (L.) on these trees, but when I turned to the solitary tree, found a female moth (late first brood or early second?) resting among the lower branches. I boxed her, and after a fruitless search on another nearby row of trees, returned home.

At home, I reflected on my discoveries, and came to the conclusion that the poplar must be extremely succulent, for within a radius of a mile were houses, a main road carrying evil smelling transport lorries, and a particularly pungent gasworks! Not an ideal situation even for a Puss Moth! On 12th July I found two empty pupa cases of the White Satin Moth *Leucoma salicis* (L), even more surprising! But when I searched a line of tall Black Poplars *Populus nigra* (L.) in a very suburban area, there was not even a sawfly on the leaves!

The female Poplar Hawk began to lay prolifically that night and she laid a total of about two hundred eggs in captivity. Being still rather curious about Black poplar, on 15th July I went to a group of trees not too far from the others, and situated on the same main road. The trees were just inside a borough refuse disposal ground and I had to trespass on Council property (younger people can take more liberties than grown-ups) to gain access to them. Here I found Puss larvae, half and full grown Poplar Hawk larvae, some compressicornis and also a great abundance of *Priophorus viminalis* larvae, the Poplar Sawfly. Finally, to my surprise, when I looked at my Balsam Poplar (*Populus candicans*) sapling in my garden I found three unmistakable Eyed Hawk *Smerinthus ocellata* (L.) larvae feeding happily on the foliage!!

L. R. Staines (3238*).

A SORRY JOURNEY

Readers may recall some of the notes published in the *Bulletin* on my visits to the Hartland Quay Natural History Reserve and the surrounding areas in previous years, with particular reference to the Large Blue (*Maculinea arion* Linn.). Wishing to see how the area was faring and also check up on the several ants living there, my father and I made a brief visit to North Devon at the beginning of July this year. We travelled by van with our sleeping gear, etc. on board so that we could sleep wherever we should finish the day. En route we stopped at Savernake Forest but found little on the wing and observed that bracken and beech trees had not yet recovered from the severe scorching of the late May frost. Our first call in Devon was at Braunton where we spent some time amongst the sand dunes in search of Coleoptera. There were a few Grayling (*Satyrus semele* Linn.) about and some Meadow Browns (*Maniola jurtina* Linn.). It was a very hot day but we saw no migrants; the chief interest was the great diversity of flowers growing in and around the dunes. Beetles were scarce and we drove on towards Hartland, sleeping by the roadside within view of Lundy Island.

On my previous visits to this area I had recorded 27 species of butterfly on the wing at the beginning of July and I had prepared my father for an entomological feast. We rose early and the mists cleared to present us with a blazing hot morning—just the weather for seeing the Reserve at its best. What we

saw was a mockery of what had been. The whole of the area within the Reserve was as brown as the desert; the notice boards were torn down and partly obliterated; the flowers and the thyme had gone and the whole of the slopes were sheep-walked into dusty terraces scattered with tufts of brown grass. This was shock enough but more were to follow. The valleys outside the reserve had either been burned during the previous winter or scarified or ploughed and the headland and slopes leading to Speke's Mill were carrying a crop of barley. We saw no *arion* and only three dark green Fritillaries (*Argynnis charlotta* Haw.), a butterfly which usually swarms everywhere in this area. We spent some time here and saw only a few Ringlets and Meadow Browns. The Grayling which was also common here was gone. We then went to the valleys north of the Quay and found again that sheep had been grazed up to the cliff side and large flocks were still grazing. We saw two fox cubs and helped up a sheep that had rolled onto its back (this was done without any enthusiasm for the sheep). There were several Grayling here and quite a few Marbled Whites (*Agapetes galathea* Linn.) but in the areas which should have held some *arion*, sheep had been grazing or the gorse had encroached and swamped the patches of thyme. In correspondence with Mr. W. L. Coleridge, who has much previous experience of this area, he informed me that he had visited Hartland in the week previous and had seen only four *arion* in the period he was there. It seems that it is fair to assume that the Large Blue is near extinction in this part of North Devon. Previous depredations by collectors and losses due to fire and grazing have been made good by the fact that the Reserve was there. With the loss of this re-stocking centre, the chances of survival are remote. The only hope is that grazing in the area will cease and the Reserve and adjoining valleys may be allowed to re-establish a reasonable growth of thyme. This in itself is not sufficient. If any collecting is done it will destroy the few butterflies left that may help in recolonisation. My plea is that the Large Blue be left for several years to breed in peace. A journey with collecting in view will have little or no spoils to show but several collectors taking a few specimens may cause the final disappearance of this beautiful butterfly.

The other known locality on the North Devon coast was visited next. Here we met Messrs. R. Jarman and B. Skinner who had spent the morning searching the slope without avail. We ourselves spent a while with them and then climbed over into the next valley which also supports a few specimens. Again there had been much ploughing and sheep-fencing was in position for future grazing. In the section where we had found *arion* to lay its eggs in previous years, it was not possible to walk as the gorse had engulfed the slope. It seems a pity that sheep do not feed exclusively on gorse. The numbers of butterflies on the wing here was also dismally small. There were a few gatekeepers and Graylings on the slopes and one or two Dark Green Fritillaries. We found several larvae of the Mullein Shark (*C. verbasci*) but the change in the floral status of the slopes seemed to have affected the butterfly population very adversely. Towards evening we started our journey home, stopping en route with Mr. Jarman to search an area of marshland where we knew the Marsh Fritillary breeds. We found several batches of larvae and ova and one half-fed larva of the Narrow-bordered Bee Hawk (*Hemaris tityus* Linn.).

We camped the night on open common land lulled to sleep by the sewing-machine note of the grasshopper warbler. On the next day we passed through Blandford and Wimborne to the New Forest near Fordingbridge where we spent the day in the Forest and on the heathland. It was again a very hot day with bright sun, and even walking seemed arduous work. We left the van near a village and walked along the great rides amongst the oaks. Even here the butterfly population was disappointing. We saw plenty of fresh Ringlets and a few dragonflies but the Fritillaries we had come to see were absent. The corner of a ride with a bush of bramble in blossom produced a male and a female Silver-washed Fritillary and another was seen soaring overhead. One Dark-brown Fritillary male alighted on a thistle head in another ride which should have been populated by hundreds. We had been walking for about four hours when we rested to have our lunch. After eating we left the Forest and walked across the heathland where we found the Silver-studded Blue, commoner than any species we had met in our journeying. They were in perfect condition and I netted a few for a friend before we completed the wide circle that brought us back to our van to start the long run via Southampton and Winchester to home.

Entomologically the expedition had been a frost but we had seen a lot of country and learnt the bitter truth that the butterfly days of yester years cannot be recaptured in the fast changing face of the English countryside.

P. W. Cribb (2270).

TABULATING RESULTS

The following article is directed at those members who already have some experience of Saturniids but do not or will not keep proper records. I am not suggesting that this is necessarily a bad thing, but I feel sure that if such enthusiasts were to keep proper records of their efforts, instead of just ordering their dozen ova, breeding the larvae and watching the moth emerge, this would by no means detract from the relaxation that Saturniid rearing provides. There is much we do not know about these moths, and it is not in my opinion any excuse to say "Well, the things I rear are common species that everyone knows about". In the last paragraph of the *Coleopterist's Handbook* will be found the following statement:—"Entomology is, fortunately one of the fields of science in which the amateur observer has still a valuable part to play, both in amassing accurate data on the habits and distribution of insects and in throwing light upon obscurities of development, behaviour or habitat".

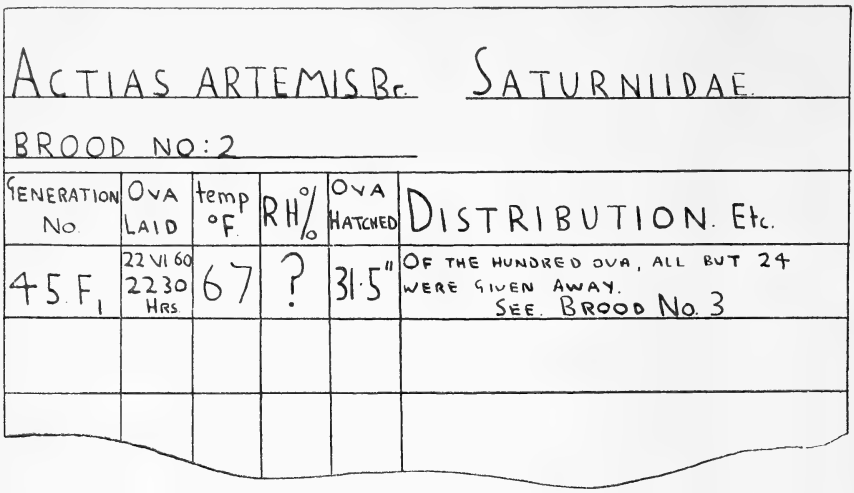
For the past two years I have been using a method which enables me to keep a concise record of *every* insignificant common or garden species that I have bred. The rarer species are treated similarly with perhaps extra detail. I have attempted to outline this method below. It is not necessarily intended to be copied but rather to give a general idea of the basic principle. The most important factor is to lay out your records in such a way that they form a complete system of cross references.

I use a 6" x 4" card index for everything. I find this by far the neatest and most convenient method. The first column provides entry for the brood number and the date received. The second column is for locality, if known,

ACTIAS ARTEMIS Br. SATURNIIDAE

DATE	LOCALITY Etc	QUANTITY AND STAGE	DATE OF MOULTS AND MORTALITY AFTER EACH				PUPATED	ADDITIONAL DATA
1. 19.VIII.57	W R. Smith.	20 Ova.	–	–	–	–	–	No alder available so young larvae died
2. 2 X 57	" "	6 4th. St. larvae	–	–	–	13 X.57 1	17.X.57 to 19.X.57	Bred at 67°F. From the same parents as Brood 1 Food Alder.
3. –	45 F_1	24 Ova.	20.VIII	30.VIII	7. IX 2	18.IX	2 X.58 to 5.X.58	Hatched 14.VIII.58. Food: Alder. Bred in cylindrical cage.
4.								
5.								

FIG. 1.


ACTIAS ARTEMIS Bc. SATURNIIDAE.

BROOD NO: 2

GENERATION No.	OVA LAID	temp °F.	RH%	OVA HATCHED	DISTRIBUTION. Etc.
45 F_1	22 VI 60 2230 Hrs	67	?	31·5"	OF THE HUNDRED OVA, ALL BUT 24 WERE GIVEN AWAY. SEE. BROOD No. 3

FIG. 2.

or the person or dealer from whom the species came. The third column is for recording the quantity and the stage when received (i.e. ova or larvae). The next group of columns is for dates of moults and the mortality rate after each. The final column is for the date of pupation. The space that remains and the corresponding line on the reverse of the card can be used for additional data such as type of cage, temperature, foodplant, date of hatching of ova etc. For the emergence of the moths one can not do better than to use the plan illustrated on page 37 of *A Silkmoth Rearer's Handbook*. On top of each card put the brood number and then divide into the individual emergences. The reverse of the card I use for records of ovipositing. (see Fig. 2). The first column gives the generation number with the appropriate emergence numbers of the two parents preceding it. The remaining five columns are self-explanatory, while the first column refers back to the first card for the new brood should they be kept, or gives details of their dispatch. By this method the whole life history is recorded on one line back and front for the larval stages etc. The number of emergence cards used will vary according to the quantity of individual emergences. On an average, the whole life history can be traced by reference to only two cards. The first card would be for the larval stages and the second card for emergences and ovipositing. If a particularly rare species is obtained then you would supplement the system described with a more detailed notebook or further card index including descriptions of the stages if unknown.

I hope that Saturniid enthusiasts will benefit from this short introduction to proper record keeping. It seems to me that although there has been a great increase in the popularity of Saturniid rearing there has been a decrease in the serious study of the family. I hope this will now be remedied.

M. J. Friend (2786).

LETTERS TO THE EDITOR

Dear Sir,

There are a number of points in Mrs. J. O. I. Spoczynska's article in the *Bulletin* (June, July, 1961) pretentiously entitled "Collecting the British Macro-Lepidoptera", which I feel should be commented upon for the benefit of those who might be misled by it. These will be, of course, the most junior members, whose sympathies Mrs. Spoczynska is so sedulously trying to enlist with her heavy facetiousness and her tacit incitements to superficiality.

Though she tells us early in her article that ". . .no entomologist ought ever to be accused of being unscientific", it is difficult to see what else one can accuse Mrs. Spoczynska of being. The whole tone of her tendentious article habituates to unscientific habits of mind, most notably in her paragraphs on "the vexed question of nomenclature". Her strictures of "To-day's change-mad nomenclatists" contain a number of interesting inconsistencies, for instance; though she says "I personally prefer to stick to the old nomenclature and eschew the new-fangled versions", and, "The order of the groups, too, I prefer to keep as they were originally according to Kirby", in fact the "modern" names are in nearly all cases the oldest that can be found; *Ortholitha chenopodiata*, the example she cites, was actually thus named by Linnaeus, and since he introduced binominal nomenclature it seems reasonable to suppose that this is an older name than her "old-fashioned" *Eubolia limitata*. Also, despite her avowed preference for Kirby's group order she actually advocates elsewhere that laid down by the Committee on Generic Nomenclature, the more scientific and modern one.

On data cards, too, much of her advice is unsound. She says; "It is usual these days to have labels printed with your main regular collecting localities and a dotted line . . .19 . . . for the date, followed by your name or initials". Initials should, of course, never be used on data labels, as the purpose of the collector's name is for reference in the event of the specimen's being transferred to other collections. If this occurs, the name attached to initials may well be forgotten. She also says, of data labels, "As a rule, the smaller the label the better. I use the very smallest size, except for hawks and large Noctuids, which can stand something bigger—but not *too* big, please"! There is no need to insist on the irrevelance of these aesthetic considerations. It is difficult to give too much information on a data label and recording of information is its only purpose. The Amateur Entomologist's Society presumes the collection of Lepidoptera to be a serious intellectual interest, and its purpose is not the showing off of one's artistically laid out cabinet drawers complete with black paper and white cotton, as explained by Mrs. Spoczynska.

Yet another inaccuracy is found where we are told that, "Males come first and females below them in your vertical columns, with the scientific and English names of the species at the bottom, followed by varieties and aberrations . . .". In fact the standard practice is to put the generic name above the series and the specific name and author below.

Possibly, however, I am wasting my time with these criticisms as the irritating archness of the style, with its numerous exclamation marks, brackets, "morals and memos", and afterthoughts, must surely deter even the most superficial amateurs from taking her seriously.

M. J. Friend (2786).

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REVIVAL OF *POLYGONIA C-ALBUM* LINN.

Some years ago I used to count myself lucky if I saw a single Comma Butterfly *Polygonia c-album* (Linn.) during the season in Surbiton However, last year I saw two specimens. This year the species seem to have become common, equalling, or even exceeding, the numbers of *Aglais urticae* (Linn.) (although admittedly the latter species is slightly less common than usual).

For instance, in the afternoon of 29th July I saw three specimens, two of them feeding simultaneously at the Buddleia in my garden. This would seem to indicate that *P. c-album* (Linn.) is again becoming common—I would be interested to read of any other observations on the occurrence of the insect this year.

H. V. Danks (2907*).

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OBSERVATIONS ON *PIERIS BRASSICAE* LINN.

The Youth Secretary, Mr. T. S. Robertson, has been emphasising earlier this year that he expects to see a resurgence of the Large White Butterfly *Pieris brassicae* (Linn.). I have in fact noticed that this insect is again common, but this may be due to migration: One afternoon I took 9 specimens, but only one of these was in good condition, the wings of the others being very worn and ragged. Admittedly this is not conclusive evidence for migration, since migrat-

ing insects often arrive in perfect condition, but it is difficult to see how this high proportion of tattered insects could have resulted normally, for they were taken early in the summer brood.

Another interesting fact was that 7 out of 9 of the insects were females. This could be because:

1. The females emerge first, these specimens being taken, as stated above, early in the summer brood—but the proportion of females in later catches was still much higher than 1:1.

2. Females are more resistant to disease, etc., during the larval and pupal stages.

3. Assuming migration, more females migrate than males.

4. That the sex ratio of *Pieris brassicae* is not 1:1 at all! (I expect correspondence from an irate geneticist).

There is surely a lesson to be learnt from this, for the above remarks concern one of our commonest species—everybody knows the "Cabbage White". In order to solve the problem, therefore, might I appeal for as much data as possible on this insect. Have there been migrations this year? If so, what proportions of males and females were present? What proportion of the sexes have been obtained in breeding? Which sex generally emerges first, if any? Have the mortality rate for different sexes of larvae been found? What proportions of the sexes have been captured in the field? etc.

If data is available please make an effort to send it either to the *Bulletin*, or direct to me, at 7, The Ridge, Surbiton, Surrey. Any which reaches me I will try to summarise for the *Bulletin*.

H. V. Danks (2907*)

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A NOTE ON *TYPHAEUS TYPHOEUS* (L.) (COL., SCARABEIDAE)

I was interested to read Mr. Foreman's article on this beetle in the Junior News Section of the June *Bulletin*. It may be of interest to him, and other members, to learn that that arch-observer of dung-beetles, J.-H. Fabre, states that the most readily selected food of this beetle is sheep-droppings, and that rabbit dung is in fact less favoured. This is, of course, in contrast to practically all other books on the species, which mention rabbit dung as the favourite food, as Mr. Foreman points out. Fabre states that early observers called the beetle the sheep-scarab *Scarabaeus ovinus*, though I can find no mention of this specific name anywhere else.

But most remarkable still, I have found *Typhaeus in human dung* at Budby, Notts., where there is quite a large colony (itself of interest since this locality, about 20 miles North of Nottingham, is very far North for the species). judging by the number of burrows. There are no sheep, but rabbits are present. Hofmann mentions both horse and cattle-dung as being favoured by the beetle. but he is rather inaccurate in biological matters, and so perhaps it would be as well not to pay too much attention to this.

I too have found that the depth of the burrows is generally greater than is normally given in the books—two to three feet being quite common. (Though Fabre, who should know if anyone does, says nine inches). It may be that a certain critical degree of temperature and humidity is desirable, and perhaps other factors influence depth also. Such a critical degree would be found in the soil at different depths according to climatic conditions. There seems to be room for research here.

R. G. Thimann (2924).

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LETTER FROM MALAYA

Collecting in Malaya takes the entomologist to may interesting places. On most trips I find myself ending up in a Kampong village with typical Malayan houses, made of unpainted grey wood and banana or palm thatch, scattered along the mud track. Each house keeps chickens, whilst pigs run wild everywhere, each with a large litter all covered in mud. I once came across one who found the weather so hot that it was sitting on its rear in a water hole, covered in mud, and the silliest expression of relaxation on its face imaginable. I mention this fact because butterflies are attracted to water where animals have urinated, in fact dozens of species can be taken in these spots. In Singapore there are many fishing pools, where for a few dollars you can hire a line and fish all day for the fish bred and placed in the pool for that purpose. Dragonflies abound around these pools and at night I have seen the uncanny Fire Flies. There are other pools on which masses of Blue Water Hyacinth grow, these are grown I believe for their edibility rather than beauty. But together with patches of herbs and fruit trees the area around a village is ideal.

Camouflage amongst insects never ceases to astonish me. The larvae seem to live rather precarious lives, being the prey of birds, lizards, parasitic flies and wasps. Out of four larvae picked off a tree, three were found to contain parasites. Most larvae, however, try to disguise themselves, some take on the form of bird droppings, others look like twigs, whilst others hide inside dead leaves on which they also feed. Pupae need little camouflage due to the fact that they do not move, although some of the Danaidae are opalescent or bright metallic in colour reflecting the light so as to look empty. The butterfly needs further protection, and we find some butterflies advertising themselves with bright warning colours indicating to the insectiverous creatures that they are poisonous. This protection has encouraged the pleasant tasting species to follow suit, in order that they may be mistaken for the poisonous ones and so escape death by gourmorts. As it is, the female, who is more important than the male, due to the fact that she must have time to lay her eggs. We find that only she will adopt the form of the poison clan, and to make it more complicated for the collector, females of the same species will mimic different poisonous ones, this process is known as polymorphism.

On each trip I find many beautiful *Papilio*, Pieridae, Danaidae, and Lycaenidae. The last mentioned family icludes the beautiful Banded Imperial *Eooxylides tharis*, which is about the size of the large copper, in fact is the same colour, but has magestic long tails, some ½ to 1½ inches long, unfortuantely, these get broken off when trapped in a net. On one hunt I found a tree of the latex variety, which was covered in larvae in all stages of growth. The underside of each leaf was crowded with larvae lying in formation. They were black with eleven white rings and a bright red head, and later described to me as caterpillars in football jerseys which was a very good description of them.

One of the most interesting catches was a pair of *Atacus atlas* moths found pairing, these were gently removed from their perch and placed in a box where they later separated and the female deposited some three hundred eggs. A few of which were kept, but disaster was to befall them. A few days after I was carried into the sick bay of the shore base at Singapore with bronchitis, the few eggs I had retained were kept in a pill box until the day they hatched. I had no means of getting them food, the flowers in my room did not satisfy them, and in desperation I tried to lasso some leaves of nearby trees from the balcony outside my room but this did not work either. My chance came when I was sent to the Asian Hospital for an x-ray. The ambulance that took me had to back up against a small bush for a while, when the vehicle pulled away, half the bush had disappeared. Unfortunately, the larvae did not take to these leaves either and eventually died. However, this is not quite the end of the story, for on entering the x-ray unit and taking off my shirt, all the leaves fell to the floor. You can imagine the look of disbelief which registered on the face of the operator, when I gallantly explained that in England these leaves were counted as a lucky charm, and always placed in a sick person's room.

One does not go out into the jungle at night looking for moths in the same way that one would in the English woodlands, for reasons which will be obvious to all. This may explain why comparatively few moths are even seen around lights. I have watched the Chit Chats (small lizards) which live in practically

every Malayan building, catching moths. In fact they sit on street lamps and wait for the unfortunate moths to enlight, but these are of the small type.

One point that I have read, but not had the opportunity to try out, is the baiting of butterflies. This is achieved by hanging up rotten fruit, particularly pineapple, or stamping it into the ground. Danaids are said to be attracted to herbs hung up to dry whilst other species can be baited with decaying fish.

Unfortunately, setting butterflies on board is impossible, so all catches have been posted home in papers. I eagerly await the day that I can return home to England and can open all the papers and relive each day's hunting.

BRIAN MOODY (1570).

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INSECT ECOLOGY COURSE AT FLATFORD MILL

Three A.E.S. members were among those attending this annual course for amateurs and undergraduates at Flatford Mill Field Centre in August 1961.

Members of the course were introduced to various methods of sampling insects and interpreting the results. Traps did not produce large catches because of the frequently inclement weather, but the relative efficiencies of sampling various groups of insects at different times of day was well demonstrated for a suction trap, light trap, grease patches, cans of selected colours filled with water, and pitfall traps. Those without previous experience found the identification to family or super-family level of the 'other orders' taken by sweeping exacting, but learned a great deal by the end of the week. Concentrated repetition work of this kind is certainly the best way to learn broad recognition of the principal groups quickly and indelibly. Unfortunately, this work was handicapped by the shortage of stereoscopic microscopes. The Centre would welcome any assistance in filling this costly gap in its equipment.

Many groups not often noticed by the amateur were found on detailed examination of the catches. Most families of parasitic hymenoptera were present, including Mymaridae (fairy flies), and a strepsipteron was noted. Interesting records included a colony of *Lathridius bifasciatus* Reit. in grass under some elm trees, a heavy infestation of the mite *Eriophyes phloeocoptes* Nal. on plum trees in the Mill orchard (a new record for E. Anglia), and a variety of lepidoptera sheltering in aggregations under the bark of dead elms. Moths particularly noted in this way were *Amphipyra pyramidea* L. (the copper underwing) and *Ochsenheimeria vacculella* F. v. R. (Tineidae).

The number of Scolytid bark beetle larvae which had fed up during the life of elms killed by Dutch elm disease, of which the beetles are vectors, was estimated. The figure was 2.4 million in a tree 30 ft. tall. Other insect populations were studied by marking and recapture. On the final day each person carried out an ecological investigation of his own, which showed how much can be elucidated in a day by the spare-time entomologist when a problem is chosen to fit the facilities available.

Dr. T. Lewis, who ran the course, is full of enthusiasm for his subject. His occasional lectures were excellent and on well-chosen topics, and he maintained a commendably uniform level throughout the course.

The library and common room at Flatford are of a high standard, many of the books having been presented by students in tribute to the way the Centre is run. The staff deserve a mention here, for it is the atmosphere that they create amongst such a shifting population which largely decides whether people determine to make themselves at home and whether the minor domestic inconveniences of these old buildings, constructed for a very different purpose, assert themselves or not. All the staff gave of their best to ensure the comfort of their guests.

In all, this is an excellent course for anyone who wants to broaden his entomological outlook and is able to maintain the pace necessary to achieve much in so short a time. The level of treatment is well suggested by the phrase 'for undergraduates and amateurs'.

R. W. J. UFFEN (1660).

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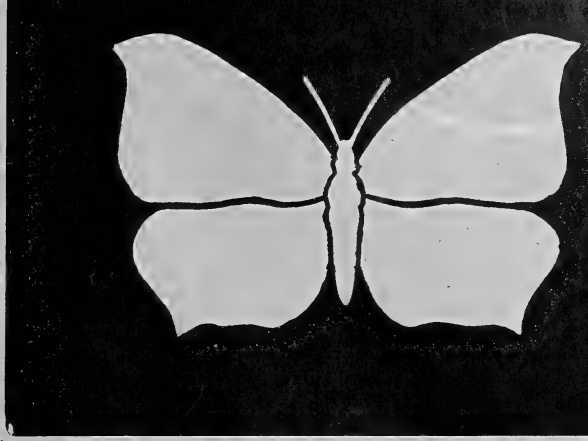

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A E S BULLETIN

No. 250

NOVEMBER 1961

AN ASPECT OF INSECT ECOLOGY

The following survey is intended to provide information as to the occurrence of insects in a restricted area of a suburban garden at Surbiton, Surrey. From a knowledge of the species found, their supposed inter-relationships have been worked out, with reference to the habitat—the details of which are discussed later.

The site measured 6 ft. x 8 ft. 4 ins. and divided itself into two main regions. At the back, near the fence, stones left from lawn preparation were found, to a depth of a few feet, together with rubble from building operations. From this, a gentle bank, planted mainly with dwarf trees and shrubs, sloped down to the edge of the lawn. The soil was originally clay, but owing to extensive cultivation, contained a large proportion of larger particles, and much humus. However, very fine particles were present, comprising perhaps 1/20th of the whole. The pH was 6.5.

The sun and shade received, varied from front to back. Although sun was received up to mid-day, the back was shaded by the fence at the rear, and the shrubs at the front. This fence, however, gave protection from the prevailing S.W. wind, although rainfall near the fence was somewhat limited by this. The ground vegetation at the time, consisted of various bedding plants, mainly *Alyssum montanum* (Madwort) and *Doronicum plantagineum excelsum*, with clumps of *Primula vulgaris* (Primrose) and *Myosotis dissitiflora* (Forget-me-not). The main area of the bank was planted with the shrubs Rhododendron (various spp.), *Forsythia viridissima*, and *Spiraea japonica*, with some *Ribes sanguineum* (flowering currant). Dwarf Cypress trees were planted at intervals. Various weeds (!) were found in small numbers, these being *Poa annua* (annual meadow grass), *Epilobium parviflorum* (lesser hairy willow herb) and *Convolvulus*.

Many of the interesting details were encountered during setting, etc., and are merely of interest to me because I became so familiar with the insects during the course of the study. To set down all of them would take too long, and so the following is confined to general comments on the various orders, and remarks on one or two of the more interesting species.

Diplura: No classification into species attempted because of lack of references. *Campodea* is the only British genus however.

Collembola: Springtails were very common, particularly amongst the stones at the back of the bank.

Orthoptera: One species found. This was quite a surprise as it was resting near the top of the fence when seen. I did not know before that there were any grasshoppers in the neighbourhood.

Dermaptera: The two generally common Earwigs were found, though these were somewhat localised.

Hemiptera: No surprises with Homoptera, with the inevitable froghopper (though not very common) and aphids. Leaf hoppers were very common indeed. This may have been due to migration (vide Williams—Insect Migration). Heteroptera, however, were surprisingly scarce.

Neuroptera: The usual green and brown lacewings were encountered. These, of course, are nocturnal, and I often thought after dark that they were "micros" until I brought them into the light. Many eggs of these were perceived on a neighbouring plum tree infested with Aphids.

Lepidoptera: Most of the commoner species were found. "Micros" were a difficulty, overcome by simply not identifying the numbers of Tineina and Tortrices caught. The commonest pyralid was *Myelois cribrumella*, the com-

monest butterfly *Pieris rapae*, and the most abundant "macro" moth was *Plusia gamma*, followed closely by *Diataraxia oleracea*. *Pieris brassicae* was very rare, probably because it has almost been exterminated by its parasites (vide *Bull. Amat. Ent. Soc.*, 17: **21**: 19: **77**) or disease (19: **99**). *Vanessa cardui* was very rare though it was quite frequent in 1959.

Diptera: A large selection of diverse forms, several unidentifiable as far as Colyer and Hammond goes. Family *Syrphidae* was the most common family by far, probably due to the migration of large numbers (vide *New Scientist* 8.505), especially *S. balteatus*. I was surprised at the comparative frequency of *Volucella zonaria*, which seems now to be widespread (vide *Bull. Amat. Ent. Soc.* 19. 72).

The abundance of mosquitoes, and other flies with aquatic larval forms pointed to the presence of a nearby stretch of still water. This would probably be an ornamental pond in the vicinity.

Calliopum aeneum: On this Lauxaniid a small mite was found. Attached to the abdomen this parasitised a fair proportion (10-15%) of these insects.

Hymenoptera: Ichneumon flies were very common, but unfortunately unidentifiable. Only two species of ants were found, which seems a somewhat low number to me. Humble bees were extremely common especially *B. terrestris*.

Coleoptera: Beetles were the only insect inhabitants of the stones at the back of the bank (apart from Collembola), this being largely dominated by spiders and woodlice. The most common was *Pterostichus madidus*, and in the drier parts, *Notiophilus biguttatus*. Weevils were surprisingly scarce, as was *Lucarus cervus*, a beetle which, in most years, is present in some numbers.

The commonest beetles apart from Carabidae were the ladybirds, notably *Adalia bipunctata*. One specimen of Thea 22—*punctata* was taken on the wing after dark.

Methods of Survey. For the purposes of the survey, any insect encountered on the area under observation was captured and roughly identified. If already represented it was released. If required, however, it was set. After setting and drying the insect was identified as fully as possible. In many cases (Apterygota, Earwigs and many flies) it was unnecessary to use a net, the insect merely being tubed as it rested. More active insects were captured with a kite net. A pitfall trap was also constructed, but apart from numerous Collembola, *Pterostichus madidus* and a single wasp, this met with a singular lack of success. Most moths and lacewings were captured by going out after dark with the net.

Methods of Setting: Methods were mostly standard, but with a few modifications in all cases. The setting boards used were of balsa wood, pins sizes 20, 9, 17 and 13 English. Killing agents were ammonia (Lepidoptera), boiling water (ants and larger beetles), and ethyl acetate (all others). In this connection, Humble bees took a particularly long time to kill with this latter. The broader classification adopted was that of Imms, but in further divisions, the books on the particular orders were followed (See Bibliography). The more difficult orders have not been fully classified as the literature consulted was not sufficient in some cases for this to be done.

In the restricted area of 6 sq. yards. 176 species were present, and this in only 2½ months of the year. The numbers were such that other surveys might be worthwhile, namely: (a) similar survey at the same time in subsequent years, to record the fluctuations of the commoner species night be of interest. (b) surveys of different habitats in the same garden (e.g. compost heap, trees) to record the different insect fauna encountered there. (c) examinations of the habits of one of the commoner species (by marking, etc.) *Bombus terrestris* might be suitable.

Another point is that of migration. Some of the migratory species appeared in numbers (e.g. *Jassidae*, *Syrphidae*, and I suspect *Plusia gamma*) but others were hardly present at all (e.g. *Pieris brassicae*, *Vanessa cardui*). It seems that little is known yet of the causes of migration in insects, for the migrations of various species do not appear to follow any set patterns with regard to the weather, etc. I should be interested to read any members' views on the subject in future Bulletins.

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H. V. Danks (2907*).

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ADVENTURES WITH AN *ACHERONTIA ATROPOS* (L.)

I like to call myself an '*occasional* amateur entomologist'; by this I mean that Entomology forms only one facet of a very general personal interest in natural history. Consequently, I may perhaps be considered a rather more lowly species than the ordinary Amateur Entomologist, who probably devotes far more of his time to the subject than I do.

When, however, I have the good fortune to come across, or be given, interesting ova, larvae, or pupae, I usually make the attempt of breeding them to the imagines—or, in the case of the latter (females) being obtained, try (by 'assembling') to obtain ova from them and rear those.

While, therefore, it may not be a particularly unusual occurrence to the more experienced and knowledgeable members of the A.E.S., it was with great excitement that in the summer of 1960 I was given the almost fully-fed larva of a Death's head hawk-moth (*Acherontia atropos*, L.). As is usually the case with this species, the larva had been found feeding on potato leaves, and had narrowly escaped untimely death as a noxious 'grub' at the hands of the original finder.

Although the general appearance and variable colouring of *A. atropos* larvae are pretty well known, I would like, for the sake of completeness, to give a description of my specimen, as it differs in at least one detail from that which I have seen published.

When first obtained, the larva was approximately four and a half inches long. Its general body colour was a slightly yellowish pea-green, and there were the usual seven deep mauve stripes, edged with pale yellow; these stripes met as pale blue and yellowish 'Vs' on the back, which was thickly sprinkled with bluish-black dots. The spiracles—on every segment except the two immediately behind the head—were blackish-brown edged with whitish. The head was of the body colour, with a broad black stripe on either side. In contrast to the descriptions given by South ('The Moths of the British Isles') and Stokoe ('The Caterpillars of the British Moths'), the roughened 'horn' was *not* of the body colour; on the contrary, it was a vivid chrome yellow—very distinct from the body colouring.

Of course it goes without saying that from the very beginning I had decided to try and rear *my* larva, and in the early stages I found this simple enough. In its large box lined with six inches of soil (formed of equal quantities of earth and bulb mixture), the larva consumed enormous quantities of potato leaves, and in a manner most fascinating to watch: selecting a leaf, the insect would steadily shear down a regular strip for about an inch, or less, then begin again at the top—the operation being repeated until its hunger was temporarily satisfied and great inroads had been made on the leaf. I found this enthralling to observe, particularly so as the noise of its eating was easily audible.

As I have said, I found the rearing of the *larva* easy enough: merely a question of seeing that ample supplies of potato leaves were forthcoming and that no dross was allowed to accumulate in the box. It was when the pupal stage was reached that the trouble started. Too late I read that a regular

sprinkling with water was considered an absolute necessity to these pupae; mine was already well on towards the time of its expected emergence when I commenced its daily 'shower bath'. The larva had 'gone to earth' at about 7 a.m. on 25th August, a few days before I went on holiday; the day before I had noticed that it had stopped eating entirely; it seemed shrunken and 'dirty' and its back was diffused with a deep orange-yellow-brown colouration. In addition it was very restless, literally racing round the confines of its cage, even attempting to climb the walls. When I returned from my holiday some two weeks later, I carefully combed through the soil and removed the pupa from its oval cocoon or burial chamber, which had become broken in the search, and placed it on a layer of moss it its box. Even if the cocoon had not become broken, I doubt whether I could have resisted the temptation to examine the pupa: but, as it was, I also had the opportunity of examining the burial chamber and of ascertaining its method of manufacture. The chamber, which was about $2\frac{1}{4} \times 1\frac{1}{2}$ inches in internal dimensions, and very fragile, appeared to me to be merely of soil, beautifully moulded and smoothed inside, with no strengthening material whatsoever. The pupa itself seemed pretty healthy, except for being rather slim and 'flat chested' and having a slight deformation (shrivelling) at the centre edge of the right wing-case (ventral surface).

It was about the middle of May 1961 that I began to have my suspicions about the pupa's health. Whilst the head was cold to the tongue (supposedly an infallible guide to good health?), there had ceased to be any body movement whatsoever, even when handled, and the abdomen when gently moved returned to its former position but slowly and sometimes only partially. On 21st May I noticed what appeared to be tiny spots of mould in the hollows of the wing-cases. I decided that all hope was gone and handled the pupa freely and without further idea of recovery. As soon as pressure was exerted on the sides they gave way, and dissection revealed the mere shell of an insect. Although the head and thorax were partly formed, the abdomen was a hollow pulpy mass.

While I had expected it for some time, this final disillusionment was a terrible disappointment after nine months delicious anticipation: but it will certainly teach me to be more careful in future—if, that is, I ever have another opportunity of rearing an *atropos*.

ANTHONY WOOTTON (3331).

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A PORTABLE SPECIMEN-CASE

This case was designed to carry specimen-tubes carrying spirit in which to kill and preserve ants in the field. It was designed as an answer to the need for a method of carrying these liquid-filled tubes about without the fear of losing any of the liquid. I hope the idea might prove useful to someone, even with different needs in mind.

It consists essentially of an oblong box, with the top and front hinging out on an horizontal axis. The dimensions might be varied according to need, but the approximate dimensions of my case are given on the diagram. It is constructed of thin sheet hardboard for lightness, the pieces being glued together. This type of construction required the addition of two blocks of wood to take the screws of the hinge.

The front of the box, if carefully made, stays shut of its own accord, without the need for a clip.

Two pieces of elastic strip were glued about an inch off the floor of the box from side to side. These hold the specimen tubes in place.

There is also space on the lid to hold a pencil and forceps, as well as room at back of the case for a note-book.

The case is held by a strap glued to the top of the back and passing around the wearer's neck. Another strap passes around the waist. This arrangement means that the case may be worn in the field, where some agile movement is required, without the case swinging about. The case stays firm when one bends down. The specimen tubes are always within easy reach.

J. M. PORTER (3187*)

COLLECTING HINTS—November

The Coleoptera

Among the first specimens to grace the young coleopterist's collection will be one or two species of the Carabid genus *Notiophilus*. We have eight species of these in Britain and to the beginner their identification is usually a matter of some difficulty. One of the best guides to the genus is a paper by D. K. Kevan published in the 1949 *Entomologist's Monthly Magazine* (pp. 1-18). With the aid of this and a good lens, identification becomes fairly simple.

The beetles can be found running on the ground in the sunshine, especially in the spring, or they may be discovered by turning over stones and logs, or in grass-tufts or moss or heaps of litter. In these more sheltered habitats they may frequently be found in winter.

Notiophilus biguttatus (Fab.) is the commonest species and is abundant almost everywhere.

N. quadripunctatus Dej. is much more local and most records are from southern England, although it does occur in Cheshire, Yorkshire and Cumberland. Sandy heaths seems to be its favourite habitat but I have one record from the chalk.

N. substriatus Waterhouse is local but widespread and is found in a wide variety of habitats.

N. rufipes Curtis is also local. It is absent from Scotland and northern England and is not recorded for a number of southern counties. It is frequently, but by no means always, found amongst dead leaves.

N. palustris (Duft.) and *N. aquaticus* (L.) are both common and widespread. Damper habitats seem to suit them better, and in my experience they are the two commonest species on mountains.

N. germinyi Fauvel (=*hypocrita* Putz.) is rather local and known only from Scotland and a dozen English counties.

N. aestuans Mots. is probably the rarest species of the genus here, with records from Hampshire and Scotland. My only specimen came from Ben Lawers in Perthshire, where I also found a small number of the previous species.

K. C. Side (2140).

REMINISCENCES OF W. D. HINCKS

Dr. W. D. Hincks, who died in July of this year, was perhaps better known to professional rather than amateur entomologists. But as well as being one of the leading experts on the earwigs, and author of "The Dermaptera of the World"—destined, alas, to remain uncompleted—he was the curator of the superb collections in the Museum at Manchester, and, of course, is known to amateur and professional alike for his work (with G. S. Kloet) "A Check-list of British Insects". He was a man of a rare type; Walter Douglas Hincks began his career as a pharmacist and, therefore, as an amateur entomologist, and the eminence he achieved in the latter field is the more remarkable for it.

I cannot attempt a personal evaluation of this great figure, for I knew him not at all. I met him as a student, on the field course which he directed at Malham Tarn for some years. I do not quite know what I anticipated, but I think I expected to encounter rather an awesome figure. Of course, such an expectation was quite wrong. When we entered the "laboratory" for his inaugural talk we found a pleasant, burly man who was the very personification of friendliness. Throughout the whole course he extended to us amateurs (and very ignorant amateurs at that) every help and sympathy, and for my own part I can say that he truly opened my eyes to the wonders of entomology. During leisure hours he regaled us with stories of his past experiences, for example, of his difficulties in purchasing a collection of tortoise-beetles in occupied Germany at the end of the war, and then of conducting them to England. On more than one occasion was it possible to catch a glimpse of his own career with all its difficulties and triumphs.

He was exceedingly kind to us in another matter when, at the end of the course, some of us went, independently, to ask where we could obtain some of the text-books he had recommended, he sent us copies gratis. And this of such rare and expensive works as Joy and Reitter. Most remarkable of all was his complete naturalness at all times—never would an onlooker have taken him

for what he really was. So deeply did the character of this great, kind and good man impress itself upon me that I have told friends "I would recognise him again instantly, anywhere". It is a great shock to realise that I shall never be able to demonstrate the truth of that statement.

R. G. Thimann (2924).

A SIMPLE CULTURAL TECHNIQUE FOR DROSOPHILA SPECIES

The fruit fly, *Drosophila melanogaster*, has long been a favourite animal with experimental entomologists of all types. Its short life cycle (some 10 to 15 days under normal temperature conditions) and wide variety of forms makes it convenient material for genetic investigations as well as for general physiological studies. This type of practical work can be a source of great interest and is not difficult to conduct.

In order to culture the flies, some form of medium is needed on which yeast, the food material, can be placed. One of the great difficulties is to obtain a suitable medium and at the same time prevent it from becoming covered by fungal growth. At various times many formulae have been devised, but they often have the disadvantage of being complex in composition. Wishing to keep fairly large numbers of flies I have tried a variety of simplified media constructed from everyday material. The following technique has proved successful and has been used to maintain a culture started over two years ago which has entirely inbreed without any apparent weakening of the strain.

Small numbers of flies are placed in one pound jam jars which have a solid plug of porridge in the bottom and a concertina of stiff paper or thin card above. Any small mesh net material is convenient to cover the top of the jars where it should be held in place by elastic bands to allow easy access. 'Laddered' ladies' stockings make a useful covering material provided they are cut to avoid the 'ladders'.

Porridge is simply made by adding any form of porridge oats to boiling water until a stiff paste is formed. A little glucose added to the mixture helps, but it is not essential, and in any case the quantity should not exceed a teaspoon in a half pint of medium. The hot paste is poured directly into the clean jars and allowed to cool. When cool, the paper concertinas are added and the jars are ready for inoculation.

Drosophila flies normally tend to crawl into dark corners in search of food unless they have been disturbed when they move in the direction of the maximum light. The simplest method of transferring flies from one jar to another is to use the defensive reflex. Jars containing the old culture of flies are covered with a piece of stiff card and the net removed from underneath. The fresh jar is then placed above the card and both jars tapped lightly on the working bench. If the hands are wrapped around the lower jar the flies will be found to move into the upper. When sufficient have moved, the card is replaced between the two jars and the fresh jar is covered with material.

Finally a yeast solution is prepared by thoroughly mixing a cube of baker's yeast about ¾-inch square with three tablespoons of water. Sufficient of the solution is poured through the covering material to produce a fluid film on the surface of the porridge. As the surface film dries, water is added to just maintain it. Under these conditions, fungi do not seem to develop and the medium does not become difficult to manipulate provided the flies are transferred by the use of their reflex response. Generally speaking, cultures are best renewed for each generation, but if adequately watered will maintain themselves for some six weeks.

For anyone tempted to try practical work of this nature, the first problem is to obtain a stock of flies. These can be obtained through suppliers, but it is rather more interesting to start with a wild culture. During the summer months Drosophila are fairly easy to capture on the surface of fruit, or traps may be made by placing fruit peelings in a narrow necked glass bottle. The flies are attracted to the peelings and find difficulty in escaping. To be successful, the traps need re-baiting at frequent intervals.

P. J. Fry (3073).

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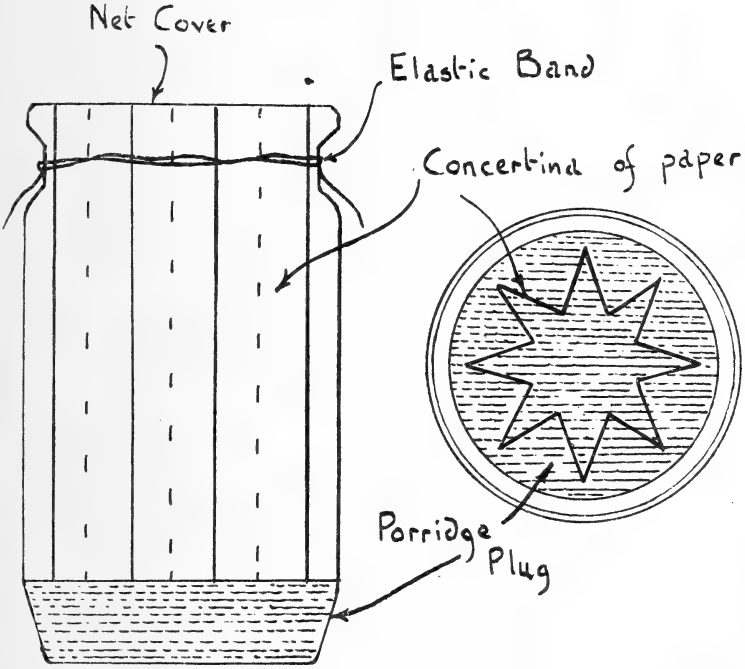
CULTURE JARS



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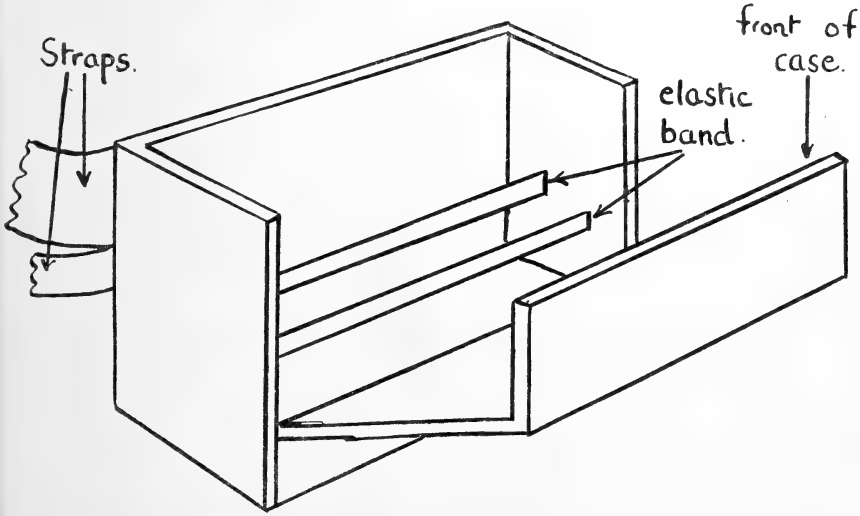

NOTES AND OBSERVATIONS

PARASITE IN BEETLE

On 30th May I was about to leave an attractive but actually disappointing pond, after an hour or so's search for aquatic beetles, but decided to have a last, farewell dip from a point on the opposite bank, where I had not yet been. It was the only place on that side from which the water could be reached.

This final effort produced nothing of interest, except that half-way up the inside of the net clambered a fair-sized beetle. I had put my glasses away, but even without their aid the beetle seemed quite obviously to be a weevil. However, not being accustomed to catching weevils in ponds, I put it into a tube which was readily accessible in my jacket pocket, and took it home for closer inspection later. As anticipated, it turned out to be a brownish example of *Phyllobius pomaceus* Gyll.

How it came to be in my net I do not know. Within arms-length had been a hawthorn tree, but I had naturally taken care not to brush the net against its branches. Presumably it had fallen into the water just before I arrived. However, I had more pressing matters to attend to, so for the time being I put this *Phyllobius* into a large tube with some nettle, and just glanced at it every morning to see if all was well.

On the morning of 2nd June all was evidently far from well. The beetle was lying on the bottom of the tube, apparently nearly dead, and protruding from its abdomen—also apparently nearly dead—was a worm-like creature.

I wondered if the beetle had been urged to seek water by the presence of a parasite needing to emerge into water. Perhaps, I thought, it had been on a clump of sedge against which my net had brushed in that final dip. As an experiment I put a large globule of water on both beetle and protruding worm, and watched the effect.

Far from livening up, both worm and beetle seemed to be in worse case than before, so with my brush I lifted them both on to a piece of dry blotting-paper. The result was encouraging. The beetle soon revived sufficiently to crawl slowly, and the worm—believe it or not—also became more lively, and returned completely into the beetle's abdomen!

The beetle remained alive throughout that day, sometimes moving a little over a piece of nettle, but on the following morning it was dead. I placed the corpse in a fresh tube, with moisture, of course, and awaited the worm's next move.

Nothing happened, and on 18th June I carefully picked the beetles to pieces. The thorax was an empty shell, as also was the abdomen, except for a small quantity of whitish, glistening matter, which I took to be the remains of the dead worm, for there were no other signs of it.

On 2nd June, when I had first found the worm protruding from the beetle, and both were almost completely immobile, I had made a few notes. The length of the beetle was 7·5 mm., and the length of worm protruding was 8 mm. The width of the worm was ·5 mm., and it seemed to be flattish rather than round. It had a distinct head, of a yellowish-red colour, and was segmented except close to the head—or so I thought. Except for the head, the worm was a glistening dirty-white. My anxiety to avoid killing the worm prevented me from making a more thorough examination, but if so vague a description permits, I should be most grateful if some reader could identify it.

HUGH CAIGER (2908).

MITES ON *CALLIOPUM AENEUM* (DIPTERA: LAUXANIIDAE)

During 1960 I had occasion to take numbers of specimens of *Calliopum aeneum*, among other Diptera, and on a fair proportion (10-20%) parasitic mites were found.

I wonder if any members can say what these mites are, what their life history is, and whether or not they occur on any other Diptera, as I have only seen them on *C. aeneum*.

H. V. DANKS (2907*).

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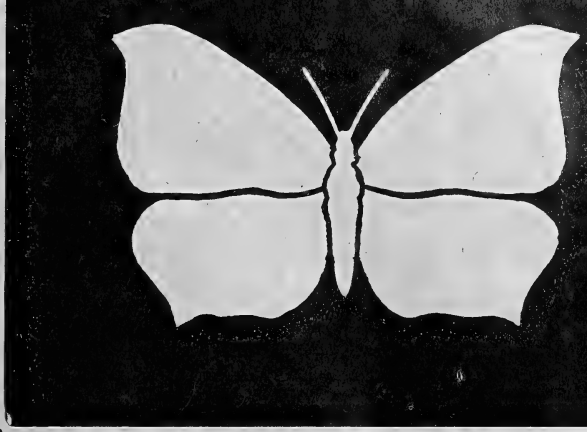

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A E S BULLETIN No. 251 DECEMBER 1961

COLLECTING HINTS—December

Stenus is a genus of Staphylinid beetles which is popular with many amateur collectors. Although there are over sixty different species to be found in these islands they are nearly all easy to identify, especially if one uses The The Royal Entomological Society's Handbooks for the Identification of British Insects, Vol. IV Part 8 (a) by C. E. Tottenham.

Although one or two may occasionally be swept from grass or other low vegetation, they are essentially ground-dwellers There are too many different species for me to give a full account of their habitats and distribution here, but a few general remarks may be of value.

Damp habitats will produce the larger number of species, but there are some that occur in fairly dry situations. The dead leaves and stems of aquatic plants lying beside a stream or pond is a very good place to search. In warm weather look to see if any are running on the bare mud at the edge of the water. Grass-tufts and moss will usually harbour a few members of the genus and so also will heaps of cut grass, weeds, dead leaves, hay-stack bottoms and anything which can be included in the term vegetable refuse.

As there are so many species it will be necessary to look in a variety of habitats in order to obtain a representative collection. Try all likely looking places in woods and marshes, on chalk, sand and clay, near the sea and on the higher parts of the mountains.

Most of the species of *Stenus* can be taken all the year round, so now is the time to concentrate on them, leaving the summer months for collecting those insects which cannot be obtained in the winter.

K. C. Side (2140).

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COLLECTING INSECTS IN FAR EAST

Whilst doing my National Service in Singapore and Malaya I had many days collecting in the jungle and on the fringe. I will attempt a brief precis for the benefit of any person who is fortunate enough to go there in the future.

I spent most time in Singapore at a camp called Nee Soon. I was fortunate to be sent there as the camp was bordered on three sides by jungle. This jungle, and small areas left elsewhere, are the remains of the jungle which once covered the whole island. The Singapore Government have turned it into a Game Reserve and it is now called the Mandai. Apart from many insects there are large numbers of mammals, reptiles and birds living in this area protected by various bye-laws. Jungle areas are not the best areas to observe animals as there is plenty of cover.

I do not collect all orders of insects, but I will attempt to describe some of the commoner species of these Orders.

Coleoptera

The beetles reach a great diversity of size and development in the Oriental region and many beautiful and interesting species occur here. I found out very quickly that pursuit of insects 'flushed' was virtually impossible and generally ended in failure in jungle. Most of the beetles collected were taken at light or in relatively open areas. The commonest large beetle was *Oryctes rhinoceros* (Scarabaeidae) a pest of coco-nut palms. This sometimes occurred in considerable numbers around street lights. Another large beetle found somewhat frequently, though only females, was *Chalcosoma atlas*. The male of this species must be one of the largest beetles in the world as specimens I saw were larger than some mice. The bizarre ornamentation on the thorax does not occur on the female. *Xylotrupes gideon* was another large beetle found at light.

I found that Carabids were not nearly so common as in Europe. All normal carabid haunts, e.g. under stones etc., were generally over-run by ter-

mites or ants. Tiger beetles were very common, although only one species was generally seen. Dytiscids were sometimes found, but then again only in small numbers and not many species. I found quite a few longhorns, some at light or resting on bark. Quite a series of longhorns (not yet identified) emerged from a log in the cage of one of my pythons. The python did not like to be interfered with, so getting the beetles was a risky business.

Chrysomelids were swept from bushes and trees but I have been unable to identify them as yet. Buprestids occurred but I was unable to get any decent specimens. Ants rapidly kill and eat any small creature here. From beneath bark of dead rubber trees I secured quite a number of Clerids, Erotylids and Tenebrionids.

Apart from collecting in Singapore I spent two weeks in the Cameron Highlands in Pahang. This is a collector's paradise. Every day I went out I did not fail to get a good haul. Cicadas especially abounded in the Highlands.

I took some beautiful Lucanids and Scarabaeids here, and had I spent more time here I would have secured quite a series of male Atlas beetles. They appeared quite common up there and quite a number of Chinese shops kept them as curiosities. I saw quite a number of large beetles squashed on the roads there. It is beyond the scope of this paper to describe all the insects taken by myself in this region.

Lepidoptera

I am not a collector of this Order myself, but I must mention moths as a great many readers are, doubtless, collectors of them. A great many moths were seen by myself at light in both Singapore and Malaya. Hawk moths were very common at light including Deaths-heads, Oleanders and other species I did not recognise. Some of the older Chinese people believe that the bigger moths contain human spirits and to molest these insects in any way would bring wrath upon them, consequently an old Chinese woman was terrified of me when I caught an Atlas moth. She believed that through catching it I could control the spirit.

Apart from moths, many butterflies occur here, especially Swallowtails. It was quite a common occurrence to see a Swallow-tail flapping lazily along a sunny ride in the jungle.

Diptera

Mosquitoes abounded here and as many are day-biters they sometimes made life miserable. Tabanids were common there and I was once followed for about a half-mile by a large one seeking a meal. Asilids were quite common and so were *Chrysomyia* ssp. These flies replace the *Sarcophaga*, *Calliphora* and to a certain extent *Lucilia* which are common-place in Europe. They are mainly attracted to dead fish.

Orthoptera

The Oriental Region furnishes large numbers of Orthoptera, especially the Pharmids or Stick-insects. I took about 5 species of stick-insect including three winged species, and although I saw some leaf insects at light I was unable to catch any.

A large number of mantids occurred also, including very many well camouflaged species. With regards to the grasshopper clan you could not walk in any grass without disturbing large numbers. Mole crickets abounded at night and frequently were attracted to light. The noise of these insects was sometimes quite deafening. True crickets occurred in plentiful numbers and the Chinese keep them in cages for fighting purposes wagering large sums of money on the outcome. Cockroaches of the genus *Morphma* occurred quite frequently in rotting trees and under loose bark.

Heteroptera and Homoptera

Large numbers of Coreids, Pentatomids and other bugs occurred in large numbers. Reduiriids were common and had to be handled with respect. Small hoppers—Cercropidae, Membraidae, etc., abounded, and of course are the most difficult insects to identify. Lantern-flies (Fulgoridae) occurred at light but I was unable to obtain any. By far the most interesting were the cicadas, and although very numerous, were difficult to obtain. Anyone who has stalked these elusive insects will appreciate how difficult they are to locate, let alone catch. They are expert ventriloquists and I once stalked what I thought was a chorus of large cicadas only to find that they were frogs. The commonest

species was a green one with a body about 1 inch long. Some real giants occurred in the Cameron Highlands with a wing-span of 6-8 inches.

Other Orders

Termites and true ants abounded everywhere. Tree-dwelling ants were vicious biters attacking everything they came across—including me.

Termites existed under almost every large stone or fallen log and nearly liberated one of my pythons by eating his cage so that it fell to dust when touched.

Carpenter bees were everywhere, tunnelling in the beams of our barracks. Hornets were common and were to be feared as they had strong ideas on their territories. In fact, quite a few people had died after being attacked by the enraged hornets. I myself was put into terrified flight by one which stung me on the back of the head.

I also collected a series of the Tropical Rat Flea *Xenopsylla cheopis* of bubonic plague fame. The rats themselves went to feed my 'tame' pythons.

I also collected a pair of giant millipedes about 8 in. long, and these fed for some time on bananas and tomato before they finally died.

ALLAN HARMAN (2721)

•

BUTTERFLIES OF THE VORALBERG, AUSTRIA

In the first two weeks of August this year I visited Feldkirch in the Vorarlberg of Western Austria. Feldkirch itself lies in a valley about 1600 feet above sea level with pine covered slopes rising quite steeply on either side and mountains in the distance. The lush valley floor and bordering pine and deciduous woods provide a paradise for numerous species of butterflies. Unfortunately I was not able to do any really serious collecting since much of the time was spent excursioning round the area, beside which I had not very adequate facilities with me anyway. However the species I did net or observe may be of interest to some members.

On the first day, July 30th, I sighted a single specimen of *Papilio machaon* (Swallowtail) which was flying very lazily and settled frequently on the stony ground. It appeared to be in good condition and yet by its mode of flight seemed not a fresh insect. I could not tell if it was one of the late first brood or early second brood. I did not have my net with me at the time and it was the only Swallowtail that was observed during the whole fortnight. The buddleia bushes provided the usual host of *Vanessa atalanta* (Red Admiral) *Aglais urticae* (Small Tortoiseshell), *Gonepteryx rhamni* (Brimstone) and the Whites. Only one specimen of *Nymphalis io* (Peacock) was observed.

The fields of the valley, full of flowering weeds, are scythed for cattle fodder. Those that were still to be razed were swarming with *Colias hyale* (Pale Clouded Yellow) which settled quite frequently. They flew quickly on hot days and were most difficult to net, but when the skies were slightly overcast and the air was a little cooler, they could be picked from the flowers on which they were feeding without much attempt at stealth. The Whites, Large, Small and Greenveined, were all far more numerous at one time than I have seen in this country. and *Leptidea sinapis* (Wood White) occurred fairly commonly in this locality as well.

The pine slopes provided a pleasant surprise. They were easily accessible by well-made, gently winding paths. Hemp Agrimony grew in clumps at the side of the paths where the sun broke through the trees. On almost every purple pink flower head was perched a Silver Washed Fritillary (*Argynnis paphia*). They were in their thousands, and countless numbers of perfect specimens both male and female were obtainable. At about 10.30 in the morning a mating pair was observed in laboured flight. Like the *C. hyale* these insects were a little more difficult to net in the hot weather, but they appeared in equally vast numbers under overcast skies and were then much more easily netted. They were observed one afternoon up to 5.30, by which time the clouds had rendered the wood quite gloomy. During the same afternoon we came upon a lone female *A. paphia* feeding busily from an Agrimony flower head. She was so engrossed that when I presented my finger before her she stepped on without hesitation and walked about thereon for at least ten seconds before flitting lazily off to another flower. *A. paphia* was still present in large numbers up to 3,000 feet. Lower down, at about 2,000 feet, small

numbers of *Limenitis camilla* (White Admiral) appeared and disappeared as daintily as ballet dancers. Most were worn specimens and all were noticeably smaller than our own *L. camilla*, though they seemed to be identical in pattern and shape of wing.

At the summit of the slope the trees broke away to reveal a pampas-like plateau with a plantation of very young conifers. Here a different species was in evidence, flapping idly in the sunshine, almost velvet black in hue. On subsequent examination they proved to be insects almost identical in appearance to *Erebia aethiops* (Scotch Argus), though they may have been a trifle larger and fuller of wing.

Another species which was flying in enormous numbers was *Pararge aegeria* (Speckled Wood) but they were the same as our own except perhaps for being a shade blacker. Although *Colias croceus* (Clouded yellow) is known to fly in large numbers in the vicinity, we saw none. It may have been too early for the second brood since the season starts a little late. However, the spectacle of hosts of *A. paphia* was a memorable enough sight to outshine all else.

J. H. Drake (2967).

RESCUE OF FAIR LADY

Early in April, 1961, I found a roughly circular pool some 20 ft. in diameter, and 1 ft. or less in depth. As it contained no water-weed, and was surronded by higher ground, it seemed most likely to be flood water, due to several weeks of very wet weather hereabouts. The only sign of insect life, which is what I was looking for, was a solitary *Gerris;* but the pool swarmed with well-grown tadpoles.

On May 27th I went to look at this pool again, but it was now only a bare patch of clayey ground or so I thought as I approached. A close view, however, revealed three prints of a horse's hoof, two of which were ¾ of an inch deep, the other less, and these still contained a little water. I was surprised to find these indentations packed with tadpoles, though in a deplorable state, being mere wriggling muddy blobs. It was indeed a dismal sight, but there was nothing one could do about it, and I was about to turn away, when my attention was attracted by movement a yard or so distant. To my astonishment the moving object proved to be a full-grown larva of *Dytiscus marginalis* Linn., which was struggling over the waterless, cracked, but still slightly glistening clay, evidently seeking a place where it could bury itself and pupate!

There was not a hope of it finding a suitable spot on the bed of the now vanished pool, or in the surrounding field, so I felt justified in making a very risky attempt at rescue. Producing the largest tube I had, though much smaller than was desirable, I placed within it some blades of grass, wetted with muddy water from one of the hoof-prints, coaxed the highly indignant larva into it, and hurried home.

Being on foot the journey took me over half an hour; the weather was warm; and for the larva my pocket must have made it warmer still; so it was with great relief that I found no sign of sweating in the tube, and the larva still very much alive. I therefore tipped it into a jam-pot containing a little water at a suitable temperature, and hastened to prepare a puparium.

The only available receptacle seemed absurdly inadequate, being a plastic container intended, I believe, for packing sandwiches. It measured about 8″ by 4″ at the top, 7½″ by 3½″ at the base, and was 3¼″ in depth, but I dared not wait until something more suitable could be obtained. The larva had probably been tramping about since before daylight. At any rate, I had a feeling that it was desperately anxious to get itself buried.

Having mixed some earth and water, I made a little mud bank at one end of the plastic case, poked some holes in it horizontally with a pencil, and then introduced the larva.

As expected, it very soon entered one of the holes, and the slight heaving of the bank indicated that it was trying to make a cell. To my disappointment, however, it shortly backed out of the hole and began scrambling about the bank. Assuming that the mud was too wet and heavy for it to deal with, I placed the larva on a piece of damp blotting-paper under a glass tumbler, rushed into the garden, hastily mixed dry earth with the mud until it was lighter and more malleable, reconstructed the bank in the plastic case, prodded it with holes as before, and re-introduced the larva.

Not unnaturally the larva was by this time boiling with rage, and as I attempted to coax it into a hole my guiding pencil was repeatedly and savagely bitten. In a minute or two, however, it crawled into one of the little tunnels and disappeared.

I then watched anxiously to see what would happen. The slightly heaving earth showed that the larva was trying to make a cell, and this time, apparently, was meeting with success; so half an hour later, satisfied that all was well so far, I stood the case in a quiet place, and just gave it a look-over once a day to see that the earth remained moist.

I gave the larva nearly three weeks, and then (June 15th) investigated, hardly expecting to find it turned into a healthy pupa after so much interference at a crucial time. Carefully removing earth, I discovered the situation of the cell, and then—still more carefully—made a little half-inch aperture in the roof. To my delight the cell not only contained a pupa, but a pupa very much alive, for the beam of my electric torch caused it to give a violent wriggle. Evidently all was well so far, so I laid a small piece of thick brown paper over the aperture, which would keep the cell dark, and yet allow easy inspection of the pupa.

On removing the lid on June 20th, my torch revealed the furrowed elytra of what appeared to be a fine female *D. marginalis* L. She must have emerged soon after the previous day's inspection for normal colouration had been achieved. Complete success was still in doubt however, for after its trying time as a larva the beetle might well prove to be malformed in some way.

On June 25th my fair lady *Dytiscus* was still in her cell, but the paper lid had been pushed aside, suggesting that during the night she had contemplated making her *debut*. Accordingly, I put her in a jar of water with some weed, and dropped a small worm therein. This was at 10.00 a.m., and during the half-hour I was able to watch she took no interest in it; but on my return at 12.30 p.m. the worm was gone.

The following day I gave her another worm. This time she obviously sensed its presence immediately, began looking for it, and soon made another hearty meal. There was now no doubt that the larva had become a healthy, well-formed beetle, so I dropped her into one of my favourite ponds, raised my hat respectfully, and left her to her own devices.

Both of us, I think, had been extremely lucky!

HUGH CAIGER (2908).

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WHY CONSERVE INSECTS?

Mr. T. G. Howarth (196) has expressed surprise (not unmixed with apprehension, I should fancy) at not having received a single communication on the subject of conservation from members of the AES during the years he has represented the Society on the Nature Conservancy's Entomological Liaison Committee. He must be a little disheartened and he deserves our sympathy. Nevertheless, the simple fact seems to be that the idea of conservation has not fired the members' enthusiasm. Why not?

I do not think anybody is in a good position to give an authoritative answer. To do so would require, at the outset, a carefully conducted opinion survey. Perhaps Mr. Howarth will undertake this through the pages of the *Bulletin*. My opinions, therefore, are no better than generalised guesses.

In the first place, the concept of the conservation of natural resources, as I see it, is a fundamental proposition pertaining to the direction of future human progress, touching on our basic assumptions in economics, politics and husbandry. It has to do with survival, poverty, food, population expansion, population control, and goes to the very roots of our attitude towards life. It calls in the resources of all biological sciences, from anthropology to ecology.

This is the grand design of conservation in the modern world. But these immensely complex questions seem hardly to concern the amateur entomologist.

So let us step down from the theoretical heights to the more immediately practical. Conservation in Africa means something very different from conservation in Britain. Africa needs to conserve its fauna in order to secure better living standards for its scattered populations and purely integrated ecological resources. The pressing need to achieve this purely practical end has been shown at the recent Arusha conference. There, scientific conservation points the way to arresting massive erosion, to a more concentrated and har-

monious exploitation of land for food, a re-patterning of food potential throughout the continent, and the eradication of endemic disease belts. Conservation in Africa has to do with survival. There is not a great deal here that is of direct concern to the amateur entomologist.

Climate, ecology, population density, industry and wealth are so different in this country that conservation must mean something very different. Conservation in Britain can almost be viewed as a luxury and not the necessity it is in Africa and in other parts of the world. Here it aims at checking urban spread and the biological sterilisation which goes with it. It aims at establishing enclaves where flora and fauna are protected, where they can be observed enjoyed and studied scientifically. Individual species of insect, plant or bird can be given such protection as may ensure their survival instead of extinction. These are, if I may exaggerate a little, tiny open-air museums.

These are, as I say, relatively unimportant luxuries our luxurious society can afford. Nature here seems such an agreeable and obliging companion to our possession of the earth that we can afford to take an indulgent attitude towards leaving bits of her to develop as she chooses. We do not really depend on her for our existence. We may need nature's co-operation here and there, but our technology has her under control. We are surrounded by well-bred dogs, not hyenas; we are bitten by tiresome midges, not by malaria-carrying mosquitoes; our cattle may be bothered by bot-flies, but they are not decimated by tsetse. One has only to go as far as the Mediterranean lands to see that man's values in relation to nature are already different from ours. There is, in short, no sense of urgency about protecting our fauna. Our desire to preserve a languishing species of butterfly springs from sentiment, not need.

Conservation in a robust agriculture has a slightly greater appearance of necessity. Ecologists have been pointing this out to us for years, but a popular response only comes about when we read of birds in painful death-throes from some hypertoxic seed-dressing. For the rest, it is a problem for the farmers to sort out, Not for the amateur entomologist.

Only the older generation of amateur entomologist has strong feelings about conservation, I suspect. Mr. Tesch, for instance, has written how much richer the New Forest was in butterflies when he was a lad. But the young naturalist cannot make such comparisons. He knows only what he experiences. What he experiences is immediate and is not in an historical perspective. You start looking backwards as you approach the age of forty; you then begin to gauge mistakes; you seek to preserve what is valuable; you become aware of guilt and anxiety about things which seem to have been mismanaged wasted, neglected. It is then that you wish to make restitution before it is too late. It would be unreasonable to expect a young entomologist to share such feelings and have the knowledge which synthesises them, unless. . . .

Unless the pursuit of the amateur is encouraged to spread from the particular to the general, from the isolated interest to broader relationships.

The amateur entomologist, lacking the responsibility and discipline of professionalism (which is not, in itself, always an advantage), tends to be self-centred. Self-centred, I mean, in the relationship between himself and his hobby. Wider implications of his interest do not have to concern him. His entomology, one might almost say, is a personal and half-secret vice. Well, eccentricity, if you prefer. Inherent in eccentricity is separation, a cut-offness from the general growth of knowledge, experience, values, even wisdom, as far as one can attain it.

To be interested in the multiplicity of problems sheltering under the general term 'conservation' means thinking about ecology, relationships between all living organisms and, above all, about the relationship between man and his environment. And the moment one begins to give these matters serious thought, the conflict of diverse vested interests leads easily to confusion, from which balanced judgment is wrested ultimately only out of experience.

So we must start with our restricted entomological preference and be willing to let it progress outwards towards the wider issues of which the problem of conservation is the most important. What conservation means must be allowed to grow out of what we already know and experience. As we permit our entomological experience to radiate outwards, we move from our original self-centred hub towards an understanding of ecology, a bleak scientific word which, in fact, embraces the whole of our objective and subjective world. To become aware of relationships—plant, animal, human—means the capacity to grow and enlarge and change. All life does this, and the human mind and feeling-life should not be made an exception.

To return, where I began, with Mr. Howarth's complaint. The trouble with the word 'conservation' is that the problems it encloses are so large, we are unable to see them. It is like an homochromic insect. Once its outline on the protecting bark has been pointed out, its presence is obvious. For most of us, I suspect, conservation is a pale grey word on a pale grey background. Might not the first step towards recognising its presence be for Mr. Howarth, and then others, to write and say how the principles of conservation really relate to our several and private entomological eccentricities? To take our imagination and understanding beyond 'collectors' to 'naturalists'.

A. N. Brangham (18).

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ANNUAL EXHIBITION, 1961

It was with some misgiving that the Council decided to forsake Buckingham Gate School and to seek new premises for this year's Exhibition. But more space was needed. The Hugh Myddelton Secondary School was selected and proved a very happy choice. The large gathering were able to move about in comfort, and dealers and exhibitors had ample room.

Thanks to the energy of our Organiser, Dr. K. J. Fox, and the excellent co-operation of members and friends, a fine and varied show was provided. Regretably, time prevented a full list of exhibits being obtained and it is hoped that in future, exhibitors will provide a small signed account so that a complete record is available.

In past years, exhibits have been noted alphabetically under the surnames of members, but an attempt has been made this year to group them more conveniently in separate sections. It is requested that the very brief notes given should be amplified by more detailed articles from their respective authors.

Hemiptera

K. C. Side (2140), showed a representative collection of the sub-order Heteroptera. These comprised Plant-bugs and Water-bugs. Among the better known species were Capsid-bugs (Capsidae), Water Boatman and the Bed-bug (*Cimex lectularius* L.)

Coleoptera

Miss K. Paviour-Smith presented details of a large scale investigation of two beetles, *Tetratoma fungorum* L. and *Cis bilamellatus* Fowler, feeding on the familiar bracket fungus, parasitic on birch trees. This was splendidly illustrated by large photographs, taken by Mr. D. A. Kempson. The life cycles of the two beetles were being worked out, reasons sought why only certain trees were favoured and a large scale map traced the spread of the species across Gt. Britain. Accurate records would be gratefully received.

J. Vincent (3027), provided large scale drawings of beetles prepared for reproduction in a text book.

H. J. Cribb (2644) showed a selection of Longicorn beetles (Cerambycidae) whose larvae form the bulk of the wood borers in this country.

Lepidoptera

In this order the Hawk Moths (Sphingidae) and Prominents (Notodontidae) were selected for special representation this year. A good number of members, including R. N. Ashlin 2987, J. J. Dillon , R. A. Jarman 2706, C. Newman 3319, and B. F. Skinner 2470, provided excellent collections. Fine series of Death's Head Hawk Moth (*A. atropos*) were especially admired.

We were very pleased to welcome Professor G. C. Varley. With photographs and specimens he illustrated the peculiar structures of male moths loosely known as 'scent brushes'. Despite the overwhelming attention devoted to lepidoptera, little was known about them and their purpose and the majority of lepidopterists were hardly aware of their existence.

Many members showed butterflies and moths from special localities and other countries. Among them, it was especially pleasing to see the excellent work of Junior Members.

A. W. Berk (3341)—Butterflies of my Village (Droxford, Hants).
W. L. Coleridge (2194)—Devon Insects.
Dr. K. G. Fox—Insects from Dungeness.

B. O. C. Gardiner (225)—Larvae with poison hairs (Hemileucidae from South America.
R. F. Haynes (834)—Irish insects.
R. A. Jarman (2760)—Typical pupae and cocoons.
R. F. McCormick—Lepidoptera at M.V. trap in a London suburb. (Streatham).
C. Newman (3319)—Lepidoptera from Austria.
Dr. A. H. Newton (1140)—Typical Zululand insects.
R. Roylis (3257)—Australian Butterflies.
L. W. Siggs (243)—Insects and photographs from the New Forest.
C. Spilling (3216)—Insects from Kirkcudbrightshire (Scotland).
B. R. Stallwood (1547)—Large collection of East African Butterflies, formed by our late member, A. L. Townsend (1691).
P. Trigg (3271)—Drawings of Larvae.
C. A. Wraight (2830)—Lepidoptera from the Black Mountains.
General collections of British Lepidoptera were shown by: R. J. Couter, (3161), P. W. Cribb (2270), M. J. Friend (2786), R. D. Hilliard (99), J. Jenner (3172), D. A. Kenyon, D. M. Lloyd (3002), R. Osborne (2437) and T. S. Robertson (2417).

There still seems to be a lack of enthusiasm for the micro-lepidoptera but those presented were excellent.
M. E. Castle (2490)—Crambid and Plume Moths (Pyralidae).
D Ollevant (1514)—Micro-Lepidoptera taken and bred in 1961.
A. N. Thomas (2687)—Detailed method of preserving 'Micros' in small slides. Top and undersides could be seen perfectly and a whole collection could be housed in a medium-sized box. Initially, however, it was still necessary to set the moth and subsequently to remove the pin.
R. W. Uffen (1660)—Larvae of Coleophorid Moths feeding on seed and flower heads etc.

Saturniidae—(Silkmoths).

In contrast to the last section, the breeding and study of the exotic silkmoths gains more devotees. The larvae are, for the most part, large and colourful, many adapt themselves well to our climate with some frost and damp protection in winter and most thrive on easily obtained British trees and plants. The A.E.S. Silkmoth Rearer's Handbook is the indispensible reference book and specialist dealers will provide a wealth of material.
S. Cooter (3296)—Collection of set specimens.
S. H. Drake (2967)—A large number of life-size paintings.
M. J. Friend (2786)—A selection of bred species.
N. Hoskins—Photographs of interesting species.
N. Wilding (2528)—Full life history of *R. fugax*, a Japanese species.

General Items

J. M. Bingham (3196)—Full life history of Great Wood Wasp (*Sirex gigas*). A female, exclusive of her ovipositer, measured 1½ inches. The larvae cause extensive damage by burrowing into the heartwood of conifers.
M. E. Castle (2490)—The construction of an ingenious apparatus for close-up photography and also an example of his 'Head mounted lamp' for use when 'sugaring' etc.
T. E. Cooper (2343)—A miniature moss garden studded with plants of the Round-leaved Sundew (*D. rotundifolia*).
—.Crane—A detailed description of a simple method of Close-up photography of insects using only a 127 Brownie camera and simply constructed apparatus. Examples of his work were most convincing and it is hoped to publish fuller details in the *Bulletin*.
P. F. Gent (192)—An experimental observation cage for the purpose of viewing the habits of small bees. Nests and foraging sites were connected by glass tubes.
A. P. McGeery (3287)—Collection of British Dragonflies (Odonata).
Medical Research Council—We were indebted to Messrs. T. W. McSheehy and C. F. Wright for showing a revolutionary welded aluminium insect cabinet. Advantages claimed were, light weight, cheap to manufacture, damp proof and non-warping.
A. R. Middleton (2482)—Dissection of bird pellets showing the amazing diversity of undigested fragments.
R. Robinson (3201)—A formicarium housing the Yellow Ant (*L. flavus*). This species is noted for the extreme herding of aphids.

An unknown exhibitor showed a fine collection of paintings of plants with their respective galls. Comparatively little is known about these plant galls and more investigators are needed.

Another unknown exhibitor showed a collection of orthopteroids (cockroaches and grasshoppers etc.) from Greece. This interesting family is poorly represented in the British Isles (38 species), but several species have a worldwide distribution. The cockroach and the locust are economic pests.

For many years we have enjoyed the company of two large exhibitors, G. L. Ashby (2252), Curator of the Insect House at the London Zoo and the St. Ivo Natural History and Entomological Society from Huntingdon. The interests of both are worldwide and cover a great variety of living creatures. We thank the Council of the London Zoo for their assistance, and appreciate the enthusiasm of St. Ivo's in making the long trip to London each year, heavily laden.

The specimens shown, ranged from tortoises and alligators to spiders, snails and scorpions. British species seemed insignificant and colourless in comparison with the size, variety and brilliance of their exotic relations. Of special interest was the observation hive from the London Zoo containing two Queens. Presumably the second one would eventually supplant the original Queen. Also an instructive lay-out, loaned by courtesy of the Shell Chemicals Co., illustrating the present-day methods of Locust control. This was complimentary to the St. Ivo display.

Other special features were provided by Messrs. Gardner, Robertson and Uffen.

B. O. C. Gardiner (225) showed his film, 'Life History and Parasites of the Cabbage White Butterfly' illustrating his research work. Careful in-breeding over many generations had produced a pure line of virus-free stock. The introduction of wild stock invariably resulted in virus infection. The control of the species by the various parasites was shown by some very effective photography.

T. S. Robertson (2417) once again gave a demonstration of setting lepidoptera. It was extremely popular, especially with the younger members, and methods and technique were discussed.

R. W. J. Uffen (1660) gave a talk 'Micro-lepidoptera of Urban Areas'.

Practically every main dealer in Entomological requirements was represented at the exhibition, with comprehensive displays of books, apparatus and British and foreign living material. The full range of A.E.S. publications was on sale and a table was set aside for the wants and exchanges of members. The canteen facilities were very good.

In conclusion, the Council would like to thank all those members whose hard work made the exhibition a success, to record their appreciation of seeing so many members and friends present, and to extend a warm welcome to them to join us again next year.

R. D. Hilliard (99).

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NOTES FOR JUNIORS—II

BREEDING AND REARING THE BRITISH MACRO-LEPIDOPTERA

In my last instalment I put on record a few pointers towards the arrangement of a collection so that it may be of some scientific value as well as looking well set out in your cabinet or storeboxes. This month I want to give some attention to the question of breeding and rearing the early stages.

Anybody can dump a large number of caterpillars into an empty jam-jar and tie a piece of newspaper over the top with an elastic band—the newspaper pierced with air-holes or not, as the case may be—but don't expect your captures to survive if you give them such primitive treatment, as many boys do (especially small boys!). Some of these small boys also labour under the misapprehension that one small twig of foodplant will last the inmates a week or more.

Make up your mind that you will provide proper accommodation for your charges *before* setting out to look for them, or indusing a female butterfly or moth to lay you a batch of eggs. If you want to breed a large number of larvae, of various different species, then you will want a large number of proper receptacles for them at the outset; if you want to limit your scope somewhat and concentrate on only a few species to start with, or a small number of each then you need have fewer cages to start with, and can add to them later.

Eggs.—These are best kept in the round glass-topped tins sold by dealers specially for the purpose. I have never yet found an effective substitute, so I do not recommend you to start experimenting at this stage. Matchboxes, etc. are definitely not the kind of receptacle in which to keep eggs, or even young larvae, as some boys do. True, a female moth may lay a large number of eggs in a matchbox in your blazer pocket—in fact this happened to me only a few months ago. In an emergency, a female *pilosaria* was slipped into a matchbox in my coat pocket (moral: Always carry one or two different sized pillboxes for stray females (moths, I mean) you may meet with one on the way to school) and when I got home I found she had laid me about 700 eggs, all very neatly and precisely laid out in beautiful rows along the side of the box. However, larvae brought up in such overcrowded home conditions would doubtless turn out juvenile delinquents—so I transferred them to one of the glass-topped tins above referred to.

Never try to remove eggs from the material on which they were laid. Cut round the paper, cardboard, matchbox-wood, netting, withered leaf or what not, and deposit this, complete with the ova, into your tin. A circle should be cut from some good quality blotting-paper and put in first to line the bottom of the tin. This not only absorbs any excess moisture, but also affords a firmer foothold for the newly-hatched larvae than the bare tin. Never use coarse blotting or, worse still, cotton-wool or cellulose wadding, as these have loose fibres which can become entangled with the eggs, with disastrous results.

Do not put sprigs of the foodplant into a closed tin with unhatched eggs. If your eggs are in a ventilated cage, it is a different matter but I do not advise putting minute eggs into a huge cage, or you will have endless trouble in rounding up your baby larvae—if you manage the job at all, as more likely they will escape through even the minutest crannies, especially 'loopers', whose agility and adroitness as babies has to be seen to be believed—it is quite out of all proportion to their size, or to the slowness of their movements when they are older.

Baby Larvae. As soon as your ova start to hatch, introduce a small piece of the foodplant, and as soon as the larvae establish themselves upon this and are seen to start feeding (but not before, as many species make their first meal of their eggshells, which would seem to be essential to their well being), the sprig, complete with occupants, should be moved to a larger-size glass-topped tin, similarly lined with a circle of blotting. The sprig of foodplant should be changed every day, and the frass can be conveniently lifted out on the blotting for cleaning out. The blotting can be replaced with another piece when soiled, of course.

Cleanliness and hygiene cannot be over-estimated; more deaths occur from a lack of attention to this than from any other cause, excepting only overcrowding which takes the highest toll of all. NEVER overcrowd larvae, especially in the later instars; let Nature be your guide here. You never see large numbers of larvae crawling over one another in the wild state; even in the case of gregarious species, they usually give each other elbow-room, as it were, stripping branches systematically side by side, but here don't forget that they are surrounded by a lot of fresh air and a lot of fresh branches as well, and can move on when they feel like it.

JOY O. I. SPOCZYNSKA, (751).

(*to be continued*)

LETTER TO THE EDITOR

THE LOBSTER MOTH AT LIGHT

In reply to Mr. Grout's note on the Lobster moth *S. fagi*, on looking back to my notebook I find I have taken two or three of this species to mercury vapour light in Northamptonshire in early July 1958. However, in 1960 in the New Forest in early June this time, I found the Lobster a common visitor, a dozen being on the sheet at the same time, all were males. I would say the moth comes easily to mercury vapour light.

P. J. GENT (192).

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JUNIOR NEWS SECTION

Editorial

One of the best-known advantages of being a schoolmaster is the long summer holiday. For the entomologist it is almost, but not quite ideal. I say "not quite" because after a few years it becomes apparent that some of the species one wishes to find can only be obtained by going some hundreds of miles in June or July—when the school term is in full swing. To my surprise, I was able this summer to see a butterfly which had eluded me since my student days. With members of the Lyonian Natural History Society (2295†) we were enjoying a camping Natural History Expedition in Perthshire. A sunny but rather cold day found us near the summit of one of Scotland's highest mountains on 14th August. On the lower slopes plenty of insects had been seen, including the Meadow Brown (*Maniola jurtina* Linn.); Small Heath (*Coenonympha pamphilis* Linn.); Dark Green Fritillary (*Argynnis aglaia* Linn.); Small Tortoiseshell (*Aglais urticae* Linn.); Common Blue (*Polyommatus icarus* Rott.); and Green-Veined White (*Pieris napi* Linn.). Higher up, insects were few, but we detected at rest in the grass, one Mountain Ringlet (*Erebia epiphron* Koch.). This species I always associate with late June in Scotland, and it was indeed gratifying to see it so unexpectedly at so late a date.

Harking back to a topic discussed last year (*Bull. amat. Ent. Soc.*, **19**: 24 and 89) I have been re-examining Small Copper butterflies (*Lycaena phlaeas* Linn.) to try to get a clearer idea of the incidence of blue spotting on the hind-wings (var. *coeruleopunctata*). My son has gone through our extensive collection of specimens (typical and otherwise) from various parts of England, Wales, Scotland and the Hebrides. He has recorded the numbers and percentages of specimens with the numbers of blue spots on the wings. (Since some specimens differ in the number on the two wings, those with say, 3 on one wing and 4 on the other have been grouped with those with 4 on each side to form a group with "7 or 8" spots in this table). Here are his results in tabular and graphical form.

No. of Spots Blue	0		1 or 2		3 or 4		5 or 6		7 or 8		9 or 10		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
♂	67	58·8	15	13·2	8	7·0	13	11·4	11	9·6			114
♀	54	52·9	8	7·8	10	9·8	10	9·8	19	18·7	1	1·0	102

The results raise more questions than they answer. It looks as though the butterflies tend to be either well-marked, with 3 or 4 blue spots on each hind-wing; or completely lacking spots. Those with only one or two spots on each wing, appear to be much fewer. However, is our sample large enough to be significant? Moreover, have we unconsciously selected the well-marked ones in our collecting, thus artificially producing the two peaks on the graph? Further research on these lines by some enterprising Junior would be welcome.

News from Members

W. W. Page (3299*) has been studying Silkmoths with the aid of the "Silkmoth Rearer's Handbook" published by the A.E.S. He has been collecting and breeding butterflies and moths for three years and sent me this report on his activities:—

"Last year I had some luck with British Lepidoptera. I found a short gravel lane near Epping with an abundance of Honeysuckle and Bramble. I only went four times, but in that time I saw five White Admirals, a Silver-washed Fritillary, and a Gatekeeper with three spots on both forewings".

In the June *Bulletin* I mentioned breeding experiments on the dung beetle *Typhoeus typhoeus* L. carried out by M. J. Foreman (3079*) and threw doubt on some of his conclusions, particularly about the relationship with the incidence of rabbits. He follows up in these terms:—

"Regarding your enquiry as to the distribution of rabbits in the Teddington area, I found only one warren within an area of about a square mile. There are, however, several copses to which the public are not allowed admittance and it is possible that there are a few in these. In reference to my breeding experiments, unfortunately I was unsuccessful in my attempt. This, I feel, was due to there being insufficient depth of soil under the dung. I am setting up another experiment which I hope will be more successful as the beetles are given more freedom".

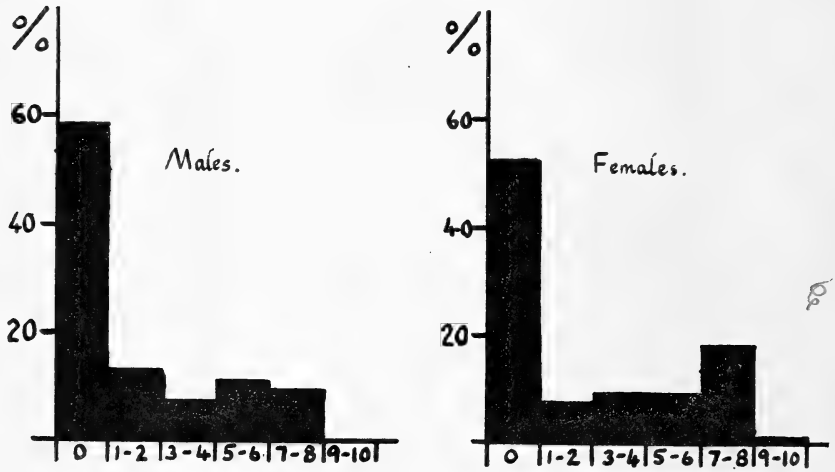
There follows in his account, a drawing of his new breeding container, about two foot deep with dung spread on loam, then a deep layer of sandy soil. I hope we may have further progress reports.

Migrant Insects

My table of your records of early Spring butterflies has attracted the attention of Captain T. Dannreuther of the Insect Immigration Committee, since we have in it several records of the Red Admiral (*Vanessa atalanta* Linn.). He has asked me to pass on to the observers the Immigration Committee's record forms for them to fill in the details, and this I have done.

If any other Juniors have reliable records to add, on the Migrant Insects, they also may wish to receive record forms.

The Small Copper Butterfly (Lycaena phlaeas Linn).



Total no. of Blue Spots on both Hindwings.

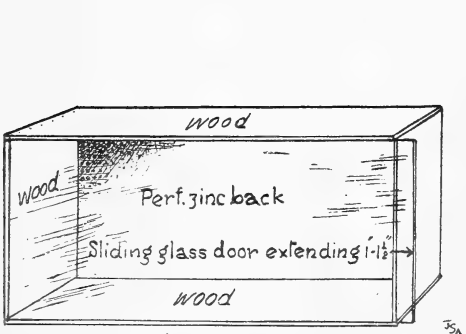


fig. 1

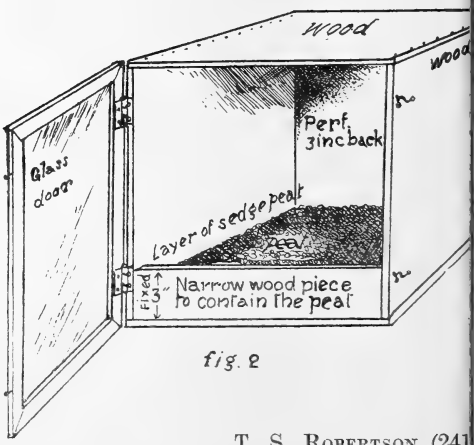


fig. 2

T. S. Robertson (241

Printed by T. Buncle & Co. Ltd., Arbroath, and published by the Amateur Entomologist's Society, 1 West Ham Lane, London, E.15. 1961.