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**THE BULLETIN  
OF  
THE AMATEUR  
ENTOMOLOGISTS'  
SOCIETY**

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

EDITED by PETER G. TAYLOR, B.Sc., F.R.E.S.



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- (e) By taking just that extra bit of trouble required to record happenings of note for the *Bulletin*.



## **PRESIDENT'S LETTER**

A number of alterations have been made in this Society, which I am sure will bring an all-round improvement.

Firstly, in an effort to improve the printing service we have changed our printers and so your *Bulletin* now appears in a slightly different form: we hope that you will like it.

I regret to announce that Mr Lawfield has resigned as *Bulletin* Editor due to ill health, but I am pleased to welcome his successor, Mr P.G. Taylor. Mr Taylor has been an enthusiastic member of this Society for 17 years and is determined to make a success of the *Bulletin*. Although retaining the same general policy, that is, to cater especially for beginners of all ages and also for the more advanced members, and to emphasise the study of living insects, he will be instituting a number of changes which, I am sure, will much improve the *Bulletin*.

Contributions to the *Bulletin* should be sent to Mr Peter G. Taylor, B.Sc., F.R.E.S., International Language Club, 12, Park Hill Rd., East Croydon, Surrey.

Obviously, the task of changing printers and Editor at the same time is not an easy one, and so it might not be until after two or three issues that this "new" *Bulletin* gets into its stride.

Mr Taylor will be assisted by an Editorial Board, and at the time of writing this letter the following members have agreed to serve on it:—Messrs R. W. J. Uffen, E. Lewis, L. Christie, T. S. Robertson, L. S. Whicher, B. F. Skinner, and D. Ollevant.

I am sure that members will join with me in wishing the "new" *Bulletin* success, and that whenever possible they will assist in making it so.

Another change is that I am pleased to report that the AES Council has co-opted Mr M. J. Friend to take over the Office of General Secretary with effect from the first of this month (January). I have known him for about four years and am quite confident that he will make an excellent Secretary. The Office of Assistant Secretary is now no longer needed, and I am very grateful to Mr B. F. Skinner for his valuable assistance.

D. Ollevant (1514), *President*.

## **EDITORIAL**

As you will doubtless have read in the President's Letter, the *Bulletin* is now "under new management" and you are in for a spell of editing by me. Like all Editors, I hope to make it a success, and intend that it should be scientifically faultless, yet readable; always meticulously written (or edited!) in flawless English; usually serious; always responsible and helpful; occasionally humorous. Whatever I make of it, I do not intend to write it, so, "in the words of the prophet," it all depends on YOU! In short, I can publish what *you* are willing to write, so please let me have any item that you can contribute (yes, you!), be it ever so humble. You'd be surprised how many of your fellow-members would be just as interested as you were when you noticed that curious little bit of behaviour of the caterpillars you have been rearing, and how many would be (almost) as thrilled as you were when you turned up that uncommon beetle in an unexpected place.

If some of you Juniors aren't too happy about writing something to go

into print, don't worry: we'll soon straighten it out. That's what editors are for. Let's have something from you older, more experienced Members, too. You remember that old boy who gave you a leg-up when you were a beginner, fumbling in the dark? He wasn't niggardly with his tips and "wrinkles", was he? His main concern was whether his help and advice were made use of and appreciated. Were they? Come on, then, and give of your experience to our own beginners struggling in their darkness.

Now that I've got that lot off my chest, I really should like to put on record how very grateful we all are to Mr W. N. Lawfield for coming to our aid and piloting us through troubled times. He is a very busy man, and could ill spare the time that must be devoted to a job such as this.

While I'm in the mood for thanking people, I am sure I speak for all of us when I say how much we feel indebted to Mr D. Ollevant, who has been the mainstay of the Society for some years now. Not only has he been our President during the present year, but he has also carried out most efficiently and conscientiously the arduous task of Honorary Secretary for the past seven years, and for a considerable period has done much hard work as Assistant Editor of the *Bulletin*. It is also not generally realised that, to while away his spare time, Mr Ollevant has patiently and painstakingly dealt with numbers of queries from Members, either answering them himself or farming them out to specialists in fields other than his own. Such is his devotion to the AES that he has quite broken his health in serving us, yet such is his modesty that I shall have him about my ears when he reads this! He now hopes to spend a little more than the 15 minutes a day (during the lunch-hour!) that he has been able to devote to practical entomology.

In his President's Letter, Mr Ollevant has relieved me of some of the burden of describing my intentions for the *Bulletin*, but there are still a few points I should like to put to you.

I shall publish nothing that is not as accurate and correct as the combined efforts of the author and me can make it.

I shall ensure that, wherever possible, no genuine question is published unless accompanied by at least one reply (even though I have to write it myself) the author of which will be indicated.

I shall try to include more reviews of books—not only new ones—likely to be of interest and value to Members.

From what I hear, from both editorial staff and other Members, many of the latter are more than a little hazy about how to prepare something they have written and would like to offer for publication in the *Bulletin*. To help such people, and to clarify the position for more experienced writers, I have compiled some directions for the guidance of would-be contributors, and print them in this issue ("How To Submit Contributions"). As this seems to be a perennial problem, they will be printed in full at regular intervals (probably once a year). In the fulness of time—when I have found out where the errors and omissions are, and corrected them; and when I get around to cutting the stencil, I shall have them duplicated, for despatch on request and receipt of a stamped, addressed envelope, to any Member who seriously contemplates becoming a more-or-less frequent contributor to the *Bulletin*.

In any case, I am arranging for a *résumé* to be published in one of the cover-panels in every issue of the *Bulletin*.

As you can see, we have made a radical change in the appearance of the *Bulletin*. We had heard a number of complaints about the small type used for it, and that, especially when this was combined with page-width lines, it was

trying to the eyes; and, to tell the truth, we found it rather trying ourselves! Accordingly we have, rather by way of an experiment which we hope will appeal to Members, not only increased the size of type a little and returned to the far more readable two columns, but changed the type-face too. We hope the new type especially, and the "new look" generally will appeal to Members, and that its clarity and lack of "fuss" will help to encourage a sharp, clear, uncluttered appraisal of the matter which it sets out.

Peter G. Taylor (719).

## HOW TO SUBMIT CONTRIBUTIONS

(1) If possible, please submit type-written "copy". If it is type-written, please ensure that it is fully double-spaced (i.e., that there is a whole line empty between successive lines of type) with very wide margins (1½ inches on the left; at least one inch on the right) but do not rule the margins. It must be on ONE SIDE ONLY of quarto paper.

(2) If it is not possible to type your "copy" ("copy" is the technical name for material submitted to a printer), please make quite sure that it is very clearly written, so that it cannot be mis-read. It is a good plan to get a friend to read your manuscript back to you *aloud*—you'd be surprised how easy it is for someone who isn't actually thinking your thoughts to misinterpret what seemed as clear as crystal to you! This is especially important in view of our use of Continental printers, for, although I intend to send them only type-written copy, this may involve much hard work by other Members or their friends (who may know nothing at all about science and its conventions), and I may occasionally be cornered into sending manuscript. Printers, too, are

not scientists, and Continental handwriting is very different in style from ours, to say nothing of its being in a language other than the printer's mother-tongue.

(3) The title must be in capital letters all through, NOT underlined (that means "italics" to a printer), and centrally placed across the page.

(4) The author's (or authors') name(s), followed by AES Membership No(s). in parentheses, must be placed at the end of the article on the right-hand side, on a different line from the text, and also in capital letters throughout, NOT underlined.

(5) The date of writing, in the simplest, neatest, most logical way of writing it, should be placed on the left, opposite the author's name. (*Example*: 25.12.61.)

(6) ALL species of insects, and of other living things (where *exactly* identified), to be named with their *full* scientific names, i.e., *full* name of genus with a capital initial letter; correct specific name with *small* initial letter (these two to be underlined unless occurring in a passage of which the text is to be in italics and therefore itself underlined); name of *author* of that scientific name (or standard abbreviation of it.—N.B:—"Linnaeus" and "Fabricius" to be abbreviated to "Linn." and "Fab." respectively, NOT "L." and "F.", with all respect to the memory of these great men!) with a capital initial letter and NOT underlined.

(7) If, and *only* if, there is a *regularly* used English name, this is to be added, in parentheses after the scientific name, with *each word* of the name having a capital initial letter, e.g.—

*Aglais urticae* Linn. (Small Tortoiseshell).

(8) If you don't know any item of this information, *don't* just leave it out, but leave a good-sized gap, so that the Editor can fill it in for you. (Make sure, of course, that you *have* supplied enough

information for him to identify the species that you are referring to!)

(9) Once you have given the *full* names of a species, you may, if you wish, refer to it further in the same article by its English name alone (if any), or by its scientific name alone. If the latter, and no confusion can possibly arise by doing so, you may, if you wish, omit the author's name altogether and/or abbreviate the generic name to its initial letter, followed by a so-called "full stop".

(10) If you use the name of a genus on its own underline it, and if it is followed by "sp." (singular) or "spp." (plural) meaning "species", this is *not* to be underlined.

(11) ALL scientific names of groups above the rank of genus must have a capital initial letter and *not* be underlined. If you use an adjective made from one of these names (e.g., hymenopterous) or a noun, formed similarly but referring to a student of the concerned group (e.g., lepidopterist), give them small initial letters. If, however, you take such an adjective (as in "an agromyzid fly") and use it as a noun ("an Agromyzid") it is usual to give it a capital initial letter.

(12) If you use an English vernacular word that does not attempt to identify a *species* of living thing (e.g., oak, elm, grass, beetle, butterfly, lady-bird, cow, etc.) do not give it a capital letter (unless, of course, it begins a sentence!).

(13) If you should submit an offering that is primarily "literary", "stylistic" rather than merely the careful setting down of scientific information (and the Editor, forgive him, must necessarily be the final arbiter in such cases!), the above rules will, of course, be suitably waived.

(14) Last, but by no means least, please count the actual number of words in your contribution (excluding title and signature, but counting groups of initials and abbreviations as one word

each) and write it, in PENCIL and ringed round, in the top right-hand corner of the first sheet of each article.

(15) If the contribution needs any illustration, and you feel like submitting your own drawings for publication, these *must* be twice as big, in both height and width, as they are to be printed, and drawn clearly in *black Indian ink* on *white* Bristol board, which you can buy from any good stationer or artists' sundriesman. Otherwise they will not reproduce properly, and printing-blocks are expensive! (Don't forget that any writing will come out half-size, too.) If you don't feel able to make your own drawings for publication, send the best you can and we shall try to find another Member to produce fair versions that *will* reproduce.

(16) Your copy will be checked carefully for possible ambiguity, accuracy of English and of naming, and, if there is time, any *major* alterations sent to you for approval before printing (it's advisable to keep a copy of the original).

(17) When the final form of your copy has been agreed on (between you and the Editor), or, in the absence of any major alteration(s), as soon as possible, it will be sent to the printer at an appropriate time (this *may not* be the next month!).

(18) When the Editor receives the proofs of your article he will send you a copy for a final check. You will have this for only a *strictly limited time*.

(19) If it is satisfactory, please return it to the Editor, marked "O.K." and signed and dated.

(20) If there is anything you *must* have altered, and the change meets with the Editor's approval, he will instruct the printer to make the alteration.

(21) If you and the Editor cannot agree, the item will not be published.

(22) If you fail to return the proof of your article within the time limit, it will be printed as it stands, or with any compositor's errors corrected.

The Editor's address is:—

*The International Language Club,*  
12, Park Hill Road,  
EAST CROYDON,  
Surrey.

These instructions will be published in the *Bulletin* at regular intervals (at least once a year) with a *résumé* in each issue, in the form of a cover-panel. As soon as possible they will be duplicated and sent on request to any Member (stamped, addressed envelope, please) seriously contemplating becoming a fairly regular contributor.

Peter G. Taylor (719), Editor.

## COLLECTING NOTES - January

### *The Macrolepidoptera*

It is still not too late to go digging around the roots of trees for overwintering pupae, but remember that there is little "cover" for ovipositing female moths near solitary trees, and that hard, trampled soil will deter larvae from burrowing, and the further they walk, the larger the area available to them, so that your chances of finding them decrease in proportion to the square of the distance. Also, hard earth, like stony or rooty soil, decreases your chances of retrieving *undamaged* pupae (you don't use a bulldozer to find a man buried under a collapsed building!). Pupae "breathe" air, so you won't find many if the ground is waterlogged or subject to floods. Furthermore, if there is ivy on the tree, or if it has a sheaf of shoots growing up around its base, don't bother: it's odds-on that any larvae would have stopped short and pupated there. Finally, bags of patience, stout knee-pads, a bottle of embrocation (for your back) and *the best of British luck!*

Even at this time of year there are mild nights, and you can often find numbers of larvae, especially those of "Noctuids" if you search low-growing plants on such nights, using a not-too-bright torch. Pay particular attention to the undersides of leaves—but be very careful, for most of these larvae curl up into a ring, let go, and fall into the grass-roots (where they are impossible to find and/or retrieve unharmed) at the slightest touch. If you are contemplating such activities in, or within sight of, a public place, it is a politic move to "prime" your collecting-box with several larvae from your cages before leaving home: not to make your captures feel welcome, but to do duty as "Exhibit A" to substantiate your rather unlikely-sounding story should you have no luck and are investigated by an "arm of the law". A copy of the *Bulletin* in your pocket ("I just happened to have it with me, Officer") doesn't do any harm, either!

If you happen to know of places where any of our Hairstreaks of the genera *Thecla* and *Strymonidia* lay their eggs, surprisingly enough, searching pays dividends—the ova are very conspicuous, and a quick scanning of each twig *from all sides* readily reveals them, placed singly close to the base of a side-branch or a bud. (Yes, I *have* done it, and successfully!)

Finally, have you tried bait-trapping?

Peter G. Taylor (719).

### *The Smaller Moths*

Now that the oak trees are bare, it is easier to see the oak-galls, and these may be collected, placed in flower-pots or other well-drained containers, and left out in the open until about the middle of March. I have also been successful by keeping them in tobacco-tins, but only with the spongy galls. The larvae go into them to pupate and several species may be bred of both the

Tortricoidea and the Tineoidea. I should be very interested if any member who tries this method of collecting would publish in the *Bulletin* a list of the species bred from these galls. Incidentally, the number of hymenopterous insects bred from them will amaze the lepidopterist.

*Artemisia vulgaris* Linn. (Mugwort) is a plant which usually grows on disturbed ground, and is particularly common on the bits of waste ground in Suburbia which the tidy-minded authorities sometimes miss. In the South-East the larvae of *Pyrausta nubilalis* Huebner may be found feeding in the stems. Their presence will be revealed by the holes in the stem, under each being the bits of chewed-up wood and frass, often caught in cob-webs. The roots of this plant are attacked by the larvae of *Eucosma foenella* Linn. and *Hemimene simpliciana* Haworth. The former can be found by snapping off the stems near to the ground, thus revealing the webbing made and left in the stems by the larvae. The roots should be dug up, cut down to more manageable proportions, and then stored out-of-doors for the rest of the winter—but make them safe from the birds.

Galls, roots and stems should be put into breeding-cages or other suitable places so that the moths can be easily seen and caught when they emerge.

D. Ollevant (1514).

### The Coleoptera

January is a good month for the coleopterist to examine the dead shoots of *Typha* or reed-mace. There are two British species of *Typha* but there is probably little difference in the beetles associated with them and both species are equally well worth working. The plant grows in reed-swamps, shallow lakes and ponds, canals and slow-flowing rivers, often forming a

dense stand covering a large area. The bases of the leaves sheathe the stem and overlap each other so that the base of the plant consists of a number of tightly rolled layers. In winter, when the plant has withered and turned brown, the lower parts remain standing up out of the water until the next season's growth overtops them.

The layers of dead leaves can be peeled off one by one. This should be done over a white sheet. Many species of beetles and other insects will be found hibernating between the layers. Some of the beetles feed on other aquatic plants during the summer and move on to the *Typha* for winter shelter. Others are predators using it as a snug hibernating place. A few are definitely associated with the plant and are seldom found off it.

An hour's collecting as described above produced the beetles listed below. The date was Jan. 21st, 1961 and the locality a flooded gravel-pit in West Kent. Other localities will provide the collector with a different set of beetles but it should be equally interesting. The species taken were:—*Alianta incana* Er., *Hygronoma dimidiata* Grav., *Tachyporus nitidulus* Fab., *Telmatophilus typhae* Fall., *Coccidula rufa* Hbst., *Coccidula scutellata* Hbst. and *Anisosticta 19-punctata* Linn.

Of the many other species taken from *Typha* stems on various occasions the more interesting are:—*Telmatophilus schönherrii* Gyll., *Atomaria gutta* Steph., *Melanophthalma transversalis* Gyll., *Notaris scirpi* Fab., *Phytonomus nigrirostris* Fab. and *Tanysphyrus lemnae* Pk.  
K. C. Side (2140).



## NATIONAL NATURE WEEK 1963

The Council for Nature's National

Nature Week has been fixed for 18th-25th May, 1963. The centre-piece will be an exhibition to be held in the New Hall of the Royal Horticultural Society in Westminster. It is hoped that there will be exhibits from the Nature Conservancy, the Forestry Commission, the National Parks Commission and other national bodies, as well as a section of trade exhibits for books and other goods of interest to naturalists.

The aim of the Week is to win for the natural history movement increased support from the public and to improve the financial state of the voluntary bodies in membership of the Council (the AES is a member). This will be done by means of publicity through the media of the press, radio and television. Apart from the exhibition mentioned above there will be other events in London, and the Council for Nature intends to assist local natural history societies in arranging exhibitions in their own areas.

The Council for Nature also announces that a prize of fifty guineas will be awarded for the best design for an emblem to be used in connection with the Week. The design must be fairly simple and suitable for wide reproduction, but should not represent an individual bird, mammal, insect or plant alone. The winning design is likely to be adopted as the permanent emblem of the Council for Nature. Designs approximately twelve inches by fifteen inches in size should reach the Secretary of the Council at 41 Queen's Gate, London, S.W.7. not later than 15th January, 1962.

This information has been extracted from the Council for Nature Intelligence Unit's Monthly Press Bulletins.

The AES Council will ensure that the Society takes part in this "Week", and Members will be informed when arrangements have been made.

D. Ollevant (1514).

## POPLARS IN LONDON

I am pleased to see that London's poplars have aroused the curiosity of Mr L. R. Staines (*Bull. amat. Ent. Soc.*, **20** : 101). I have long been aware of the substantial fauna on them, which deserves more investigation than I have yet had time for.

There are a couple of Black Poplars (*Populus nigra* Linn.) in the next road to mine, and long rows of similar trees about a mile away. All are cut back with depressing regularity. They harbour several kinds of sawflies which I have never tried to rear; several species of "Macro" moths, including *Laothoe populi* Linn. (Poplar Hawk), *Cerura vinula* Linn. (Puss), *Tethea ocularis* Linn. (Figure of Eighty), *Apatele megacephala* Fab. (Poplar Grey), *Catocala nupta* Linn. (Red Underwing); quite a variety of Microlepidoptera, most noticeably *Gypsonoma* spp. (Tortricidae) which sit on tree-trunks and fences; not to mention the many groups which are passed over through lack of time or literature for identifying them. Stag beetles (*Lucanus cervus* Linn.) in the vicinity are almost certainly from the roots of these rows of trees.

In late September there are three kinds of leaf-miners to be seen; the moths *Stigmatella trimaculella* Haw. (in short irregular galleries on the upper-side) and *Phyllocnistis suffusella* Zell. (in long faint mines like snail-tracks, pupating in a turned edge of a leaf), and an agromyzid fly of uncertain identity (in pale-green galleries on both sides of the leaves).

Also near my home are rows of mature Lombardy Poplars (*Populus italica* (Duroi) Moench), on which I find disappointingly small numbers of these insects, except for the numbers of brightly-spotted sawfly larvae, or prepupae, which come down at one time of the year. I have always wanted to find

out whether the difference in the fauna is real or illusory, and, if real, whether it reflects the species of tree or only the state and position of the trees. The Lombardy Poplar has small leaves with the aromatic resin of the buds very persistent, and this must affect many larvae in the spring. The trees are large, and of course upright, so that one cannot collect from any significant proportion of any tree without climbing it. They are on the edge of a park with hard-trampled earth at the foot of the trunks, and all dead leaves are swept away. This must deprive some species of their usual pupation sites. The Black Poplars, by contrast, are in gardens or waste ground, with crumbly soil available nearer to the trunks. Being cut back, the foliage they produce is on long, succulent shoots. Comparison between these types of tree can thus be very misleading. It seems that Mr Staines has more comparable trees in his area, so I hope that he will make some more observations.

The black-and-white *Gypsonoma* species are worth collecting in numbers. They are variable, and some varieties are probably characteristic of urban situations. The larvae feed in the leaves and shoots in distinctly different ways and consequently the species on trees which are lopped are probably different from those on uncut trees.

R. W. J. Uffen (1660).

## THE ROBIN THAT DIDN'T RETURN

On Monday, 24th July 1961, a large, brightly coloured moth was found on the outside wall of Messrs George Payne & Co's factory in Croydon Road, Waddon, by two members of the staff, Mrs D. Seabrook and Miss B. Jennings. Croydon Public Libraries suggested the

Secretary of the Entomology Section of the Croydon Natural History & Scientific Society as the most likely local person to know the identity of the specimen. By a remarkable piece of good fortune he was on holiday at home, and able to call within an hour or two. By a remarkable piece of good fortune it turned out to be one of the two foreign silk-moths he can recognize; and a lengthy telephone call to Mr Christie who, by a remarkable piece of good fortune, was sitting by his telephone waiting for somebody to ring him up with just such an enquiry, confirmed its identity as a male *Samia cecropia* Linn. (the Robin Moth), a native of North America. No doubt it had escaped from the cages of some nearby breeder of silk-moths. The specimen, expertly set by Mr Christie, was exhibited at the joint meeting of the Croydon Natural History and Scientific Society (Entomology Section) and the AES Members who live locally, on the 4th September.

Ernest Lewis (952).

## REVIEWS

**The Nigerian Butterflies. An Atlas of Plates and Notes.** By John Boorman and Patrick Roche.

Part I: Papilionidae. Pp: 7. 31 plates (black and white). 1957. Price 10/-.

Part V: Nymphalidae, Section III. Pp: 19. 47 plates (black and white). 1959. Price 15/-.

Published by Ibadan University Press, and obtainable from the University Bookshop, University College, Ibadan, Nigeria.

These two parts of a series to illustrate the butterflies of Nigeria and the

British Cameroons are written by an ex-member of the AES, John Boorman, and by a present member, Dr Roche.

They consist of brief notes on identification (chiefly to translate the black and white of the plates into colour) and very brief notes on the distribution.

Section III of the Nymphalidae illustrates the species of 26 genera, from *Hamanumida* to *Issoria*, and includes the well-known *Precis*, *Kallima* and *Vanessa*.

The books are paper-backed, but printed on good-quality paper. The plates show the butterflies life-size, and include the underside when it is necessary for identification.

Using the valuable notes with the photographs it should be quite easy for anyone, amateur or professional, to identify these butterflies; and these books will be of value not only to the European visitor to, or resident of, this region, and to the collector at home, but also, it is to be hoped, to the Nigerians themselves when in the future they will probably take more interest in spare-time pastimes such as entomology.

I hope that the authors are able to complete the series and that the publishers are able to maintain the very reasonable price of these first two parts.

D. O.

### **Warwick Natural History Society. Seventh Annual Report. April 1961.**

Price not stated. Published by the Society at the County Museum, Warwick. Pp: 24.

The most interesting paper in this report is one by G. H. Knight called "Some Problems in Pollination". As these problems are concerned with insect-pollination of four common wild-flowers they are of particular interest to amateur entomologists. These four are the Honeysuckle, Primrose, Red Campion, and Bluebell.

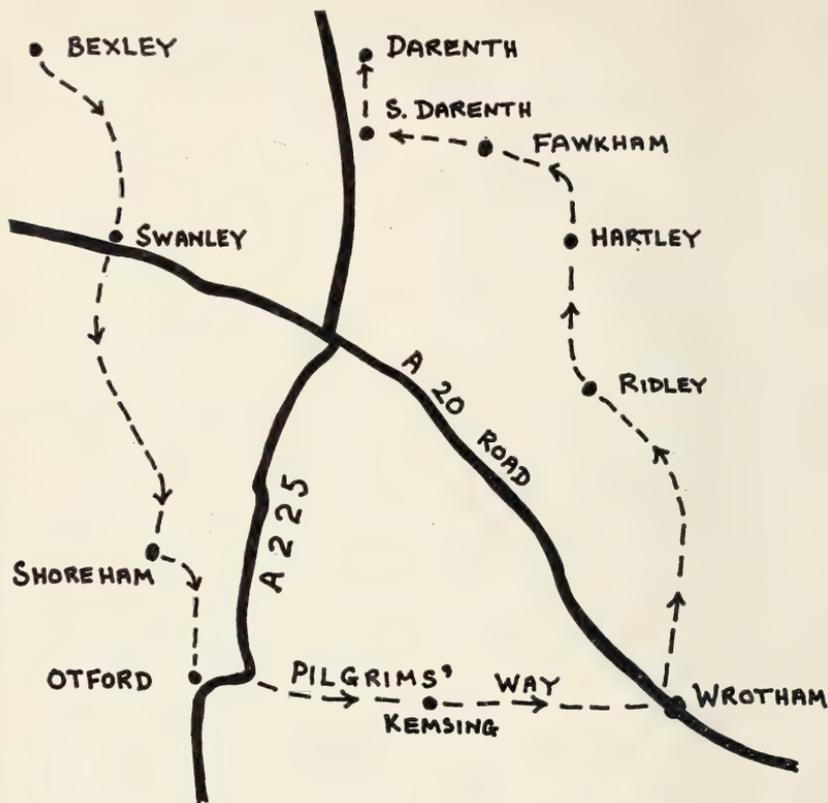
Although Mr Knight does not (with one exception) acknowledge other writers on this subject—particularly the dipterists such as L. Parmenter, the paper is well worth reading.

D.O.

## **JUNIOR NEWS SECTION**

N. W. Archer (2975\*) has sent me a sketch-map of a walk he did last year. It was originally drawn to show me the places where he had recorded Spring butterflies for me to add to the list I compile each year, but I do think some other Juniors might find the idea a good one. Here is part of his letter:—

"During the Easter holiday I did two long walks to Wrotham, of 23 and 29 miles respectively. On the first walk I saw a few Small Whites (*Pieris rapae* Linn.) near Wrotham (12.4.61). I did the second walk on 18.4.61. This was a very hot day with brilliant sunshine. The countryside was swarming with butterflies. There was, however, a lack of them before Shoreham, owing to a thick mist which filled the air down to an altitude of about 100 feet. The mist cleared when I was about half-way between Shoreham and Otford, and from then on, except in the few built-up areas through which I passed, butterflies were numerous. They were most plentiful along the Pilgrims' Way between Kemsing and Wrotham. Here the road became a rough cart-track running along the foot of the scarp slope of the North Downs, and was very warm and sheltered. I must have seen about a hundred Brimstones (*Gonepteryx rhamni* Linn.) and fifty Orange Tips (*Euchloe cardamines* Linn.) along this portion of the road, although it was



only  $1\frac{1}{2}$  miles long. This makes a startling comparison with the twenty Brimstones and ten Orange Tips I had seen in the previous six years. Other species recorded here and elsewhere on the walk were the Peacock (*Nymphalis io* Linn.), and the Small Tortoiseshell (*Aglais urticae* Linn.).

"Whites were plentiful, but I find difficulty in distinguishing between the Small White and the Green-veined White (*Pieris napi* Linn.) when they are more than five yards away in flight. There was definitely one Green-veined White at Shoreham, because I saw it at rest. Also, at South Darenth I

discovered a mating pair of Small Whites.

"While I was on this walk it occurred to me that these Spring butterflies provide an interesting problem for a new Study Group—on what flowers, particularly wild ones, do they feed? I cannot remember ever seeing a butterfly feeding at such common flowers as the Wood Anemone (*Anemone nemorosa* Linn.), Lesser Celandine (*Ranunculus ficaria* Linn.) or Bluebell (*Endymion nonscriptus* (Linn.) Garcke). The only Spring garden flower at which I have seen a butterfly feed is *Aubretia*. By Spring I mean March and April, because in May a large number of

common flowers appears. On the walk I observed that Dandelions (*Taraxacum* spp.) attracted many Small Tortoise-shells, Peacocks and Small Whites, and Primroses (*Primula vulgaris* Huds.) attracted Orange Tips and one Brimstone. Incidentally, the Orange Tips ignored Cow Parsley (*Anthriscus sylvestris* (Linn.) Bernh.) completely (or rather the males did, because I must admit that I have never seen a female Orange Tip except in other people's collections)."

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

I must congratulate Mr Archer on his fortitude: it is good to know that there are still young people who are prepared to walk such long distances.

As for the flowers at which the early Spring butterflies feed, may I say that I, too, have seen them frequently at Dandelions (*Taraxacum* spp.), Primroses (*Primula vulgaris* Huds.), etc. Besides those he mentions as visited by these butterflies, I have observed them feeding also at Bluebell (*Endymion nonscriptus* (Linn.) Garcke) and Lesser Celandine (*Ranunculus ficaria* Linn.), these two species being "patronised" especially by Orange Tips and Brimstones; at Sallow catkins (*Salix caprea* Linn. and *S. atrocinnerea* Brot.), these being especially attractive to Brimstones and Vanessids; and at fruit blossom, particularly that of the Gean, or Wild Cherry (*Prunus avium* Linn.) which seems to be especially irresistible to Vanessids. I have noticed, however, that after hibernation Brimstones seem to be far more interested in searching for and courting a mate and in laying eggs than in feeding, which they seem to do the previous summer.

Could it be that Mr Archer has been confusing female Orange Tips with one of the smaller Whites, especially *P. napi* Linn., which he himself admits to confusing with *P. rapae* Linn? Their

flight, though different from that of the two *Pieris* species, is surprisingly powerful by comparison with that of the males, and they had me fooled for years! (*Thought*: is this an example of what is misleadingly called "mimicry", i.e., protective resemblance to another species which is unpleasant to interfere with?)

Another possibility is that, as in so many other species—most, in fact—males emerge first, and it is not until much later (when there are plenty of males about, and the likelihood of one of them finding and mating with a female very soon after her emergence is very high, thus giving the female as long as possible to lay her eggs) that the females are on the wing. By that time there would be far more Whites flying, for collectors (and other would-be predators?) to mistake them for. In addition, the males would have been flying for so long that (1) they would by then have become a part of the scenery, and (2) they would be rather worn and therefore attract less interest.—*Editor*.



## NOTES AND OBSERVATIONS

I have been rearing some larvae of *Lampra fimbriata* Schreb. (*fimbria* Linn.) (Broad-bordered Yellow Underwing) from ova laid by a moth caught at mercury-vapour light last August, and have given them leaves of Dock (*Rumex* sp.) to eat. What has really interested me is that, of the two dozen I have kept, rather fewer than half (11 to be exact) have grown at a tremendous pace, having far outstripped their siblings. The difference in size is so marked that I have split up the brood into two batches "to see what happens".

Several possible explanations occur to me, but they are only guesses:—

(1) Could it be that the large ones are

females, packing away as fast as they can the food which will eventually go to form their ova?

(2) Could it be that they are males, which in very many kinds of living things become sexually mature before the females, and therefore will need to complete their early developmental stages in a shorter time?

(3) Could it be that some of these larvae (one of the batches) is of a physiological type that does everything more slowly than the others, so that either (a) they will give rise to pupae which "lie over" for another Winter, or more; or (b) the larvae themselves may take more than one season to "feed up" and pupate? (The last idea is, I know, a "wildie", but you never know...)

Perhaps some Member with wider experience than mine of rearing larvae would like to contribute a note for the *Bulletin* explaining my observations: it would be very welcome. Perhaps to Members in that category this sort of thing is commonplace ("Oh, yes, old boy, that often happens. It's due to..."). In any case, please write and let me know, in a form suitable for publication (see elsewhere in this issue).

Peter G. Taylor (719).

#### HYDRAECIA PETASITES

### DBLD. (BUTTERBUR MOTH) IN BUCKINGHAMSHIRE

It may be of interest to Members that on the night of 2—3.9.61. I took in my mercury-vapour light-trap a worn female of this species. The trap was operating in a garden on the lower slopes of a gap in the Chilterns at Wendover. This site overlooks a misfit brook—the head-waters of the winterbourne known rather euphemistically as the River Misbourne—on whose banks I have never actually

noticed the foodplant *Petasites hybridus* (Linn.) Gaertn., Mey. & Scherb. (Butterbur), but I admit that I haven't really searched. Otherwise the nearest likely place is a small reservoir a couple of miles away on the other side of the town and in the Vale of Aylesbury.

In 25 years of admittedly rather sporadic collecting this is the first time that I have met with this species.

Peter G. Taylor (719).

### LEAST CARPETED WAVE IN SOUTH-WEST LONDON

On the 17th July 1961 I took in my mercury-vapour light-trap here in Streatham a slightly worn specimen of *Sterrhia rusticata* Fab. (Least Carpeted Wave). This local moth was a very welcome addition to my collection. I would be very interested to hear if other members have also taken this species in the London area.

R. F. McCormick (3375).

### INJURY TO AN OAK EGGAR LARVA

During the last few weeks I have been rearing a few larvae of *Lasiocampa quercus* Linn. (Oak Eggar). While changing the foodplant I had the misfortune to impale one on a bramble thorn. Although the caterpillar bled at the time, the wound has since dried up.

Despite its injury, which occurred during its third instar, the larva looks quite healthy and is still feeding normally.

I have now changed over to feeding the larvae on ivy. Have other Members had the same experience? Will my larva have a good chance of getting through all right?

R. F. McCormick (3375).

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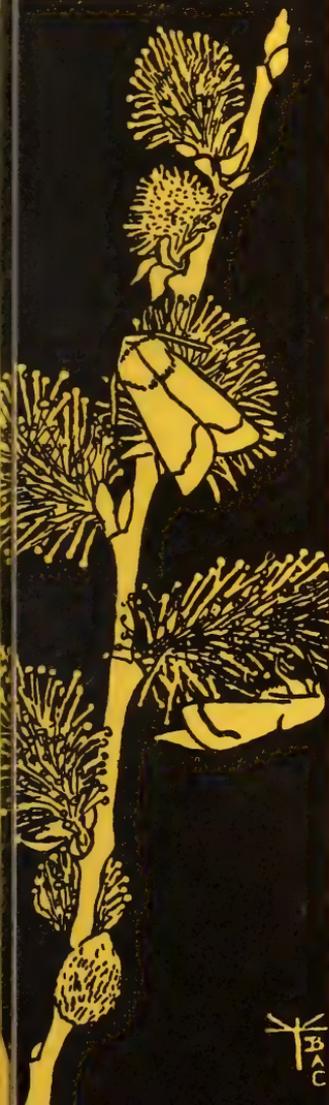
FEBRUARY, 1962



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

EDITED by PETER G. TAYLOR, B.Sc., F.R.E.S.



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Heading in capitals, NOT underlined.

Correct scientific names, consisting of name of genus (capital initial, and underlined), name of species (small initial, and underlined), authority (conventionally abbreviated, NOT underlined).

English names of species, etc., with capital initials.

Your name at end, on the right, followed by your AES Membership Number in parentheses.

Date of writing, all in figures (e.g., 15.8.27.), opposite your name.

Number of words, in pencil and ringed round, in top right corner of first sheet.

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*Manuscripts, drawings, and books for review to: Peter G. Taylor, International Language Club, 12 Park Hill Road, East Croydon, Surrey.*

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### EDITORIAL

At the time of writing, all I have seen of the January *Bulletin* is the proofs. Thanks to the postal delays due to the usual Christmas congestion, and to the complications that arise when instructing a new printer, things are already a little behindhand. With the New Year postal delays on the Continent and the threat by Post Office workers to work to rule in January, there may well be further delays.

However, we can only hope that as time goes on, things will improve. This still does not prevent one (*this one*, at least!) from feeling awfully like an "expectant father" pacing to and fro outside a maternity ward! I do hope it's worth all the trouble that the Editorial Committee and your humble servant have taken to produce it (could I say—all that labour?).

In any case, by the time you read this, not only should you know whether you like our new brain-child, but, with a bit of luck, and because so many of you have responded to my exhortation and written to me to say so, I should know too. I trust that all of those who write, either for this purpose or to contribute copy for the *Bulletin*, will forgive some delay in replying—only the select (?) few who have already done some editorial work can have the slightest inkling of the enormous volume of work involved. In an attempt to reduce this somewhat, I shall be compiling a number of duplicated letters for various purposes, and crave your indulgence

should you receive one of these, possibly augmented with more particular details in manuscript.

Please keep up the flow of copy for publication, and don't forget to read the advertisements and AES announcements on the cover of the *Bulletin*: you'll find that, from time to time, new ones appear, or the old ones are altered in important ways.

Peter G. Taylor (719).

### LETTER TO THE EDITOR

Dear Sir,

I was interested to read Mr Cribb's article in your October issue where he describes his disappointing journey through southern England.

I am afraid habitats for interesting insects of all kinds are disappearing very fast, and it is up to entomologists who deplore this process to join with other naturalists who are trying to do something about it through the County Naturalists' Trusts. These are bodies whose main aim is to stem the destruction of interesting natural habitats in their counties, and all of them would welcome support from local entomologists.

There is now a Trust in almost every county in England and the southern half of Wales, and the intelligence

Unit would be glad to forward to any reader the name and address of the Secretary of his local Trust.

Yours faithfully,

15.11.61.

R. S. R. Fitter.

Director, Intelligence Unit,  
The Council for Nature.

The address of The Council for Nature is : 41 Queen's Gate, London, S.W.7.  
—Editor.

August. Course on the study of Diptera, directed by Mr H. M. Russell of the Tolson Memorial Museum.

Flatford Mill. 15th—22nd August. Insect Ecology, directed by Dr T. Lewis.

One final point of interest—Dale Fort will not allow stiletto heels or radio sets !

D. Ollevant (1514).

## THE FIELD STUDIES COUNCIL

The Field Studies Council has now published its 1962 programmes for the various Field Centres, and these may be obtained from the Wardens of the Centres. The weekly fee is £8.10s. for amateurs. Members of the AES are reminded that Carnegie Bursaries can be applied for to the Warden concerned, reducing the weekly charge by £3; AES membership number must be quoted.

The Centres are:—

Dale Fort Field Centre, Haverfordwest, Pembrokeshire.

Flatford Mill F.C., East Bergholt, Nr Colchester, Essex.

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Of particular interest to Members are the following courses:—

Malham. 25th July—1st August. Insect course, directed by Mr A. Brindle of the Manchester Museum. 1st—8th

## COLLECTING NOTES—February

### *The Smaller Moths*

*Rubus fruticosus* Linn., the Bramble, grows almost everywhere and it is well worth examining its leaves whenever the opportunity occurs during the Winter. The larva of *Phlyctaenia prunalis* Schiff. (*Udea nivealis* Scop.) spins a slight web which turns the leaf down.

Another feeding larva is that of the local moth, *Epagoge grotiana* Fab., whilst the larva of *Tortrix musculana* Huebn. hibernates in a folded leaf. There are four species of the Tineoidea which may be found: *Schreckensteinia festaliella* Huebn. as a pupa in a network cocoon on the underside of a leaf; *Tischeria marginea* Haw. as a larva in a pale-brown blotch—this is probably the commonest moth of all those found on this plant; *Nepticula aurella* Fab. as a larva in a long irregular gallery—this common larva is amber-yellow; *Nepticula rubivora* Wocke as a larva in a large yellowish blotch, and this local (Southern England to Midlands) larva is greyish green.

When breeding the leaf-miners, especially, make comprehensive notes: it

will make the task of identification much easier.

The dead stems of the Umbelliferous plants should be carefully split open whenever possible for there are several species which may be found as pupae in them during the Winter. This method needs perseverance as many stems will be taken apart before results are obtained. Probably the commonest pupae will be those of *Depressaria eracliana* Linn., but as these will be empty there is not much point in collecting them! However, amongst the pupae which may be obtained are those of *Lozopera francillana* Fab. in the stems of *Conium maculatum* Linn. (Hemlock). This pretty moth occurs locally in the South of England.

D. Ollevant (1514).

#### The Coleoptera

The trunks of sycamore trees often bear numerous flakes of bark which are loosely attached and can easily be peeled off. Behind these pieces of flaky bark one finds many small beetles which take advantage of the shelter thus afforded and use the place for hibernating. In addition one finds other species which normally live under bark. February is quite a good time to carry out a search of suitable sycamore trunks. When removing the flakes some precaution should be taken to catch any insects which fall as the bark is removed or it is very disappointing to see a choice specimen drop into the grass at the foot of the tree where there is little hope of finding it again.

The species which can be found in this way will no doubt vary with the locality. The following list is from my own records. *Dromius quadrimaculatus*

Linn., *D. quadrinotatus* Panzer, *D. meridionalis* Dej., *Phloeocharis subtilissima* Mannerh., *Tachyporus obtusus* Linn., *Leptusa ruficollis* Er., *Rhinosimus ruficollis* Linn., *R. planirostris* Fab., *Trixagus dermestoides* Linn., *Phyllotreta nemorum* Linn. and *P. undulata* Kutsch. None of these is a rarity but there is always the possibility of something rarer to be found under the next flake.

K. C. Side (2140).



#### DEATH'S-HEAD HAWKMOTH (ACHERONTIA ATROPOS LINN.)

In describing my first feeble attempts to rear a larva of *A. atropos* (*Bull. amat. Ent. Soc.*, 20: 111-112) I omitted two important points: the date and place of the original find. Perhaps I may correct this omission now by saying that the larva was found on 21st August 1960 on an allotment in Stone, a village about 2½ miles from Aylesbury (Bucks.). (See *Entom.*, 94: 83.)

With regard to the pupa, I might also add that I realised afterwards that I had made the mistake of allowing it to remain in an open box at or just below normal room temperature. I now know, of course, that I should either have allowed it to remain undisturbed within its cocoon underground, in which case, presumably, no "forcing" would have been necessary, or have "forced" it by keeping it warm and spraying it periodically with water. Should I have another chance, I shall

certainly find Mr R. A. Jarman's article (*Bull. amat. Ent. Soc.*, **20** : 28-29) a useful guide, though as my object in rearing the Lepidoptera is *not* to obtain fine specimens but to observe complete life-cycles under as natural conditions as possible, Mr A. E. Curran's experiences (*Bull. amat. Ent. Soc.*, **20** : 8-9) gain more sympathy from me.

Finally, a minor correction: in my article (page 112, line 6) I said that the larva's back had become "*diffused* with a deep orange-yellow-brown colouration"; this should obviously have been "*suffused*". I hope the purists will forgive me my *lapsus styli*.

Anthony Wootton (3331).

In *A Moth-hunter's Gossip*, that excellent little book by Mr P. B. M. Allan which every bughunter worthy of the name must surely read and love, there are some most interesting and apt remarks on this very subject. I recommend both this book and *Moths and Memories*, by the same author, to Mr Wootton (and to any other Member who has not yet met with them). In particular, he will find the pages mentioned in the references at the end of this note to be especially relevant.

I am sure he will find equally apt an anecdote (true, of course!) in yet another delightful book by Mr Allan, *Talking of Moths* (see below). All of these may be obtained from booksellers advertising in the *Bulletin*.—*Editor*.

#### REFERENCES

- ALLAN, P. B. M. (1937): *A Moth-hunter's Gossip*. 1st edn. Pp.14-17.  
 — (1947): *A Moth-hunter's Gossip*. 2nd edn. Pp. 14-16.  
 — (1943): *Talking of Moths*. Pp. 45-46.  
 — (1948): *Moths and Memories*. Pp. 12-19.

## DISCOVERY OF THE ESSEX SKIPPER BUTTERFLY (*THYMELICUS LINEOLA* OCHS.) IN MIDDLESEX

In the summer of 1960 my son, Phillip, captured a specimen of what I then thought to be *Thymelicus sylvestris* Poda (the Small Skipper) on some waste ground in the neighbourhood of our house here in Hanworth, near Feltham in Middlesex. It was not in very good shape but the point of interest was that it had black tips to the underside of its antennae.

We decided to pay particular attention to the Small Skippers in 1961 and accordingly in mid-July we captured a sample quantity for examination. They were all males and about half of them were apparently genuine *T. lineola* Ochs. (Essex Skipper). Mr Eric Classey kindly examined them for me and confirmed the identification. A wider search brought to light that the butterfly was widespread over the whole of the surrounding waste ground and was well established over land which had been 'made up' some years previously by tipping. This land was raised about eight feet above the original level of the marsh and supported a very mixed vegetation, the grasses being of species associated with dry waste ground. Here the Essex Skipper was more common than the Small Skipper.

It would appear that this colony has been here for a very long time as the area is an oasis in the midst of suburban development, being part of a farm now non-existent. Part of the farm land is a permanent open space but so far "undeveloped" and the grass has not

een a mower in years. Areas are occasionally fired by the local youths but this has not seriously affected the insect population. A further piece of land which belonged to the original state forms part of a golf-course and our opposition about the age of the colony seems justified as we again found the Essex Skipper to be present in the grasses flourishing in the unmown outlying area of the course.

The females of the species appeared about a week after the males were taken and I obtained several ova from one of these. They were deposited inside the sheaths of the grasses and the females chose grasses which had already become dry and were in the "hay" stage, the eggs matching the colour of the whitish-yellow grass.

Mr Classey was not able to trace an earlier reference to this species in Middlesex and the fact that I had not observed it earlier (having spent four previous summers here), implies that we do not always notice what is immediately under our noses, and it would be interesting if every Member collecting butterflies made a point of examining all Small Skippers in 1962 (particularly in the London area) in case it has been overlooked elsewhere. I should be interested to hear of any discoveries.

P. W. Cribb (2270).

### THE PUPA OF THE ESSEX SKIPPER BUTTERFLY (*THYMELICUS LINEOLA* OCHS.)

Having had the pleasure of breeding this "Skipper" this year, I thought that

fellow butterfly-collectors in Kent, Essex and Suffolk, who may discover this pupa and suspect it to be that of the Essex Skipper, would like to have a description of it, as I myself had difficulty in obtaining a book which seemed confident of the accuracy of its description.

The pupa is about 2 cm. long and lies in a slight cave, formed by strands of a coarse white silk. It is attached, as far as I could see, only by the "tail" [cremaster] and not by the bristly "snout". The newly formed chrysalis has a pale emerald abdomen, and whitish-yellow wing-covers and head region. A darker stripe runs the length of the body.

Four days before hatching, the chitin covering the eyes turns to a raspberry hue. A day later the wing-covers appear a fulvous colour and the eye-coverings have turned brownish. A day before hatching, the pupa is black with the indentations between the segments whitish.

The pupae hatched within 2—3 weeks of pupation.

P. J. S. Miles (3343\*).

### THE LARGE WHITE BUTTERFLY (*PIERIS BRASSICAE* LINN.)

In view of the scarceness of this insect in 1960 I looked for it more carefully than usual this year.

I saw the first one near Darlington on April 15th; it was a male. Later in the Summer the species was common in many places that I visited. On August

6th/7th there were numbers in Cambridge and Ely, while on a journey between London and Manchester on August 28th I saw it everywhere. It was also common in the Weymouth, Yeovil, Taunton and Bideford areas between August 31st and September 12th.

It will be of interest to see if other observers report that during 1961 it has regained its former status.

24.10.61. H. N. E. Alston (2609).

*P. brassicae* was seen to be particularly common along the coast of South Wales, between Tenby and Swansea during the first two weeks of August, 1961.

It was quite frequently seen flying over the shore, but I could detect no movements from or towards the sea which suggested migration.

Here in Surrey this butterfly has been quite as common this year as it ever was.

19.11.61. D. Ollevant (1514).

Migrating insects whose line of flight (track) happens to carry them from some other region of the world to our island must inevitably, at some time, cross our shore: we therefore become conditioned to the idea that migration necessarily involves the crossing of at least one shore. This is a mistake, and arises from our insular outlook: biologists who grew up on great continents are not afflicted by it (it was only by dint of working as personal assistant to Dr C. B. Williams, F.R.S., for a year that I was able to shake it off!).

The degree to which the migration of insects is directional depends on a number of factors, such as the intensity

of the migratory "urge," and directional features of the environment (especially with low-intensity migration) such as natural barriers. Thus it would appear that the *Pieris brassicae* observed by Mr Ollevant, contrary to his belief, were in fact migrating.—Editor.

## INSECT MIGRATION

In *Bull. amat. Ent. Soc.*, 20: 110, Mr H. V. Danks raises the question of the causes of migration in insects, saying that "little is known yet" about them.

As I understand it, the critical factor is the population density in the early stages of development. From the purely theoretical point of view, it will obviously be of value for the survival of a species if there are, among the population, certain individuals so affected by the presence of others of their own kind that, should the frequency with which they encounter them exceed a "personal" threshold value, they would become more inclined to make locomotory movements (and thus to travel) than to remain quiescent. Should these movements be related to some more-or-less definite direction, such as that of the prevailing wind, the bearing of the sun, or the pattern of the stars, so much the better: those individuals not so affected will remain behind, competition for necessarily limited resources will be relieved, and their chances of survival will improve; there will be less likelihood of the individuals with "itching feet" wandering back into the area of origin, and there is always the chance of their "stumbling upon"

itable environments as yet uncolonized. Even if the restless ones "work off" their restlessness while still within the range inhabited by their own species, and "settle down" there, the genetic re-shuffling resulting from their interbreeding with the local population can only be of eventual advantage to the species. (It is worth remembering this when considering the present influx of West Indian immigrants, and trying to relate it to the past successes of Britons, their immense variety, and the numerous successive admixtures of new genetic material following the waves of immigrants, colonists, refugees, invaders, missionaries and occupying troops of the last 2,500 years or so—barely 100 generations!)

It is not, of course, suggested that the tendency of any individual to migrate in this way is an "either-or" matter resulting from its dependence on the nature of a single gene, but that several, perhaps many, genes "co-operate" to produce the observed effect. One might expect such a situation to give rise to a population consisting of individuals which could be placed in a finite number of categories (one more category than the number of genes involved) according to the number of contributory genes possessed by any particular individual. Such graded variation does occur, but it is rare, and only becomes evident in special conditions. Far from the more usual effect of such polygene ("poly-" means "many") variation in Nature is that the grades (or "steps") are smoothed out and blurred either by the effects of variation in the environment on early developmental stages, or by different amounts of indirect interference from other genes.

This gives rise to so-called "continuous" variation.

It is well known that the spectacular mass-migrations of some kinds of grasshoppers, Silver Y moths (*Plusia gamma* Linn.), Painted Lady butterflies (*Vanessa cardui* Linn.), or Lemmings (*Lemmus lemmus* Linn.—Rodentia: Microtinae), for example, all originate in extremely highly populated areas.

It is not as widely known that caterpillars kept in crowded condition—even though the food supply may be ample—move about and feed more, more quickly, and more often than do those of the same kind kept in isolation. They thus live their lives more quickly and reach maturity earlier (compare "a short life and a gay one").

The same is true of grasshoppers, which in addition, develop in different ways according to the degree of crowding, so that the more crowded they are, the greater is the proportion that finish up with a structure and habits more suited to migration—hence Locusts. This looks to some people like the Divine Hand of Providence, but they find it difficult to understand why the effect of all this so often leads to destruction of the very migrants whose migrations seems to have been so well provided for. However, all the structural modifications are effects of the more rapid metabolic rate (the total rate at which the chemical processes of an organism proceed) such as the deposition in storage tissue of excess food taken in, and in surface structures such as cuticle of excess waste material produced; the other modifications are due to consequent different modes of functioning.

The direction of emigration is immaterial, for the survival of the species rests with those that remain behind, and it is pure chance if the emigrants happen upon "pastures new." As the tendency to become migratory is polygenic, there will be plenty of the non-migrants carrying several of the appropriate genes, but insufficient to render *them* migratory in the particular conditions of crowding that precipitated the migration of their fellows: the tendency, suicidal though it is, will thus be preserved.

Thus it can be seen that, while Divine Providence is not ruled out, it is not necessary to invoke it. Though we may believe what we like as private individuals, as scientists bound by the principle of Occam's razor (*i.e.*, where a number of equally applicable alternative explanations can be given for any phenomenon, one should accept the one involving least unprovable suppositions, until such time as any further evidence might come to light proving it wrong) we must interpret things, if possible, in "material" ways not involving supernatural belief.

Of course, in *any* population of *any* species there *may* be occasional individuals showing the same migratory tendency for the same reasons, and this would account for those rare wanderers belonging to normally colonial species that one occasionally meets with in "surprise" surroundings, far from any colony. Between this extreme and mass-migration all gradations can be imagined, and all have been observed

at one time or another: witness, Mr D. Ollevant's observations of the Large White butterfly (*Pieris brassicae* Linn.) elsewhere in this issue.

If anyone has managed to drag his mental gum-boots thus far through the morass of verbosity that I always seem to pour forth, he may find it interesting (I do!) to make some comparisons with our own species. Have you noticed that, while there have always been odd individuals with the wanderlust, in certain circumstances they have been more numerous, *e.g.*, Norsemen crowded into fjords, land-hungry Danes such as Lief the Lucky wandering off into the unknown, many of them perishing *en route*, a few setting up colonies not all of which survived for long; even the Pilgrim Fathers, who found that England was too small to hold them, and cramped their style (*cf.*, mutual irritation)? Does it appear relevant that in cities, where advantage accrues from the proximity and co-operation of numerous individuals, the pace of life is more rapid and there is more disease due to the deposition of excess food material (coronary heart-disease) and of excess excretory waste material (rheumatic diseases)? And what about the modern mania of those working in giant cities to live in the country, to "get away from it all", to travel abroad for holidays, to join expeditions setting up small communities on South Sea islands; to own an island; to explore space? Fetched? Perhaps, but are you sure?

Peter G. Taylor (719).

## REVIEW

**The Moths of the British Isles.**

*Series I*: Pp. 427; 90 colour plates, 58 in black-and-white. *Series II*: Pp. 379; 69 colour plates, 72 in black-and-white. By Richard South, F.R.E.S. Edited and revised by H. M. Edelsten, O.B.E., F.R.E.S. and D. S. Fletcher, F.R.E.S. Frederick Warne, London, 1961. Price 3/- each volume.

In 1907 Messrs Warne published *Series I* of "The Moths of the British Isles" by Richard South, and in 1908 the first followed *Series II*. These two books were conceived as a cheap and easy method of identifying the popular moths, an assemblage of "Macros" and a few of the "Micros"—with some of the "Macros" omitted. Their publication probably helped a great deal to popularise the Lepidoptera and made their identification quicker and easier. It also resulted in making lepidopterists "lazy" inasmuch as they tended to rely on the coloured pictures for identification by wing-pattern and to ignore the other taxonomic features which sometimes are essential. This probably resulted in more mis-identification of similar species than if the books had never been published.

As time went on and more impressions of the plates were made, the quality of the coloured plates deteriorated (the black-and-white plates were never very good) until the earlier impressions were more prized than the later ones, and, of course, the information in them became more and more out-of-date.

However, as a remedy for this situation we now have a completely re-set "South". The coloured plates have been drawn by the late H. D. Swain, and the text has been revised by the late H. M. Edelsten ["hard work never killed anyone"—*Ed.*] with the help of D. S. Fletcher, R. J. Collins and many others.

There is no doubt that Mr Swain's paintings were very good (although the reproduction does not always do them justice)—I have seen some of the originals; and there is also no doubt Mr Edelsten and his helpers did a good job, but with what result? A curious and cumbersome hotchpotch of a book.

In 1948 Messrs Warne published in two volumes "The Caterpillars of the British Moths" edited by G. H. T. Stovin, a "popular" and useful book for identifying those larvae which are easy to identify, but not so useful for the more difficult ones, and since these books are now available why continue to publish the black-and-white plates of larvae in the new "Moths"? In fact, three of them in the first volume and one (Plate 18, not 19 as stated in the Preface) in the second volume have been redrawn by Miss A. Walters. Without them the cost could have been reduced. There are several half-tone blocks in the text, too, some useful but some reproducing very poorly, and they are of little value.

There are coloured pictures of the whole of each moth, life-size, (although these seem to have a tendency to be always of the smallest specimen) until

suddenly in *Eupithecia* (the Pugs), the reader is confronted, without any warning, with pictures of half-moths, and twice life-size. I am sure that there must be some beginners who are wondering why their moths are so much smaller than those portrayed in this part of the book! These pictures of the half-Pugs are probably the best of all, and one wonders why all the moths couldn't have been like this, although the magnification would not have been necessary in most cases. There is a good deal of wastage of coloured plates in that very rare varieties have been portrayed (mostly in the Arctiidae), and species which look alike are all portrayed, e.g., Plate 88 shows two Dark Daggers (*Apatele tridens* Schiff.) and three Grey Daggers (*Apatele psi* Linn.) where one picture would have sufficed with a brief note in the text about the slightly different forms.

Some plates have the names at the foot, some on a separate sheet opposite.

Some of the "new" species have no identification details at all (e.g., *Celerio nicæa* de Prunner).

The use of generic names is not consistent, as, for example, in this extract from page 75: ". . . whereas, in the Poplar Kitten, this portion of the line forms a clean curve. The band on the hind wings [sic] is not quite so broad and is further away from the margin than it is in *C. bifida* . . ." (*C. bifida*, as named by Brahm, at any rate, is the Poplar Kitten, which is referred to on the previous page as *Harpyia bifida* Brahm). This draws my attention to the index, or rather, indices, for there are two of them, one for English names, the other for scientific names. The

amalgamation of these two would have made reference easier (compare Collins' *New Naturalist Series*). In neither of them could I find any indication that the Poplar Kitten is referred to on page 75. There are, in fact, *four* places where it should have been mentioned! One wonders how often this kind of omission has occurred.

Scientific names have to appear on the plates where there are no English names in common usage, but on Plate 142 there is a moth which has been given a specific name with a capital initial letter.

An improvement would have been made by putting the page references on the plates, especially as some plates are so "out-of-step" with the text. It is possible that an improvement would also have been effected by putting the number of each moth against the drawing as well as at the foot of the plate (or opposite to it)—this has been done with the drawings of the larvae.

The publishers say that they have included the whole of the Noctuidae in the first volume to help the student of this family, and as a result have had to put the Lasiocampidae and Arctiidae in the second volume. I suggest that the reason may have been that the inclusion of more popular moths in the second volume might help to sell it better. For the student of all the other families it is a nuisance.

I like the nomenclature and am pleased to see that Mr P. B. M. Allan's "Larval Foodplants" has been used. I think that a brief bibliography would have been helpful, for instance, does a beginner know what "Entom." means?

With the example of such modern books of identification as the Peterson Field Guide Series, this book could have been made so much better by the publishers. The question is: "Is the book worth buying?" The answer is undoubtedly "Yes"—until something better comes along, and after all, in the light of modern prices, the price per volume is quite reasonable when one considers what one is getting in the way of coloured plates and text.

D.O.

## JUNIOR NEWS SECTION

### Editorial

Each year while I have been Youth Secretary I have compiled a list of records of first occurrence of common butterflies in Spring and early Summer. Once more I ask for Juniors, and others who may be interested, to contribute these, so that I can bring them together on one list. If this is repeated for a number of years, I think its interest increases—at least up to a point. The butterflies I am most interested in are:—Speckled Wood (*Pararge aegeria* Linn.), Comma (*Polygonia c-album* Linn.), Red Admiral (*Vanessa atalanta* Linn.), Peacock (*Nymphalis io* Linn.), Holly Blue (*Celastrina argiolus* Linn.), Small White (*Pieris rapae* Linn.), Large White (*Pieris brassicae* Linn.), Green-veined White (*Pieris napi* Linn.), Orange Tip (*Euchloe cardamines* Linn.) and Brimstone (*Gonepteryx rhamni* Linn.).

The advantage of studying these species is that they are common and widespread, and so one has a reasonable chance of determining their dates of

appearance fairly closely. Moreover, if Members from various parts of the country can send records it may reflect differences of climate from South to North or West to East—though no such differences can be detected in previous years' records, mainly because of the great concentration of recorders in the South!

I have been asked when I consider that Spring and Summer records cease to be "early". For this purpose I should say, towards the end of May. I usually compile my list early in June.

### News of Members

J. Muggleton (3253\*) who lives at Staines, in Middlesex, follows up an article by Mr J. H. Drake (2967).

"I was interested to read J. H. Drake's article on *Automeris illustris* Walker (*Bull. amat. Ent. Soc.*, 20 : 57) as I have now reared the larva of this moth. I noticed that these larvae made definite clicking noises, like *Actias selene* Huebn. This is not mentioned by Mr Drake, nor is it mentioned in the "Silkmoth Rearer's Handbook."

"When the larvae were about to moult they spun together a tent of leaves. Some larvae ate their cast-off skins. The spines of the larvae did not sting when I touched them with the palm of my hand, but when I touched them with the back of my hand they stung as severely as nettles. The spines of most larvae were 10 mm. long, but one larva was larger than the rest and had spines nearly 2 cm. long.

"The cocoon differs greatly from that of *Automeris coesus* Boisid., being white and flimsy. It is double: the first layer

is thin and like rice-paper; the second layer is mesh."

In August I went with members of the Lyonian Natural History Society (2295†) on a camping expedition in Perthshire. We were not concerned solely with entomology, but we ran a mercury-vapour lamp on most nights, and during the day we collected such butterflies as we saw. It was mid-August, but there was a cold wind, so insects were rather few. Among those we did get were the Dark Green Fritillary (*Argynnis aglaja* Linn.) and the Scottish forms of the Green-veined White (*Pieris napi* Linn.), Common Blue (*Polyommatus icarus* Rott.) and Pebble Prominent moth (*Notodonta ziczac* Linn.). Perhaps the most surprising find was a perfect specimen of the Small Mountain Ringlet butterfly (*Erebia epiphron* Knoch) which is usually to be found a month or six weeks earlier in this area.

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

## NOTES AND OBSERVATIONS

### MOTHS IN CENTRAL LONDON

It may be of interest to Members that I found a freshly emerged specimen of *Mimas tiliae* Linn. (Lime Hawk) on Rootes's window in Berkeley Street, London, W.1 on July 3rd and also a specimen of *Catocala nupta* Linn. (Red

Underwing) on the pavement outside the Carlton Club, St. James's Street, S.W.1 on August 30th.

8.11.61. H. N. E. Alston (2609).

### RARE MIGRANTS IN THE WEST COUNTRY

I have taken two particularly interesting moths this year (1961), one being *Rhodometra sacraria* Linn., ab. *labda* Cramer, (Vestal), at a kitchen window here at St. Columb Minor on the north coast of Cornwall. It was attracted to the lit window at 10.5 p.m. on 29.8.61; and the other moth was *Utetheisa pulchella* Linn. (Crimson-speckled Footman), a female taken on the night of 1-2.9.61 at 12.18 a.m. in the grounds of the manor of Rhyolton Barton, which is situated about three miles from Newquay.

C. A. Brind (3140).

On the night of 16th September 1961 I took in my mercury-vapour trap one *Leucania vitellina* Huebn. (The Delicate). I thought at first that it was a "var." of *Agrochola circumcellaris* Hufn. (The Brick), but was puzzled by it, and when a friend of mine came to stay with me he at once identified it and told me that there had been quite a number taken this Autumn. The moth is new to me and not knowing that there was an immigration this year it never occurred to me that the above was this species.

G. H. W. Cruttwell (118).

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EDITED by PETER G. TAYLOR, B.Sc., F.R.E.S.



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Correct scientific names, consisting of name of genus (capital initial, and underlined), name of species (small initial, and underlined), authority (conventionally abbreviated, NOT underlined).

English names of species, etc., with capital initials.

Your name at end, on the right, followed by your AES Membership Number in parentheses.

Date of writing, all in figures (e.g., 15.8.27.), opposite your name.

Number of words, in pencil and ringed round, in top right corner of first sheet.

Return proofs promptly.



## EDITORIAL

The January *Bulletin* had a gestation period of 14 weeks—far longer than your editor had been led to believe—the “copy” having been despatched *nine days* after his appointment. During this time, the whole *Bulletin* was conceived, written, typed and edited, and long and meticulous instructions were compiled and issued to the printer. We had hoped that the issue might appear almost on time, but were not then to know how heavily the dice were loaded against us.

However, despite the “deep freeze” and all of the other hindrances and difficulties mentioned in my last Editorial, when the January *Bulletin* did finally come out I received a veritable state of letters, almost all of them approving the changes I have made. These included at least six from Members whom I know to be (or to have been) themselves editors of serious publications. The only unqualified complaint was from one Member who felt that the return to two columns per page would make the *Bulletin* look like a newspaper (“Or the Bible,” I confess I replied)!

However, despite the improvements, our Continental excursion has not been a success, for the delays accumulating over the February *Bulletin* are proving to be at least as long as those we experienced with the January issue. We have therefore not only returned to home territory, but, as a glance at the colophon will show, patronised a printer with whom your long-suffering Editor can confer—in his own language!—after a ten-minute walk.

In order to catch up the lost time, I shall have to “telescope” one or two of the monthly issues soon, so don’t be alarmed—it won’t get to be a habit! In fact, to save incurring extra postage, the matter for one month will be spread over two or three successive issues, including this one.

Articles are arriving steadily at present, but it has occurred to me that my detailed guidance to would-be contributors might possibly discourage the more timid, and especially younger Members, from committing their thoughts to paper. This is the last thing I should wish to do, and while I shall gladly carry out any adjustments necessary to make contributions conform to the standards and conventions I have set for the *Bulletin*, at the same time I hope contributors will do their utmost to carry out as many of my requests as possible.

In particular, if contributions are typewritten, please type them on *quarto* paper, *not* foolscap and *not* notepaper, and *please* double-space the lines. If they are in manuscript, *please* make sure that the handwriting is clearly and boldly legible (if someone else can read it when holding it at arm’s-length, it’s probably as good as it could be), and that it is written on *every other line*. The amount of unnecessary work involved in preparing a hastily scribbled note is tremendous, and anything an author can do to meet the Editor’s requirements and ease his burden will be at least highly appreciated, and *may* make all the difference between acceptance and rejection of the material.

One or two of the more important conventions are as follows :—

All abbreviations are to be treated as recommended in the "Concise Oxford Dictionary," i.e., they are to be followed by a point (.) *only* if the last letter of the word is missing ; certain abbreviations consisting of initial letters only, such as AES, are to be treated as ciphers, and the points omitted.

All references to articles in the *Bulletin* are to be indicated by the World List abbreviation (*Bull. amat. Ent. Soc.*), underlined, followed by a comma, then the volume-number *only*, next a full colon (:) followed by the number(s) of the page(s) occupied by the article(s).

Every sentence (sorry about this, but it seems necessary !) must have a finite verb, and be complete and meaningful on its own. Successive sentences may *never* be separated by a comma alone.

Infinitives will *never* be split.

Elsewhere in this issue there appears an extract from a delightful duplicated newsletter circulated by our staunch Member, one-time Honorary Secretary, and Editor of our Silver Jubilee *Bulletin*, Mr Ernest Lewis, to all AES Members living within a reasonable distance of Croydon, and to all Members of the Entomology Section of the Croydon Natural History and Scientific Society, who hold very pleasant informal joint meetings on the first Monday in every month. The meetings are a great success (as are the even more informal (lubricated) meetings at nearby "premises" which follow them), as will be gathered from the extracts. Incidentally, Mr Bush insists that I point out that his account has been a trifle exuberantly embellished during the reporting !

Talking of reporting, the gastronomic meeting with the entomological theme in celebration of the New Year, referred to in the newsletter, was a great success, and was reported at considerable length by the two local papers, both of which gave quite flattering prominence to their accounts ! They even reported on the unhappy sequel experienced, ironically enough, by Mr Lewis (whose idea it was), on whom, it might be said, the insects had their revenge.

Is any other group of Members "getting together" like this ? If so, let's hear about your meetings ; if not, how about it?

Unfortunately, I have to make a couple of apologies. In the *Junior News Section* of the December *Bulletin* (*Bull. amat. Ent. Soc.*, 20: 127-8) there appeared two drawings of a rearing-cage which, Mr Robertson assures me, had no connection with the accompanying text or, for that matter, with anything he had ever written. I should like to apologise on behalf of whoever was responsible for the confusion, to Mr Robertson, to Mr M. J. Foreman (whose communication they were supposed to illustrate), and to the artist "J.S.A." who drew them.

The second apology concerns the report by Mr R. D. Hilliard (*loc. cit.*, 123-5) of the Annual Exhibition, 1961. Mr Hilliard tells me (*in litt.*) that the report as printed in the *Bulletin* bears little relation to the manuscript he submitted, and that, as a result (among other errors), the exhibit illustrating methods of Locust control put on by St Ivo School Natural History and Entomological Society was said to have been mostly made up from material lent by Shell Chemicals. In fact, although Shell did contribute some of it, most was

ent by the Anti-Locust Research Centre,  
to whom we tender our most sincere  
ologies, as to St Ivo School.

I'm getting rather good at writing  
ther people's apologies! I shall have  
to take it up as a side-line.

Peter G. Taylor (719).

### SECRETARY'S LETTER

You will have read in the January  
*Bulletin* that I have taken over the posi-  
on of Honorary General Secretary  
om Mr Ollevant. This will have come  
a surprise to many of you who have  
me to look upon Mr Ollevant as an  
essential part of the AES. This he cer-  
nly has been for the last seven years.  
was in March of 1954 that he officially  
took over the job from Mr Lewis.  
nce that time he has brought to the  
Society the benefits of his knowledge  
an entomologist, but above all  
te benefits of his unlimited enthu-  
siasm. In recognition of his work  
for the Society he was elected our  
President for the last year. However, it  
is not generally realised that he still  
continued to be our Secretary through-  
out the whole of the time he was Presi-  
dent. The Editor has already expressed  
his appreciation of Mr Ollevant's work,  
but I am sure you will wish to join with  
me in thanking him for all the hard work  
he put in, to, I am afraid, the detriment  
of his own entomology and, indeed, his  
health. Now that he has retired from  
office I look forward to reading articles  
by him in the *Bulletin*. In future I hope  
it will be on entomology instead of  
the usual Secretary's Letter.

While on the question of thanks, it  
remains for me to thank our ex-Editor,

Mr Lawfield. Without any hesitation,  
he stepped into the breach in the Spring  
of 1960. At that time he had only recently  
joined the Society and was really a  
botanist, not an entomologist. Apart  
from the difficulty of dealing with a  
subject which tended to be somewhat  
foreign to him he was beset with print-  
ing difficulties. It is to his credit that he  
got a *Bulletin* out at all. The fact that it  
was repeatedly late was due to circum-  
stances completely beyond his control.  
I am sure we are all most grateful to him  
for a splendid effort under difficult  
conditions.

You will have gathered by now that  
1961 was not a good year for the Society.  
In fact it was a very bad one. The only  
good thing about the year was the out-  
standing success of the Annual Exhibi-  
tion, particularly after the disappoint-  
ing one of 1960. It seems to me that  
there are three things that still remain  
to be done:—

- (1) To dispatch the *Bulletins* to reach  
you on the first of the month.
- (2) To publish a Membership List.
- (3) To publish a new Handbook or  
similar publication.

I would now like to tell you how your  
Council has dealt with these points. We  
have changed printers in the hope of  
achieving better co-ordination, and  
therefore expedite *Bulletin* production.  
We have every confidence that by the  
middle of the year you will be receiving  
your *Bulletin* on or soon after the first of  
the month. I am afraid that it will con-  
tinue to be late for the first few months  
as we have got to catch up bit-by-bit.  
We plan to issue a Membership List dur-  
ing the year. The compilation and pro-  
duction of this list will probably be under  
the supervision of the Editorial Panel. The

exact details are still in the discussion stage, although by the time you read this preparations should be under way. With regard to the third point: we have put aside some of the Society's money into a Publications Fund, although owing to the expense of producing a publication (almost £1,000) it is unlikely that anything will be done about one this year. However, the mere fact that money is being put aside for publications should be encouraging.

These I think are the three main improvements lined-up for 1962. We have other, smaller changes under discussion, but I will tell you about these later.

I have told you what we are going to do: what are you going to do? The main medium of the AES is its *Bulletin*. Recently we increased the size of this to twelve pages, yet already we are finding it increasingly difficult to keep this up. Our new Editor has devoted a good part of the January *Bulletin* to instructions for contributors. We are a Society of about 850 Members, of whom about .06% have ever contributed anything to the *Bulletin*. Why not take advantage of these instructions and sit down and write us an article? There are other ways in which you can help, such as recruiting new Members and mentioning the AES to advertisers with whom you do business. For those of you who would like to help in the administration of the Society we are keeping a book of Members prepared to help. In this way if an Officer suddenly resigns a replacement can quickly be found. After great difficulty we have managed to fill all the vacant positions on the Council. Despite repeated appeals throughout the whole of last year only a handful of Members responded to our requests for help. One

of the things which has been worrying us is the absence of new faces on the Council. The AES is not a closed shop, and if you would like to help in this way do please write and tell me. As with everything else nowadays, you will be put on a waiting-list, but your turn will come to be considered by the Council for election. While on the question of vacancies I should like to inform you that our Youth Secretary would like to resign. So far he has not felt able to do so because there is no one to take his place. *Societies do not run themselves*, yet it is only fair that your Officers should feel able to resign after a few years of what is quite hard work. How refreshing it would be if this apparently apathetic attitude were ended, and during the next few days I were swamped with letters from Members prepared to become our Youth Secretary.

One of the difficulties in running a Society such as ours is that there is considerable difficulty in arranging for Members to meet. Judging by the numbers at the Exhibition many of you are keen to do this, although the same cannot be said of the Annual General Meeting. Almost the only way you can meet other Members is by use of the Membership List which at the moment is quite out of date. Until the new one comes out the only way of contacting other Members is through me—the Secretary. I should welcome letters from any of you on anything to do with entomology or the Society. Any questions you may ask I can pass on to a panel of experts. We also want your criticisms, for without these we cannot know what you, the Members, think of a particular scheme. When writing to me it would be appreciated if you could enclose a 3d. stamp for return postage,

though this is not absolutely necessary. I should also like to meet as many of you as possible and introduce you to fellow-Members. Please call on me if you are near Worcester Park, but if possible send me a postcard before calling.

Finally I should like to remind you that *how much you get out of the AES depends upon how much you are prepared to put in it.*

Michael J. Friend (2786),  
1.1.62. *Honorary General Secretary.*

## COLLECTING NOTES - March

### The Smaller Moths

Quite a number of species may be found in the wing during the milder weather of this month. *Semioscopus avellana* Hueb. may be found either on birch trunks or by attraction to light in long-established woods. *Diurnea fagella* Schiff. will be easily found on tree-trunks, and the males will come to light. About twelve species of the genus *Depressaria* do hibernate and I have taken them by disturbing the herbage; at light; or by looking for them on fences. I have not, as far as I can remember, found any on tree-trunks.

There is a paper (which includes a coloured plate), by S. N. A. Jacobs in the *Proceedings and Transactions of the South London Entomological and Natural History Society*, 1949-1950.

However, most collecting in this month will be for larvae, and if the bark is stripped off dead tree-trunks, the dirty-white larvae of *Dasycera sulphurella* Fab. will probably be found. There is a chance of getting the similar-looking larva of the

other species of this genus, the local *D. oliviella* Fab.

The larval cases of the moths which are generally grouped under the name "Psychidae" may be searched for. *Whittleia reticella* Newm. has a case of longitudinally-placed thin fragments of grass and may be found on fine-leaved grasses in salt-marshes. *Epichnopteryx pulla* Esp. has a case of longitudinally-placed grass-stems, constricted at the posterior end. It is a local moth, and I have found it feeding on fine grasses under the shelter of gorse bushes. *Fumea casta* Pallas has a similar case except that the grass-stems are splayed outwards at the posterior end. This moth is much more common, and its larva feeds on grasses in many places. One of the grasses that I have found it on is Yorkshire Fog (*Holcus lanatus* Linn.) The larva climbs up tree-trunks, fences and walls to pupate in May and is then more easily seen.

A much more difficult larval case to find, although common enough where there is lichen on the tree-trunks, is that of *Narycia monilifera* Geoffroy, a moth which Kloet and Hincks, in "A Check List of British Insects," placed in the Tineidae.

The case is small, 5—6 mm. long, and black but dusted with lichen powder. The larva feeds on the lichen on tree-trunks and it is not easy to see the first one. It may be gently removed with a pair of forceps, but is not very easy to rear.

D. Ollevant (1514).

### The Coleoptera

There are usually some days in March when the sun shines warmly and there is very little wind. Such days seem to

favour the congregation of insects, particularly beetles on the concrete sea-walls which have been constructed along the shores of many of our estuaries and sea-coasts. The number of insects which swarm on a sea-wall under suitable conditions is vast and is of the order of hundreds of thousands, possibly even millions, per mile length of wall. There is a constant coming and going of some individuals, while others will remain in one spot for a long time. The collector has the difficult task of choosing what he wants from the large number of specimens available.

The number of different species is not easily assessed. I usually find that about a dozen species are present in very large numbers and perhaps 50 or 60 are less common, some only occurring in ones or twos. The Staphylinidae make up the bulk of the beetles but many other families are represented: Hydrophilidae, Scarabaeidae, Coccinellidae, Carabidae, Chrysomelidae, Curculionidae and Dytiscidae are usually present. A complete list of species collected on even one day would take up too much space in these notes.

It should be made clear that the phenomenon of insects swarming like this is not confined to the month of March, for I have experienced it also in April and again in August and September and it possibly occurs at other times too.

K. C. Side (2140).

## INTERNATIONAL CAMPS FOR YOUNG NATURALISTS IN 1962

The International Youth Federation for the Study and Conservation of Nature announces the following camps

for 1962: the 12th International Camp and 7th General Assembly, at Diksmuide, Belgium; the annual course on nature conservation in the Luneberger Heide, Germany; a conservation camp on the island of Hooze, Germany; and work camps to study plant ecology in Germany and birds in Holland. There may also be a camp in Scotland. Details from Derek S. Davis, 56 Altmore Avenue, London, E.6.

(From the Council for Nature Intelligence Unit's Monthly Press Bulletin No. 21, November 1961.)

D. Ollevant (1514).

## REPORT OF LOCAL GROUP MEETING

Since January 1961, AES Members living near Croydon have been meeting with the Members of the Entomology Section of the Croydon Natural History and Scientific Society. The following is a report of one of the meetings, circulated to all those interested.

There were eight of us at the last meeting on the 6th November, representing equally, incidentally, the under-twenties and the over-thirties.

Mr Cecil Bell brought a drawer from his collection containing some beautiful varieties of *Ochlodes venata* Br. & Grey (Large Skipper), *Erynnis tages* Linn. (Dingy Skipper) and *Pyrgus malvae* Linn. (Grizzled Skipper).

Mr Peter Taylor brought a variety of exhibits. One was the larvae of *Lampra fimbriata* Linn. (Broad-bordered Yellow Underwing) which he showed at the previous meeting, now much grown. The brood had been separated into two batches, the average size of the cater-

illars in one being appreciably larger than that of those in the other. It is interesting that there should be this marked difference in size, as the larvae are from eggs laid by a single female [an unfortunate oversight.—Ed.], and they have been reared together. The rather rash theory has been put forward that the larger specimens are females, and the smaller males. We shall know if this is so when [if—Ed.] the adults emerge. Alternatively, as males usually emerge before females in most Lepidoptera, it may be the larger and more rapidly developed which are the males (see *ull. amat. Ent. Soc.*, 21: 11—12).

Another interesting object was a piece of wood bored with holes which were packed with the bodies of various Syrphidae (Hover Flies). This was undoubtedly the work of a species of *Trabro*, *sensu lato*, (Hymenoptera: Phoridae), a genus of solitary wasps, many of the representatives of which furnish their brood-chambers with Diptera for the nourishment of their offspring. A further exhibit was a cocoon spun among dead leaves which, it was thought, might be that of a Noctuid moth.

Peter Taylor also brought from his library a copy of C. G. Barrett's "Lepidoptera of the British Isles," Vol. I, 1893, with many beautiful coloured plates: one of which, incidentally, illustrated a rare variety represented in Mr Bell's drawer of Skippers.

But, it was universally agreed, the real interest of the evening centred on Mr Denis Bush and two boxes of South American butterflies, mostly Nymphalidae, which he brought. These were most beautiful insects, some of them unfamiliar from their selection to illustrate

those expensively produced books full of coloured plates of tropical Lepidoptera. Now, however, we saw the real things, resplendent in all their undimmed hues. The brilliance of their colouring, compared with many specimens seen in collections, caused some comment, and it was thought to be the effect of setting in the field, as opposed to the common practice of leaving specimens in papers for months for ease of transport, which leads to rubbing of the scales and consequent loss of brilliance. It was noticed that the tufts of hair-like scales (androconia) on the wings, which diffuse scent during courtship, were particularly well developed in some species. The undersides of many of the butterflies bore patterns in striking and beautiful contrast to the uppersides; others had the famous "dead leaf" markings which are so remarkable a form of protection. However, it is useless to attempt to describe these wonderful insects in words: they have to be seen. Those not among the eight present haven't lost their chance, because Mr Bush promised to bring some more at later meetings.

We also heard quite a lot about his travels in the Amazon basin. The hazards of life in this part of the world are not quite what one is led to believe from sensational literature. The dreaded piranha fish are said to reduce a man to a skeleton in two minutes if he be unlucky enough to fall out of a canoe; Mr Bush paddled amongst shoals of them, and he came to no more harm than if he had been in Mr Bell's goldfish pond. Anacondas, the largest snakes in the world, are kept as household pets in the villages, and used to keep down the rats. Jaguars shared his camp-fire, and one had the impression, although it

wasn't directly stated, that it was the custom to leave out a saucer of milk and a few fish-heads. The chief enemies were biting flies (this will waken a sympathetic response in Roger Farrow, after his experiences in Greece), and ants, which were fierce, innumerable and ubiquitous. Some of the flies were so small they could penetrate the finest net. Ordinary repellent creams were useless, and apparently served merely as sauce to the meat. The only effective deterrent, if a somewhat drastic one, was to drench oneself from head to foot in paraffin, which the flies didn't like at all. It wasn't quite so clear what could be done about the ants, but we did hear of an episode in which Mr Bush, thoughtlessly clutching a branch above his head as his canoe passed beneath, brought down about a million fiercely biting ants on to the heads of the passengers, who were compelled to abandon ship and lie submerged in the water until their assailants had been drowned and washed downstream.

Further unpleasant hazards were offered by sting rays which lie hidden in the mud at the edges of rivers, and electric eels which become stranded in small pools as streams dry up. It was also a little startling to hear of freshwater sharks abounding in the Amazon a thousand miles or more from the mouth.

The methods of collecting were distinctly novel to his hearers, whose experience was confined to Europe. The comparatively few butterflies which fly at an accessible level through woodland glades could scarcely be seen, but warned the man with the net of their approach by the loud clicking of their wings in flight. Most of them, however, kept to the tops of the trees, and had to

be enticed down if they were to be caught. The favourite method was to select a particularly large tree in the forest, and put a charge of high explosive underneath it. A shatter charge would instantly reduce the entire tree to powder; a more modest one would merely blow it out of the ground and throw it twenty or thirty yards. The collector returned a week later armed with pieces of rotten banana thoroughly steeped in the most potent form of alcohol available. These were scattered about the clearing formed by the removal of the tree, and, next day, hundreds of butterflies of every kind would be found feeding on the ground. It would have been a simple matter to net as many as were wanted, had it not been for one species, as common as all the others put together, which was very wary, and flew at the slightest movement, naturally disturbing all the others. This was in contrast to another species, which had the habit of falling asleep in the middle of the day in clusters on exposed branches, from which they could simply be picked off.

So we were left with a graphic portrait of the mid-twentieth century lepidopterist: dripping with paraffin, reeking of fermented banana, and armed with high explosive.

The next meeting will be on Monday, 4th December, at 7.30 p.m., at Ruskin House. The one after that will be on New Year's Day. It is hoped that quite a lot of Members will be able to come then, because if all goes as planned, there will be as a seasonable attraction refreshments in the form of as great a variety of edible insects as can be assembled. If anyone can contribute any, they will be most welcome. A few fried

gr shoppers, it is thought, will come as a welcome change after a week of turkey, mince pies, and Christmas pudding.

Many Members living within a reasonable distance of Croydon do not know of these meetings, but would like to attend them, or to receive the monthly circulars, they are invited to get in touch with me.

Ernest Lewis (952).

## BUTTERFLY POPULATION NOTES FROM EAST KENT—1961

The year opened with the usual flurry of Holly Blues (*Celastrina argiolus* Linn.), for which the earliest date was 19th March; Large, Small and Green-veined Whites (*Pieris brassicae* Linn., *P. rapae* Linn., and *P. napi* Linn.: earliest dates 5th, 24th and 14th March respectively; and Brimstones (*Gonepteryx rhamni* Linn.), for which the earliest date, strangely enough, was the 6th April. All these were out in usual force.

Later on we found the "Browns" (*Maniola* spp.) to be out in usual numbers, and the same with the "Skippers" (Esperiidae) and "Hairstreaks" (*Necla* spp., *Strymonidia* spp.)—although I found the Purple Hairstreak (*T. mercus* Linn.) to be less frequent in its usual haunts.

Common Blues (*Polyommatus icarus* Fitt.), Small Coppers (*Lycaena phlaeas* Linn.) and the Brown Argus (*Aricia aestis* Schiff.) all seemed to be as plentiful as ever: if anything, more so. The Small Blue (*Cupido minimus* Fuessl.) was found in very sparse numbers only, but this may well be due to over-collecting. Of the Chalkhill and Adonis Blues (*Lysandra coridon* Poda and *L.*

*bellargus* Rott.) I have no figures, but all I can say is that I have not found them. As I have mentioned, all the commoner Pierids (Whites) were plentiful—except the Orange Tip (*Anthocharis (Euchloe) cardamines* Linn.), whose numbers seem to have declined lately.

Nymphalids, as far as Peacocks (*Nymphalis io* Linn.), Commas (*Polygonia c-album* Linn.), Red Admirals (*Vanessa atalanta* Linn.) and Large Tortoiseshells (*Nymphalis polychloros* Linn.) are concerned, were in usual force, but of the Painted Ladies (*Vanessa cardui* Linn.) I have few records, and the Small Tortoiseshell (*Aglais urticae* Linn.) was almost scarce. The White Admiral (*Limenitis camilla* Linn.) remained fairly abundant.

The most common Fritillary was, as usual, the Pearl-bordered Fritillary (*Argynnis euphrosyne* Linn.), with the Dark Green (*Argynnis charlotta* Haw.(=A.) *aglaja* Linn.) second and then came the Heath (*Melitaea athalia* Rott.) (in enlarged numbers), and finally the Silver-washed (*A. paphia* Linn.) and the High-brown (*A. cydippe* Linn.).

The past year appears to have been a poor one for Clouded Yellows (*Colias* spp.), I, in my own "corner", having only one record: the Pale Clouded Yellow (*C. hyale* Linn.) at Margate. Also no French Swallowtails (*Papilio machaon* Linn. ssp. *gorganus* Fruhst.) have drifted across this Summer.

P. J. S. Miles (3343\*).

## A SUCCESSFUL MISSION TO KENT

For several years, I have had a conspicuous gap in my collection among the Notodontidae (Prominent moths) and

although most of the indigenous species of this rather attractive group have come my way from time to time; yet I have never been fortunate enough to discover the whereabouts of *Ptilophora plumigera* Schiff. (Plumed Prominent). It seems strange that such a robust moth should choose mid-November to be out and about, instead of behaving more like the rest of the family. Such is the case however; and those who want to catch this somewhat local insect must be prepared to quit the comforts of the fireside at a time of the year when most outdoor collecting is practically at a standstill.

From the meagre information which I was able to trace in back numbers of the *Bulletin* (*Bull. amat. Ent. Soc.*, 7: 28 and 227), I learnt almost nothing and I am indebted to our Member Mr. B. F. Skinner for so kindly putting me on to a locality where it is known to occur freely. I had hitherto tried a few places in Kent in the Eynsford district, but without success. Last year Mr. Skinner took a single example in the Ashford district of the same county and I was determined to "have a go" myself this Autumn.

The first suitable opportunity occurred on Saturday, 19th November, 1961. I had diligently searched the pages of British Railways' timetable and found that I could get there and back from my home town (Dorking) the same evening and still have several hours' collecting. Accordingly I set out on my motor-scooter and reached Redhill in time for the 3.12 p.m. train to Tonbridge. Thence non-stop to Ashford, which I reached at 4.30 p.m. Having been rather staggered at being asked for 20s. 6d. return fare at Redhill, as the train sped

on into the fast-gathering gloom, I reflected rather ruefully that I would have paid dearly for my expedition, should I come back empty-handed. Reaching Ashford, it was necessary to go some way out into the country, not so very far from the little town of Wye. As a rule, co-ordination between train and bus in country towns leaves a lot to be desired; but for a change I did not have long to wait, and soon a comfortable *East Kent* bus took me all the way and deposited me at the edge of the collecting-ground.

The time was now 6.0 p.m. and darkness had set in. The evening had turned out ideal for my purpose: not chilly; no nip of frost in the air; no moon; and although easterly, the wind was hardly noticeable. Finding a likely spot, not far from a large maple tree (the food-plant of *P. plumigera*) and just beside a small wood, I lit my Coleman 500-candlepower paraffin lamp. Scarcely was the light shining out when, just as I was assembling my net, a reddish-brown moth fluttered on to the sheet. This I "boxed" and confirmed it to be a Plumed Prominent, the highly pectinated antennae from which the species derives its name making identification easy. Before I could get the net properly rigged up, five more came in quick succession, all of which I was able to capture without the aid of the net. I was amazed at my good fortune; I had hardly expected to get so many within about three minutes. After an hour's wait four more stragglers turned up and as a total of ten was sufficient for my purpose, I packed up and tramped back to Wye station, where I was just in time for the 8.17 p.m. train to Ashford. Of course, all my specimens were males (mostly "in the pink" of condition), as

apparently the female is not usually attracted to light. On my way to Wye, I searched hedge-side maples in the hopes of finding a female moth, but without success. Perhaps if I go again next year in early Summer, I may be able to beat out a larva or two.

I carefully examined my captures in the train coming home and all of them had settled down quietly in pill-boxes: I never take a cyanide bottle out with me in the field. I eventually reached Redhill at 10.24 p.m. and lost no time in bringing the seven-or-so miles home. Before retiring, I re-examined the "spoils", dropped them into the lethal bottle, and now look forward to the day when I can remove them from the setting-boards and fill up another box in my collection. Having collected for over 30 years, it becomes increasingly difficult to acquire a new species each year, but somehow, in 1961 I have managed to find four new species.

Raymond F. Haynes (834).



### EYED HAWKMOTH

**AMERINTHUS OCELLATA LINN.)  
AT STONE, BUCKS: 1958-1959**

It is probably safe to say that, to the average amateur entomologist, the chances are pretty limited of being present at the precise moment when a critical stage in a metamorphosis is taking place.

In this connection, it was my privilege some years ago—on 4th October, 1958—to be precise—to be able to witness, in a specimen of *S. ocellata*, the whole process of change from fully-fed larva to pupa.

I had found the larva, strange to say, on the back door-step to our house, and while I cannot now be certain, I think it must have arrived there *via* some boxes of apples which had been brought down from the garden. From its size (about  $2\frac{1}{2}$  inches), lethargy, and the "doubling" movements it made on being handled, it seemed that pupation was imminent; and this proved to be the case after I had provided it with a suitable earth-lined container. As an "Occasional Amateur Entomologist", I breed only on rare occasions [!—*Ed.*]. In consequence, I have very little breeding apparatus, and I use whatever suitable container I can lay my hands on at the moment. This time, by sheer chance, I happened to use an old all-glass fish-tank, which had been lying about the house for years. Sheer chance also that in "going to earth" (which it did two days after I had obtained it) the larva made its pupal cell right against the side of the tank—thus giving me the prospect of a grandstand view of the next stage in the insect's metamorphosis, *i.e.*, the change to pupa.

I resolved not to waste the opportunity but to record the coming event in some detail—that is, if it did not occur during the night or when I was away during the day. I was lucky: on the evening of 4th October—approximately 8 days, inclusive, after the "going down"—the change commenced. Just previous to this, the larva had become shorter and fatter; its true legs were clasped together, and its horn depressed flat against its body. At intervals it made convulsive contractions, like those it had made when I handled it *before* it had "gone to earth". I first noticed that pupation was actually beginning when I saw that some of the larval skin had

been drawn downwards by the terminal pupal hook or cremaster, thus tightening the remainder of the skin surface. Then, as I watched, the skin suddenly split between the lobes of the head and slowly and in jerks slid down to the tail, gradually disclosing the pupa—which at first was a beautiful shade of green, but rapidly darkened to a very dark brown.

Shortly after this, I removed the pupa from the earth, because I thought the latter might harden (it was not anything like an ideal composition) and become difficult for the emerging moth to negotiate. If—what a fateful word that is!—I had used the correct soil mixture, I might have been able to witness the emerging moth's struggles to the surface. But perhaps it is too much to ask to see two complete stages in one metamorphosis! In any case, the imago emerged successfully in my absence, and at a comparatively early date—on or some days before 4th May, 1959. Perhaps the warmth of my room had something to do with this.

In conclusion, a few words may not be out of place on the frequency with which *S. ocellata* is encountered in my district. In previous years, when we had more fruit trees than we have now, it was rare that a year went by without the accidental discovery being made of at least one well-grown larva, usually on apple; and although I have never encountered the moth in the wild state—never having actually sought it—I have on many occasions reared imagines from larvae found locally. I presume from this that *S. ocellata* is reasonably common in mid-Bucks.

Anthony Wootton (3331).

## VARIATIONS IN WING- VENATION

I should like to comment on an article (*Bull. amat. Ent. Soc.*, 20: 22) by Mr John H. Drake, which I consider to be somewhat misleading.

The article was illustrated by admirably simple line-drawings of the wing-venation in question, but unfortunately the wing-veins had been religiously numbered from the costal margin ("leading-edge") of each wing in strict sequence. Thus, if one compares the courses followed by veins bearing the same number (which, to my mind at least, implies that they correspond), one finds that the two variants seem extreme.

If, however, one compares the wing-veins of each wing in turn of either variant, with those of the typical Saturniid represented by Fig. 1, starting first from the costal margin and labelling the veins of the variant with the numbers placed against comparable veins in the "typical" figure, and stops doing so as soon as the correspondence ceases; whereupon one recommences the process but starting from the anal margin ("trailing-edge"), once again stopping when the correspondence ceases: one gets a far clearer picture of the degree of variation in each variant.

In fact, in Fig. 2, I should interpret the irregularity as comprising the coincidence of veins 3 and 4 in the forewing, and transfer of the origin of vein 4 in the hindwing from vein 3 across to vein 5, with attendant displacement of the latter towards where vein 4 "ought" to be. As a general biologist as well as an amateur entomologist, I should regard this variation as something to be expected in an interspecific hybrid, as

the parents are genetically incompatible. On the other hand, the hindwing variation does give a hint as to how the born tendency of the cells of an organism such as this moth, to range themselves during (? pupal) development into the pattern of wing-veins that we see, works itself out.

The same could be said of Fig. 3, where the same sort of irregularity has occurred, but here the origin of vein 2 in the forewing has shifted from vein 1 across to vein 3.

I have read no response in the *Bulletin* to Mr Drake's appeal for records of comparable variation. Is there none?

Peter G. Taylor (719).

go about this (see list of references at end). Cockroaches may be bought from Messrs T. Gerrard & Co., 46-48 Pentonville Road, London, N.1.

### *Anatomy of an Insect*

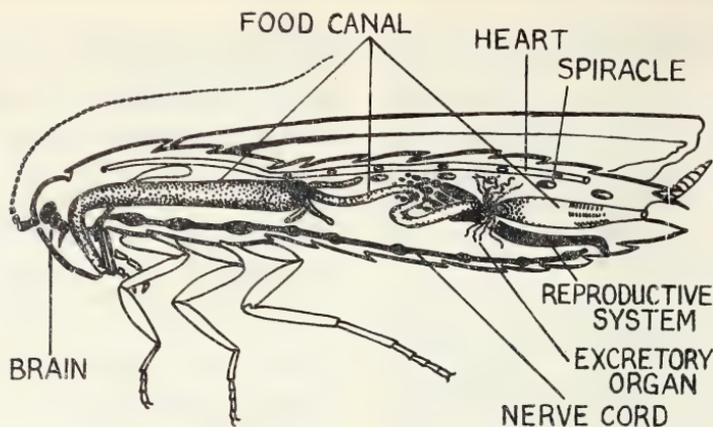
Insects live in the same world as you and I and all other animals. They are therefore beset with the same dangers as we are. Accordingly, the insects that survive to-day are those whose mode of functioning protects them from these dangers. Of course, this will depend on their structure, and it is not surprising that there are striking parallels with the structure of other animals. For instance, an insect has a skeleton which supports it, muscles that enable it to move about, and a nervous system that co-ordinates its various activities. These include feeding, excreting, keeping the blood circulating, and, in some insects, breathing. Finally, even though the chemical machinery of its body becomes less and less efficient as it gets older (or it meets an untimely end!), its ability to reproduce saves its kind from extinction.

In the accompanying rather simplified diagram I have tried to show some of the structures in an insect that fulfil these functions. Unlike ours, the skeleton is on the outside and consists of a series of tough plates of a substance called chitin, jointed in a way that permits movement. Within this casing much of the content is muscle, which I have not shown. Those organs I have shown are immersed in blood, which is not enclosed in veins or arteries but is kept slowly circulating by being forced repeatedly through the long tubular heart shown near the top of the diagram. It passes in by the holes along the sides, is forced forward along the full length of the heart and spills freely out at the

## JUNIOR NEWS SECTION

### *Editorial*

In an earlier *Bulletin* (*Bull. amat. Ent. Soc.*, 20: 78) P. Trigg (3271\*) and G. J. Walder (3335\*) commented on the lack of a clear but simple account of the internal anatomy of an insect. I intend in the next few issues of the *Bulletin* to attempt to do something about this for them. After careful thought and some experiment with other insects I am following tradition and using the Cockroach as an example. The reasons for this choice are connected with the fact that I think you should not be satisfied with reading about it, but should follow up by looking inside an insect yourself some time. If you should choose to do so you will find that the Cockroach is just about big enough to make this possible. Moreover, since it is used in school Biology classes there are instruction books to give full details of how to



head end. It then seeps back around the bodily organs and repeats this circuit. (The action of the heart may be observed in large smooth caterpillars such as those of some Hawkmoths, since their skins are transparent).

The blood, unlike ours, is not primarily concerned with carrying oxygen. A system of tubes (called "tracheae") carries air from the exterior direct to the remotest tissues of the insect. I have not attempted to show these tracheae, but have tried to represent the spiracles, which are openings by which they communicate with the exterior. As the blood circulates it receives the waste matter produced and exuded by the organs as they carry out their varied jobs. This waste is extracted from the blood by the excretory organ (consisting of a cluster of so-called Malpighian tubules) to be deposited in the latter part of the food canal, and so carried out of the body with what remains of undigested food.

A lot of space in the body may be occupied by food reserves derived from the food eaten by the insect. These may be regarded as a fuel supply—like the contents of the petrol tanks of an aeroplane. The value of this comparison can be seen if we consider a locust or a

Hummingbird Hawkmoth (*Macroglossum stellatarum* Linn.) setting off on a migratory flight of some hundreds of miles. The fuel consumed on such a flight must be considerable. Also occupying much space may be the reproductive system—and I have shown in my diagram the developing eggs and the tube by which they are passed out of the body. T. S. Robertson (2417), *Youth Secretary*.

#### REFERENCES

- ROWETT (H. G. Q.): *Dissection Guides, No. 5—Invertebrates*. John Murray, London, 1953.  
 WHITEHOUSE, (R. H.) and GROVE (A. J.): *Dissection of the Cockroach*. University Tutorial Press, London, 1949.

#### NOTES ON

#### TELEA POLYPHEMUS CRAMER

My experiences with these Silkmoths may be of interest to beginners in the rearing of foreign insects.

On June 18th, 1961, my batch of a dozen ova hatched, and the larvae fed very well on hawthorn (*Crataegus* sp.) in an airy cage indoors and soon grew to an enormous size. They spun up in a sectioned box from the 28th July onwards, except for the first one ready, which I popped into a paper bag with some twigs, for quickness.

On the 29th August, I collected all the cocoons together for their winter quarters. When I opened the paper bag, I was surprised when something moved, and I was even more surprised to find that it was a perfect female moth, which had potted the inside of the bag with eggs. She must have emerged at least two days previously, making a complete life-cycle of only ten weeks. It was amazing to me that such a large moth (6 inches wingspan), could expand its wings perfectly in such cramped quarters.

During the following week, five more moths emerged, and the remaining six have passed the Winter as pupae and should emerge this Summer.

My children and I were lucky enough to watch the emergence of one of the moths. It took fully an hour from the first damp spot on the cocoon, to the time when the moth struggled free. I think it must have had abnormal difficulty, because it had lost a lot of the fur-like scales from its back. In future I shall cut the cocoons to ensure easy emergence. I know that this practice is usually frowned upon, but I have treated other species of Silkmoths in this way, with success. This also seems to save their energy for a longer life—up to three weeks.

I did not obtain any pairings, although I left the moths in a large cage together. The females all laid eggs on their second night, regardless of whether any males were present. It would seem necessary to have a male and female emerge on the same day for breeding purposes [see footnote]. Of course I could not have reared larvae so late in the year, but I have learned from my experiences.

Joyce I. Heslop (3356).

As I am sure Mrs Heslop will know, female animals have a very busy time doing the many things necessary for the well-being of their offspring, so that their time is very valuable to the species. Therefore, the shorter the time before she mates (no, the moth, not Mrs Heslop!) and can therefore fulfil these functions, the less a female moth brings potential danger to herself and her species by reason of her vulnerability—she carries a heavy load of eggs and is the naturally sessile sex.

It is usual, then, in Nature, for males to emerge rather earlier than the females: thus, by the time the females appear, there are plenty of unmated males flying and searching for mates, and the time lost is minimal.

I should hazard a guess that Mrs Heslop's lack of success in obtaining pairings among her Silkmoths is probably due to another factor (or combination of factors) such as partial inversion of emergence-times due to some artificial disturbance of external conditions, e.g., temperature range during the pupal stage. The latter could also affect directly the sexual maturity of one or both of the sexes, by interfering with the rearrangement and further development of the cells of the pupa.—*Editor.*

•

## REVIEW

**Wild Silk Moths of the United States**, by Michael M. Collins and Robert D. Weast. Pp. 138, 96 illustrations. Collins Radio Company, Cedar Rapids, Iowa, U.S.A. Price in this country about £3.

The first part of this book consists of a systematic review of the twenty-one species of Saturniids of the United

States. All of these belong to the sub-family Saturniinae, except three in the genus *Automeris* which is in the sub-family Hemileucinae. The form of this review is similar to that in our own *Silkmoth Rearer's Handbook*. In contrast though, there is far less space devoted to mere descriptions of ova, larvae and pupae, no doubt because the authors feel that their excellent photographs are sufficient in this respect. The only pity is that they are not in colour. Under each species there are sections on habitat, breeding habits, breeding in captivity, and collecting. There are also general remarks on each genus.

The second part, which occupies approximately one third of the book, is entitled "Studies and Experiments". There are sections on population dynamics, breeding-flights, parasites, diseases, breeding and hybrids. It is this part of the book which is of particular interest, notably the sections on parasites and diseases. The authors discuss and describe many of the more common parasites and diseases frequently encountered in our breeding-cages. Their treatment of these sections shows an obvious understanding on their part of all the problems associated with Saturniid breeding. This part of the book is by no means exhaustive but it does approach the subject in a scientific way which even the beginner can understand.

The book is very fully illustrated throughout with magnified photographs of all the stages together with breeding-cages and miscellaneous equipment. There is no index but I did not find this a disadvantage, as the layout of the book is quite excellent. The volume is beautifully presented, well

bound, and printed on very good-quality art paper, this, no doubt, contributing largely to the high price. One word of warning: the classification as revised by C. D. Michener can be confusing. However, one soon gets used to the unfamiliar names applied to some of the genera.

This book is a "must" for any student of the Saturniidae. The species covered are all strictly of the U.S.A. but the second part of the book applies equally to all Saturniids. I hope every Saturniid enthusiast will invest in a copy by next season.

M.J.F.

## TROPICAL SPIDERS

At the time of writing I know of three Members besides myself who are actively engaged in keeping tropical spiders, two more than I knew in 1960.

How many more Members share our interest and how many of these are aware that the rest of us exist?

I therefore propose that all interested Members who have kept or are keeping tropical spiders send their name, AES number, address and brief details to myself at: 20 Boldre Close, Leigh Park Estate, Nr Havant, Hants.

The list, which I believe will be extremely useful to all concerned, will be published in the *Bulletin* together with any other notes of interest.

M. E. Castle (2490).

In the AES Membership List, which will be published later this year, will be printed the special interests (relevant ones, at least!) of all Members who have supplied details of them.—*Editor*.

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EDITED by PETER G. TAYLOR, B.Sc., F.R.E.S.



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

*Offers to lead Field Meetings, exhibit, etc., to: Dr K. J. Fox, 202 Ewell Road, Surbiton, Surrey.*

*Manuscripts, drawings, and books for review to: Peter G. Taylor, International Language Club, 12 Park Hill Road, East Croydon, 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.*

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In good English.

Preferably typewritten, double-spaced, with wide margins, and on one side only of quarto paper.

Heading in capitals, NOT underlined.

Correct scientific names, consisting of name of genus (capital initial, and underlined), name of species (small initial, and underlined), authority (conventionally abbreviated, NOT underlined).

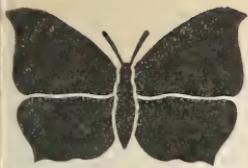
English names of species, etc., with capital initials.

Your name at end, on the right, followed by your AES Membership Number in parentheses.

Date of writing, all in figures (e.g., 15.8.27.), opposite your name.

Number of words, in pencil and ringed round, in top right corner of first sheet.

Return proofs promptly.



### **EDITORIAL**

This issue of the *Bulletin*, nominally for April-May, is, like the March number, enlarged by one sheet of four pages. Provided sufficient copy has accumulated in time (that means "provided you have written enough articles"! ) the fine issue will contain the third and last sheet of the "missing" number.

The present *Bulletin* contains the important annual administrative reports of the activities and state of the Society, and I hope you will take the trouble to read these. All too often one hears complaints that Members (not many, mercifully, but vociferous) "don't know what's going on in the Society." It is in reading these reports that one keeps in touch with such things. It is for this reason—to keep Members informed—that so much space has recently been devoted to the clarification of A E S matters. There have been one or two complaints about this, but most Members seem glad of an opportunity to hear what makes the Society "tick."

Elsewhere in this issue there is a very interesting suggestion that "splinter-group" exhibitions and field meetings should be held in the North. What do Members think about it?

This *Bulletin* has been held up by the necessity to get the February *Bulletin* printed as soon as possible. However, I think we're winning. The extra work involved in getting the February number printed for the second time, has made it extremely difficult to deal promptly with correspondence, and I do hope

Members will bear with me for a while, until we get things sorted out.

Peter G. Taylor (719).

### **SECRETARY'S LETTER**

There have already been two announcements in various circulars to the effect that the Offices of Honorary Publications Secretary, Honorary Registrar and Honorary Assistant General Secretary are abolished. I should like to take yet one more opportunity of reminding you of this so as to save the Society unnecessary postal expense in forwarding correspondence to the appropriate Officer.

All Society correspondence in the nature of Membership applications, offers of help, changes of address and non-arrival of *Bulletins* should be sent to me. (My address is now on the front cover of the *Bulletin*). All orders for publications, whether they be Handbooks, Leaflets or back-numbers of the *Bulletin*, must be sent to our Official Agent, Mr L. Christie. Mr Christie advertises regularly in the *Bulletin*, from whence his address may be obtained. Money should not be sent with the order, as an invoice will be sent with the publications. While on the question of publications, I should like to remind Members that Mr Christie now has in stock a very representative selection of back-numbers of the *Bulletin*. Many Members, I know, have the odd few copies missing from some of their volumes. If you are one of these why not complete your run of *Bulletins* by

purchasing the necessary missing numbers from Mr Christie?

No correspondence at all should be addressed to either Mr Byerley or Mr Pratt. If there is any doubt as to whom to write to, then address communications to me.

I have already appealed in the Wants and Exchanges List for full details of any address changes, changes of interests and additional qualifications (degrees, etc.) gained since joining the Society. I would remind you once again to let me have such information immediately, as the preparation of the Membership List is now well under way. In a few weeks' time I shall no longer be able to include in the List any more alterations. If, therefore, you wish to amend any of the information likely to appear in the List, you have only a few more weeks in which to do it.

I have in my possession details of the programmes for the Field Studies Council field courses. I also have details of many other residential courses in natural history. Members requiring further information should write to me unless, of course, they already know of the appropriate authority. Where possible, Members are advised to write direct to the authority concerned, but I will act as "go-between," supplying the necessary addresses, etc.

Michael J. Friend (2786),  
*Honorary General Secretary.*

## ANNUAL GENERAL MEETING

The Annual General Meeting was held in the Linnean Society's rooms at Burlington House, London, W.1, on the afternoon of Saturday, 31st March, 1962.

It was preceded by a conversazione

and two films, "The Marsh Fritillary Butterfly" and "The Life History of the Alder Woodwasp and its Insect Enemies." We were very pleased to have introducing the first film Mr C. L. Bell, who was responsible for the entomological direction and research. Mr Bell told of his experiences during the making of this film, giving away several "trade" secrets in the process. Several Members then took advantage of Mr Bell's request for questions.

The AES Council for 1962 is now constituted as follows:—

<i>Hon. President</i>	G. D. Trebilcock
<i>Hon. General Secretary</i>	M. J. Friend
<i>Hon. Treasurer</i>	G. D. Trebilcock
<i>Hon. Asst Treasurer</i>	K. H. Bobe
<i>Hon. Bulletin Editor</i>	P. G. Taylor
<i>Hon. General Editor</i>	R. W. J. Uffen
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<i>Hon. Youth Secretary</i>	T. S. Robertson
<i>Hon. Meetings Secretary</i>	K. J. Fox
<i>Councillors:</i>	P. W. Cribb, W. N. Lawfield, A. B. McGeeney, A. R. Middleton, N. C. Miller, D. Ollevant, C. B. Pratt, B. F. Skinner, L. S. Whicher, N. Wilding.

N.B.—Messrs. G. D. Trebilcock and L. S. Whicher were inadvertently omitted from the "Councillors remaining in Office" section of the Meetings Notice circulated with the January *Bulletin*.

A total of 51 Members and friends signed the Attendance Book.

Michael J. Friend (2786),  
*Honorary General Secretary.*

## COUNCIL'S REPORT FOR 1961

The number of subscriptions paid for 1961 was 800, and together with those

Members joining since the 1st September 1961, whose subscriptions cover 1962, the final membership for the year was 838. This was composed of 605 Ordinary and Affiliate, 225 Junior, 1 Life and 7 Honorary Members.

These figures show an increase in membership of 23 since the previous year, and 44 since 1959.

Eleven issues of the *Bulletin* were published, but it was found impossible to publish each number on time; in an attempt to remedy this situation the Council decided to change printers at the end of the year, so the effect of this will not become evident until about the middle of 1962. The Hon. *Bulletin* Editor, Mr W. N. Lawfield, resigned owing to failing health and overwork, and the council co-opted Mr P. G. Taylor to take over his duties. However, his first *Bulletin* would not appear until 1962.

At the Annual General Meeting in March, Members were able to enjoy an illustrated talk by Mr J. H. P. Sankey, Warden of Juniper Hall Field Centre, entitled "Why Collect Invertebrates?"

Following the criticisms of the 1960 Exhibition, the Council decided to accept the advice of the Hon. Meetings Secretary and book the accommodation of the Hugh Myddelton Secondary School. The Exhibition was a great success, and a full report on it has already appeared in the *Bulletin* (*Bull. amat. Ent. Soc.*, 20: 123).

By kind invitation of Mr G. D. Hall, many Members attended the field meetings held by the Entomological Section of the London Natural History Society.

The Council met six times during the year, for the first quarter under the chairmanship of Mr R. W. J. Uffen, and for the rest of the year under Mr D. Ollevant.

The Council was short of assistance and the President had to carry out the duties of the Hon. General Secretary as well. However, towards the end of the year the position was much improved, and the Council co-opted Mr Michael J. Friend to be Hon. General Secretary with effect from 1st January 1962. At the same time the offices of Hon. Assistant General Secretary and Hon. Registrar were abolished, their duties being absorbed into those of the Hon. General Secretary. It was felt that this would greatly facilitate the smooth running of the Society. The Council was also confronted with the difficult problem of finding someone to take over the sale and storage of the Society's publications on the resignation of Mr C. B. Pratt, to whom our most heartfelt thanks are due for the many years during which he undertook this onerous duty. Mr L. Christie, the entomological dealer, is now the official agent for all AES publications.

The Society's chief obstacles in 1961 were the difficulty of producing the *Bulletin* punctually and the lack of administrative help. An attempt has been made to solve the former, but if it proves unsuccessful in 1962, other measures will have to be taken.\* The latter problem has been largely solved by offers of help and by amalgamation of administrative functions. The greater youth and vigour of the new Officers augurs a much brighter future for the AES in 1962.

Michael J. Friend (2786),  
*Hon. General Secretary.*

\*Since this report was written the attempt to produce the *Bulletin* on time proved unsuccessful and we have now changed printers once more in a further attempt to rectify the situation.

## TREASURER'S REPORT FOR 1961

Once again I have pleasure to report that the financial position of the Society has remained satisfactory. On December 31st 1961 cash available at the bank stood at £827 17s. 10d. This figure indicates that the Society's policy of building up a reserve for future publications has been successful, especially if one considers that cash at the bank in December 1959 stood at £418 5s. 5d. This accumulation has been made possible because no major publication has been produced during the last five years, and because the Society has been supported by sales from past publications. The publications of the Society are now running down and our financial position can be maintained only if Members continue to pay their subscriptions regularly and on time, thus saving much unnecessary expense incurred by numerous subscription reminders. Since 1959 the Society has been forced to spend an amount approximately equal to the cost of one *Bulletin* issue chasing belated subscriptions.

It has not been the policy of the Society since its inception to hold a deposit account for a reserve fund. However, the Council has decided that from this year (1962) a deposit account will be initiated with the initial sum of £400 invested at  $3\frac{3}{4}\%$ . As the Society is a non-profit-making organisation it will not be liable to taxation. Thus we are able to allow this deposit to earn money without fear of taxation.

I am sure that with Members' co-operation this year will prove to be as satisfactory as the last.

G. D. Trebilcock (7976), *Hon. Treasurer.*

## THE ANNUAL REPORT FOR 1961-1962 OF THE SOCIETY'S REPRESENTATIVE ON THE NATURE CONSERVANCY'S ENTOMOLOGICAL LIAISON COMMITTEE

Your representative on this Committee is pleased to report that the usual bi-annual meetings were attended at the Nature Conservancy's headquarters in November last and March of this year. Amongst the subjects discussed were the following.

Progress with Nature Reserves and Sites of Special Scientific Interest ("S.S.S.Is.") was reported and again the Conservancy asked that entomologists visiting these should give more information in their reports, particularly ecological details wherever possible rather than just plain lists of species observed. Questionnaires are now being issued with permits, to assist visitors in this matter. Progress reports were given of the various entomological surveys carried out.

Amongst the several matters that were brought up for discussion were some of particular interest to your representative. These were the lopping of poplar trees in one of the Thames valley localities for the Pale Lemon Sallow Moth (*Cirrhia ocellaris* Borkh.) and the conservation of the habitats of the Lewes Wave Moth (*Scopula immorata* Linn.) and the Large Blue Butterfly (*Maculinea arion* Linn.). The last two insects are both extremely local, the moth particularly so as it is only known to occur in one small area in one wood in Sussex. Management programmes were discussed and reports were made on some of the reserves, one of which was a reserve in Oxfordshire for the Black

hairstreak Butterfly (*Strymon pruni* Linn.).

Finally, at the last meeting the writer brought to the notice of the Conservancy, which was asked to report at the next meeting, the fact that the Forestry Commission makes a charge of £1 for a permit to collect in the New Forest area and also another £1 to use a mercury-vapour light.

Your representative is very pleased to report that his concluding remarks at the last Annual General Meeting which were published in the *Bulletin Bull. amat. Ent. Soc.*, 20: 86-7) proved sufficiently provocative to stir some of our Members into writing to him personally about conservation matters, and he even to publish an extremely apt and informative article in the December issue of the *Bulletin (Bull. amat. Ent. Soc.*, 20: 121-3).

T. G. Howarth (196).

## COLLECTING NOTES—

### April-May

#### The Smaller Moths

On the milder days in April and on most days in May, quite a number of species may be found flying during the day or resting on tree-trunks, or may be attracted to light at night.

Probably the commonest moth to be found in suburban gardens, and indeed almost everywhere, is the pretty *Dasynera sulphurella* Fab., its larva having fed under the bark of dead trees.

*Pancalia leuwenhoekella* Linn. is a gem of a moth which flies in the sunshine in the neighbourhood of violets. I have found it to be quite common on the North Downs, but owing to its small size and low, rapid flight it is not very easy to see and catch.

*Adela viridella* Scop. and *Incurvaria*

*masculella* Fab. are usually to be found flying in woods, or at least near hedgerows, the former in swarms, but when catching the male of *A. viridella* treat its lengthy antennae with care or you will have an imperfect specimen.

*Laspeyresia ulicetana* Haw. (*succedana* Schiff.) and *L. internana* Guen. may be found flying around gorse bushes (*Ulex* spp.). The former is abundant almost everywhere but the latter is a more local insect. *L. ulicetana* is on the wing first but is double-brooded, whereas *L. internana* flies in May and June only.

Two species of the genus *Elachista*, *E. rufocinerea* Haw. and *E. argentella* Clerck (*cygnipennella* Hueb.) are to be found flying at almost any time of the day. *E. rufocinerea* is on the wing first, looks straw-coloured, and is very common. *E. argentella* is less common, on the wing later, and looks much whiter.

Flower-heads should always be looked at, especially those of the Compositae, as several species of the Tineoidea may be found on them.

Several species may be found on tree-trunks, amongst them *Mnemonicia subpurpurella* Haw. and *Pammene argyrana* Hueb., the latter usually in the crevices of oak trunks, the former being very easily disturbed.

The leaf-shoots of the Holly (*Ilex aquifolium* Linn.) should be examined, and if they show signs of being eaten and are spun together, the larva of *Acroclita naevana* Hueb. is responsible. This larva is also to be found on Blackthorn. (*Prunus spinosa* Linn.)

Two species of larvae may be found on *Origanum vulgare* Linn. (Marjoram), these being *Alucita baliodactyla* Zell., (revealing its presence by the withered tips, in which it feeds) and *Coleophora albitarsella* Zell.

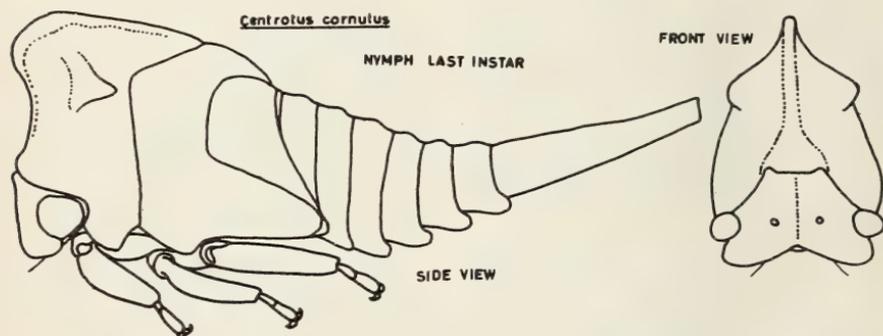
Several species of larvae may be found on *Lonicera periclymenum* Linn. (Honeysuckle), including *Ypsolophus xylostellus* Linn. and *Y. nemorellus* Linn.

The larva of *Y. sequellus* Clerck feeds on the leaves of Maple (*Acer campestre* Linn.) and occasionally Sycamore (*A. pseudoplatanus* Linn.).

The larva of *Alucita carphodactylus* Hueb. feeds in the heart of the plant of *Inula conyza* DC. (Ploughman's Spikenard).

D. Ollevant (1514).

As far as I have been able to discover, its life-history has never been worked out, and nothing appears to have been recorded regarding the egg-laying or early stages. As it is the type-species of the genus *Centrotus* on which the Centrotinae is based, I have been trying for many years to obtain specimens of the nymphs for comparison with those of other genera, without success until recently, when I received on loan from Mr R. J. Izzard, of the British Museum, a nymph taken in 1901 and an adult with



### SOME NOTES ON *CENTROTUS CORNUTUS* LINN. 1746

[Homoptera—Membracidae]

Although *Centrotus cornutus* Linn. has been known to science for over 200 years and is reasonably common in parts of the Continent, there are few published records of its occurrence in Great Britain. It is known to occur in Essex, Kent and Hampshire, and I collected several specimens at Warmwell, Dorset, nearly thirty years ago, but its distribution appears to be unknown and I should welcome records of localities, dates of capture, and any other data relating to this species.

cast nymphal skin collected in 1897. From these I have been able to prepare a description and detailed drawing of the last instar which will be published at a later date. I present here a diagrammatic figure which should enable entomologists to recognise it. Although the colour of this specimen is reddish-brown it has probably no relation to its colour in life, which may well be green.

Adults have been recorded in May and June, and the fact that the above-mentioned adult with its nymphal skin was taken towards the end of May indicates the probability that the eggs hatch with the surge of sap in the Spring, and the nymphs probably take

ive or six weeks to reach maturity. Perhaps some entomologist in the South of England may be able to verify this. The specimens I found were on scrub Oak, but it is not known if there are other host plants.

Many interesting questions remain to be answered, such as when, where and how the eggs are laid, length of life of the adults, whether the nymphs remain together as a colony or scatter, whether they are attended by ants, and the periods of the different instars. These questions can be answered only by entomologists fortunate enough to be able to observe this insect in life.

A. L. Capener (6).

## COLLECTING BUTTERFLIES IN MALAYA

The several articles on collecting butterflies in the tropics, which have appeared in the *Bulletin* during 1961, prompt me to mention some of my experiences in Malaya. I was there for two years, based in Singapore, though I spent a few months in Hong Kong and Ceylon as well as in the Federation of Malaya itself.

I would like to endorse J. P. Kruys's remarks about killing (*Bull. amat. Ent. Soc.*, 20: 4-6). I did use cyanide bottles for smaller stuff like Lycaenidae and HesperIIDae but found injecting oxalic acid by far the most satisfactory method. I used an ordinary syringe at first but later I found a cartridge-type dental syringe much better. It was necessary merely to fill up the capsules before I went out, two or three of them lasting even the best of days when I would get as many as sixty specimens

to kill. I usually took these back to base in a plastic box, packed between layers of cellulose wadding, and papered them that evening. I was fortunate in having an air-conditioned strong-room at my disposal.

All my papered specimens and full setting-boards were kept in a large tin packed with silica gel and I had no trouble with mould, discoloration or pests, this applies equally to the largest moths and the smallest of "Micros". Most of my Far Eastern specimens were brought home papered but two store-boxes of butterflies and one of larger moths survived the sea journey home, packed in a large "deep-sea box" in the hold. They took all the buffeting the shipping people and British Railways could give them and the only damage was to a few Hawkmoths and *Attacus atlas* Linn. (Atlas Silkmoth) where a Hawkmoth had come unpinned and wandered about the box!

I arrived in Malaya in September. I remember feeling almost at home right away, for so much of the wildlife was like that of England. Eastern Swallows flew over the rough grass and in estuarine mud were very plausible curlews and redshanks, though I never checked their identity. Almost on landing I came into contact with the ubiquitous Lesser Grass Blue, *Zizina otis* ssp. *lampa* Corbet. This delightful little Blue, about the size of our Small Blue (*Cupido minimus* Linn.) flits everywhere among the grass but is especially fond of the flowers of *Mimosa pudica* Linn. and *M. invisa* Martius, the likewise common Sensitive Plants. The most impressive thing about these plants is their rapid nastic movements—the well-known "dying" as one touches the plant—but the feature which makes

itself most felt is their squat spines which tear the ankles as one chases butterflies through the thickets. Two other early acquaintances were *Precis orithya* ssp. *wallacei* Distant and *P. alites* ssp. *alites* Linn. These two fine Nymphalids, the one rufous and the other shot with deep blue, were very common on the spikes of Snakeweed, *Stachytarpheta indica* Martin Vahl. My first dozen specimens were eaten off the boards by the minute Pharaoh's Ants (*Monomorium pharaonis* Linn.) which invaded my cupboards in enormous numbers. Thereafter I kept everything in air-conditioned storage.

It is surprising how soon one becomes acquainted with the common species in a strange land. I was soon able to sort the chaff from the grain except with some of the Blues and Skippers. I adopted the simple procedure of collecting any of the latter I came across. The Satyridae were particularly numerous and very interesting in spite of their drabness. Species of the genera *Mycalesis*, *Ypthima* and *Orsotriaena* were very common in the low herbage in all kinds of situations. They are very much alike and I found it an advantage to carry around with me a small notebook with pictures of the determining characters and memos of what species and sexes I needed. Among the Pieridae the lovely, delicate Grass Yellows were common. *Eurema hecabe* Linn. was perhaps the commonest one but I liked *Eurema sari* ssp. *sodalis* Moore best—a pretty creature with a pretty name.

Although Singapore has relatively few butterflies, compared with the Federation, there are still sufficient to guarantee at least one or two fresh species each

time I went collecting in a new area. The grassy places such as golf courses, roadsides and cemeteries were productive but more so were the environs of the Malay villages where bamboo groves, pineapple and papaya orchards, fish-ponds and pigsty seepages all had plenty to offer. Aromatic shrubs beneath coconut groves were sometimes swarming with commoner butterflies. Mangrove swamps were relatively poor in species, perhaps because of the few species of plants. But there are many more species to be found in the small remaining forest areas of the island. I spent many days in the water catchment area at Nee Soon, around the Pierce and McRitchie reservoirs and in the Forest Reserve at Bukit Timah. One very fine butterfly with a marked sexual dimorphism was commonly found sitting on the Reserve paths where moisture oozed from the bare earth. This species is the Archduke, *Euthalia dirtea* ssp. *dirteana* Corbet (Nymphalidae). The male is a medium-sized insect with a very hefty body and is a rich chestnut-brown with a broad pale-blue band on the hindwings. The female is considerably larger, with yellow-mottled hindwings which invariably broke off jaggedly in the net. Both sexes sat about the paths on the bare earth in characteristic manner, with their wings held out parallel to the ground and thus more-or-less normal to the sun. In England I have seen the Small Copper (*Lycena phlaeas* Linn.) doing a similar thing on those misty October afternoons when only a wan sunlight filters through. A railway cutting had been fired, leaving just the dead stools of the Oat Grass with bare, scorched earth between. The Coppers sat there on the soil with outspread wings facing the

lowering sun; it was tempting to think they were catching the last warmth of the paling Autumn sun but there were just as many doing it on the flat top bank, where the sun's rays would be very oblique, and also on the opposite bank which was shaded! [Could they have been absorbing infra-red radiation from the ground?—Ed.]

Some of the big Malayan Swallowtails (*Papilio helenus* Linn. and others) are difficult to capture but no more so than the lovely *Graphium sarpendon* Linn., which I think is called "Blue Glass". This species has the habit of fluttering along close to the ground and suddenly shooting up to a great height. In clearings and rides all one sees of this is a shimmer of blue following the contours of the vegetation. I frequently saw it but only once did I catch it.

The enormous Birdwing butterflies are found in Malaya and I saw the finest of them, Rajah Brooke's Birdwing (*Trogonoptera brookiana* Wallace), at Fraser's Hill, north of Kuala Lumpur. This lovely creature, almost as big as the common Atlas Moth, has blackish wings with an oblique band of brilliant green marks. This is the male, often common but inordinately difficult to capture on account of its habit of planing around the tops of jungle trees well over a hundred feet high. I have often looked down on the tree canopy of a valley and seen the males circling round and round, rather as buzzards soar. The females are reportedly very much scarcer, occurring only in some hill districts. Paradoxically, I never got a male but by sheer chance I caught a female at Fraser's Hill, about 4,000 feet above sea level. I was just leaving my quarters to go collecting in the jungle

when something big swooped down on to an *Hibiscus* flower just above my head. My net stroke was in the nature of a reflex action but I had a female *Trogonoptera brookiana*. In the days that followed I was often to see the males but never to catch one. I am told that professional museum collectors take them by shooting them down with a small shotgun, using dust-loaded cartridges. Another lucky catch was the large olive-green *Atrophaneura priapus* Boisdu.

There were not many butterflies which closely resembled British species and, I believe, few genera in common. but I caught a beautiful Comma with a powder-blue border—*Polygonia canace* Linn.—and one like the White Admiral, *Limentis daraxa* Dbld. The genus *Euploea* (Danaiidae), not represented in Britain, was widespread and often common. Many of them have wings of a refulgent purple by the side of which our own Purple Emperor (*Apatura iris* Linn.) pales into insignificance.

I remember one morning at Fraser's Hill catching three species of the genus merely by standing at the top of a drainage ditch which had been dug slantwise down the jungle-covered hillside. The butterflies flew up and down just above the muddy bottom and all I had to do was scoop them up when they reached the top!

I have many happy memories of Malaya apart from the butterflies. I loved the awful monotony of the rain forest; the incessant electronic howl of cicadas; the throb of a myriad stridulants; the hum of pestering midges and the weird ventriloquist cries of a

party of gibbons only just discernible in the canopy so far above. I even remember with affection squirrels which stole the pineapple bait we laid for *Charaxes* and so made our 5 a.m. rise fruitless! And the perpetual abundance of butterflies and heat made up for the lack of seasonal variation, though at present I welcome the Winter respite from collecting so that I can get down to neglected work.

If Mr Moody does any more collecting in Malaya I, for one, would like to hear of his experiences, for my memory of Malaya is growing dim after only four years.

P. A. Tyler (2476).

I, too, should be very pleased to hear from Mr Moody should he do any more collecting in Malaya.—*Editor*.

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## SIZE DIFFERENCE IN LARVAE

Mr P. G. Taylor's observations on *Lampra fimbriata* Schreb. (Broad-bordered Yellow Underwing) in the January *Bulletin* (*Bull. amat. Ent. Soc.*, 21: 11-12) were of interest to me because a similar difference in larval size arose in some larvae of *Philosamia advena* Packard which I tried to rear towards the end of last year.

I started with a dozen larvae, but soon ran into trouble, for three died of bacterial (or virus) infection within a few days of my obtaining them, in their first instar, from a dealer. However, sterilisation of the plastic boxes in which I was breeding them and reduction in the number per box seemed to have prevented further infection. I soon noticed, though, that five of the larvae were growing much faster than the rest, and I hoped that I might at

least get these to pupate successfully, for the larvae had been delivered much later in the year than I had intended—the beginning of September—because the dealer's suppliers had let him down. Consequently I was fearful of the Winter.

The remaining small larvae, however, began to "fade away" towards the end of September, and the last one died on 14th October, *still in the first instar!* Only five days later the first of the large larvae pupated.

The remainder of the large larvae were somewhat slower than this in growth, and because of the onset of cold weather I resorted to artificial heat: but juggling with the temperature proved too much for two of the larvae. Condensation due to unequal heating of the plastic rearing-container claimed another larva with diarrhoea, and by the time I had regulated the temperature properly, the Lilac leaves (*Syringa* sp.) on which I had been feeding the larvae until then had fallen, and because, at that late stage, Privet (*Ligustrum ovalifolium* Hassk.) was not accepted, the last larva died, although it lingered on into November.

The fact that I had lost all but one of the larvae (which is a terrible thing to have to confess in the *Bulletin* [Yes, isn't it: I did, too!—*Ed.*]) set me thinking. I came to the conclusion that the larvae which remained small must have been debilitated by inbreeding, and that the larger larvae were probably hatched from a different batch of eggs. I do not think that either of the major groups consisted of larvae of one sex, although the slightly slower larvae in the "large" group might well have been of a different sex from the one which pupated.

There is, of course, difference in size with sex in larvae—of two *Lasiocampa quercus* Linn. (Oak Eggar) larvae which collected last year, one was noticeably smaller than the other, pupated first (although it emerged last) and turned out to be a male; a female moth resulted from the larger larva—but I cannot really say that this is why Mr Taylor's larvae are of different sizes, although I suspect it. Certainly it could not have been due to inbreeding, since all Mr Taylor's ova were laid by a single moth. Without answering Mr Taylor's problem, then, I raise another: Were the smaller *Ph. advena* larvae in fact inbred, as I concluded?

H. V. Danks (2907).

and not having much time completely to heal internally, although the skin puncture *did* heal over, emerged as "crippled" imagines. The remaining two, which were injured when in their second to last instar, emerged in perfect condition.

From this and similar observations with other species I contend that an injury to a larva must heal internally as well as externally before a perfect insect can result—and this period varies, perhaps, with different species. Thus, ultimately, the fate of an injured larva hangs on two threads: (a) the proximity of the time of the injury to a moult or, worse, pupation; and (b) —obviously—the size of the wound.

7.4.62.

P. J. S. Miles (3343\*).

## INJURIES TO LARVAE

Mr R. F. McCormick asks (*Bull. amat. Ent. Soc.*, 21: 12) whether a larva of *Lasiocampa quercus* Linn. (Oak Eggar) which was once impaled on a bramble thorn, but whose wound has now healed externally, stands a fair chance of reaching the perfect state.

Judging from the fact that the wound has already dried up, and noting the length of time prior to pupation (during which the injury will also heal internally), I should say (without being dogmatic) that the larva will almost definitely pull through.

Whilst rearing 48 larvae of *Euproctis chrysorrhoea* Linn. (Brown Tail) I somehow managed to puncture the skins of five of them on the very sharp spikes of the foodplant, *Hippophae rhamnoides* Linn. (Sea Buckthorn). Three of these unfortunates were in their final skin,

## JUNIOR NEWS SECTION

### Editorial

Last month's contribution included an article on the internal structure of an insect. This month I am adding to it an account of the microscopic detail of the skin and external skeleton. It is illustrated by some drawings made from microscope slides showing the surface appearance and sectioned view of the skin of a newly-hatched larva of a locust.

To understand the structure, which is quite complex, we must consider something of the functions of the skin. Fundamentally it is a living tissue, composed of cells, but the cells themselves exude the non-living matter, called chitin, which becomes the skeleton. This usually has three layers, the epicuticle outermost, then the exocuticle and innermost the endocuticle. These

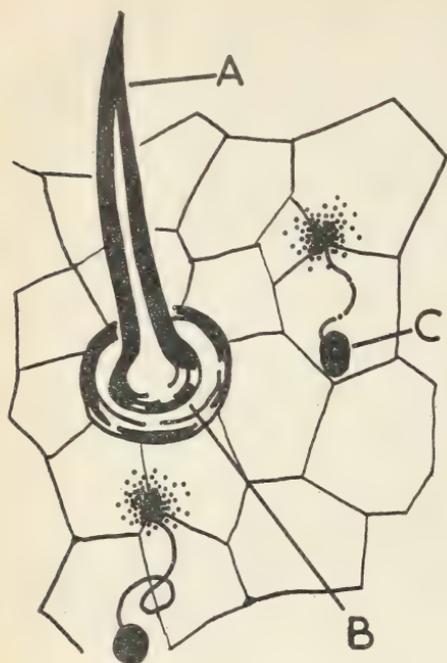


Fig. 1: Surface view of locust skin showing a sensory bristle and two dermal glands.

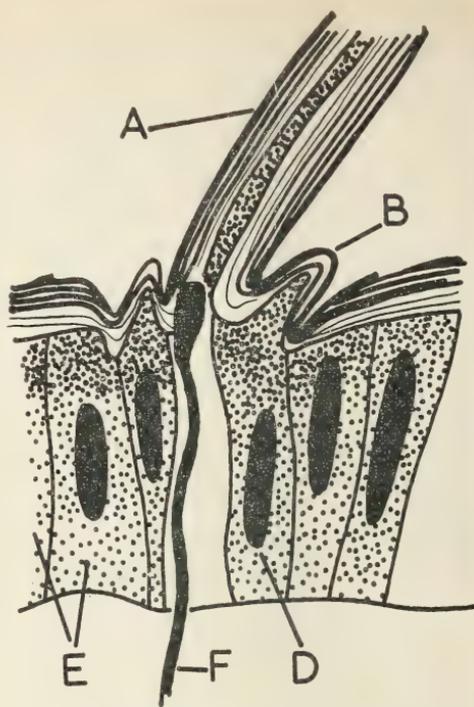


Fig. 2: Vertical section of locust skin through the base of a sensory bristle.

all contribute to the functions of the skin which can be listed as follows:—

(a) to protect the delicate interior, both from direct damage, and from indirect damage such as drying up;

(b) for the attachment of muscles;

(c) for support;

(d) to detect changes in the outside world by means of sense organs.

The epicuticle was formerly thought to be a single layer. Because of its importance in giving protection against insecticides such as D.D.T. much research has been done on the epicuticle and it is now known to comprise several layers. One of these is secreted by glands deep in the skin. They can be demonstrated by a special chemical technique, and I have depicted these "dermal glands" in my first sketch.

This sketch is of the surface, but in transparency, so the glands can be seen. It also shows one of the bristles so commonly found on insects. They are usually associated with the sense of touch, and if interfered with in any way stimulate a nerve in the vicinity. This nerve I have shown in the second sketch, which I have drawn from a piece of locust skin cut vertically in a thin section. The third sketch shows another such section, but in a different area. The dermal gland, composed of several cells, is shown. In this area I was able to distinguish clearly the exocuticle and endocuticle, and have accordingly shaded them differently. The exocuticle is a region which, after it has been formed, is acted upon by chemicals produced in the skin, which have a tanning

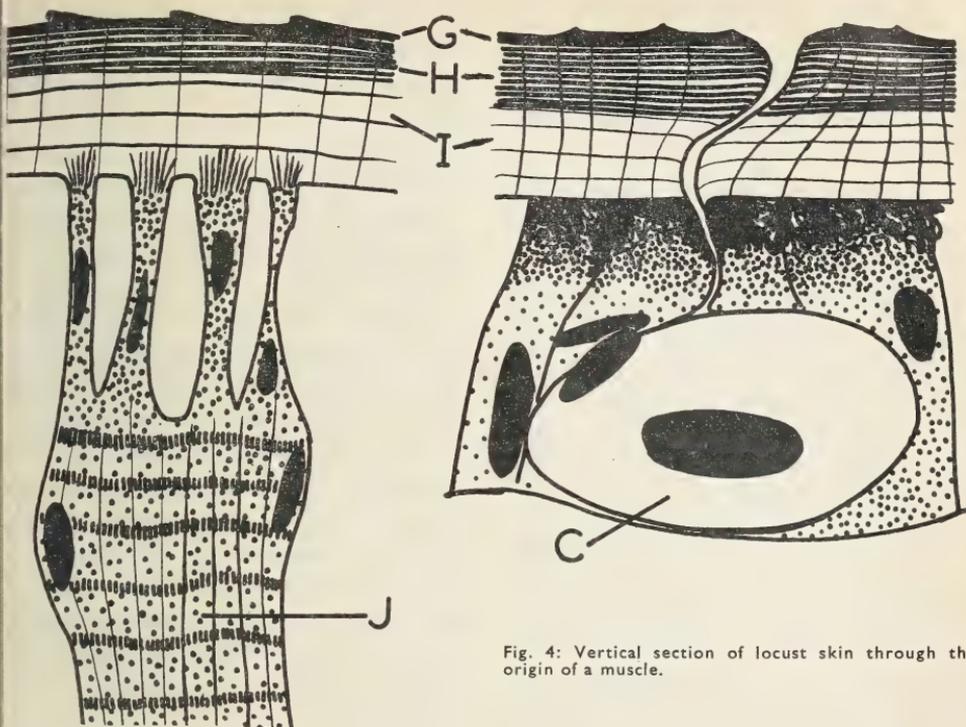


Fig. 3: Vertical section of locust skin through a dermal gland.

Fig. 4: Vertical section of locust skin through the origin of a muscle.

KEY TO FIGURES

- A—sensory bristle    B—socket of bristle    C—dermal gland
- D—nucleus of cell    E—cells of skin    F—nerve
- G—epicuticle    H—exocuticle    I—endocuticle
- J—muscle

fect. This makes it tough and resilient, as an outer casing for the body. To it are attached the muscles, and my final sketch shows the way in which these are inserted. This particular piece of skin was on the head, and the muscle shown is one of those whose contractions operate the powerful mandibles when the locust bites its food.

*News from Members*

D. P. Maskell (3361\*) writes from Dalham, London:—

“I am a very recent Member of the BES, and although I have taken an interest in insects since I was young, I have only just recently started studying in order on its own (Coleoptera). My

parents do not like me going out collecting in woods, etc., on my own, so I have been trying to find a friend to go collecting with. If you know of anybody in the same situation, or could help me in any way at all, I should be most grateful.”

As a new Member, Master (or perhaps Miss) Maskell would not know of the field meetings of the Society held in the Summer. They seem to be at least part of the answer to his problem, and I hope we may see him on some expedition this season.

T. S. Robertson (2427), *Youth Secretary*.

## REVIEW

**Introducton to High Altitude Entomology**, by M. S. Mani. Pp. xix + 302, illus. London: Methuen, 1962. £2.2s.

Dr Mani writes with authority and enthusiasm on material derived largely from his Himalayan expeditions; in fact High Mountain Entomology might be a more appropriate title. The 650 references show that others are aware of this small world, and books like this which collate and consider the ecology of limited environments are in the best traditions of Natural History.

Careful delineation of the environment occupies the first 86 pages; its effects on the insects, the next 54; the insects and their communities are given 96 pages; and finally 46 pages are devoted to the evolution and origins of the populations. In fact the book is well planned and carefully considered, yet its climax, "Peculiarities of distribution of nival insects," seems rather short for so much preliminary effort.

The nine complicated figures showing interaction of factors I found unhelpful, but there are many excellent graphs of meteorological factors and insect activity; figure 64 is an exception, height being plotted against abundance instead of the reverse.

There are innumerable very striking biological facts and observations: the short feeding year of 10 weeks at 3-4,000 metres; the dependence of a large part of the nival fauna on the "wind-blown derelict" insects from the plains deposited, by high air circulation, on to the snow, the intense aggregations in suitable niches; *Collembola* active at  $-10^{\circ}\text{C}$ . and a beetle at  $-17^{\circ}\text{C}$ .; the clothing of nival insects and their be-

haviour in response to sun-heated rock; the capacity of many insects to remain dormant for years and their dependence upon the proximity of snow; these make fascinating reading and could profitably have been enlarged upon.

Melanism, size, flight capacity, the aggregation of individuals and the diversity of species; all are reported to to change with altitude and a quantitative measure of their gradients would be invaluable for comparison with other ecologically graded environments.

The book is delightfully free from the jargon which disfigures so many ecological texts but there is one notable lapse, not surprisingly in the section "Hygrophilii and terricolae". Fortunately it lasts only two pages and otherwise only a few words such as "nival", "valence" and "autochthone" need explanation.

6.4.62.

L. R. Taylor (441).

## LETTERS TO THE EDITOR

Sir,—As you start your toils as Editor of our *Bulletin* you have the good wishes of every Member. We appreciate how much effort is put into the Society by all the Officers.

Concerning the activities of the Society, one of course appreciates that the business meetings must of necessity be in the London area for the simple reason that in a scattered national society such as ours only London could provide enough keen Officers, but need this apply to all the other activities? I have in mind the Annual Exhibition. Why could we not hold this in Manchester or Leeds occasionally? Surely there are as many Members within, say, 50 miles of the centre of either of these

ities as in the London area. If our Southern Members were not agreeable to this suggestion, then why not have a Northern Exhibition in addition? One feels that it could be held in conjunction with one of the main meetings of other societies in the North. For instance, the Yorkshire Naturalists' Union holds meetings of the Entomological Section twice yearly, usually in Leeds. These are well attended, with splendid exhibits, and it may well be that the YNU would welcome co-operation with the AES. Just after the War Mr B. A. Cooper, who was then at Leeds University, organised an AES *Conversazione* at Leeds, and many of us remember it as a splendid effort at which we formed friendships which have continued ever since. It requires only the efforts of an enthusiastic Member who actually lives in one of the main towns to carry out the necessary arrangements—though, of course, the eventual success depends on the loyal attendance of every possible Member.

Whilst on the subject of northern events we recall Field Meetings with pleasure, though it seems many years since we had one. In particular I remember a gathering at Hardcastle Crags which was a most happy occasion.

If other Members in the North of England agree with my remarks, is it possible to form a small sub-committee to look into the whole question? Entomology can be a very lonely road, particularly in industrial areas, and it has always been one of the main aims of our Society to encourage and assist younger naturalists. Nothing is likely to assist our younger Members more than opportunities to get together and learn from one another.

0.3.62. W. E. Collinson, FRES (247).

Sir,—With reference to the article by Mr P. W. Cribb (2270) in the February issue of the *Bulletin* (*Bull. amat. Ent. Soc.*, 21: 253) I should like to make some observations on the presence of the Essex Skipper (*Thymelicus lineola* Ochs.) in N.W. Surrey.

During the Summer of 1958, in an effort to add some "new" species to my collection I explored one or two suspected localities in Surrey. I also examined the specimens of the Small Skipper in my collection in the hope of discovering that I had mis-identified some and, in fact, I had included some specimens of the Essex Skipper among them, but this was not the case.

I was very fortunate in finding some on my first search for them in a locality near Epsom, where about one in five of the small Skippers were Essex Skippers: the rest were, of course, Small Skippers (*T. sylvestris* Poda). After my success with finding specimens there I resolved to catch examples of small Skippers on every possible occasion in the hope of gaining more specimens or, at least, a further knowledge of the range of the species.

I have since found it in the following places: Epsom Common, Ashted Common and Beddington, all in Surrey; Appledore, Kent; Hadleigh, Essex; and Chelmondiston, Suffolk.

The locality nearest to London in which I have found this butterfly is just such a one as Mr Cribb describes for his Middlesex specimens. Again it was on my own doorstep—at Beddington in Surrey. The area is one where there were two or three ponds in the past. These were partially filled in and tipping was, I believe, stopped for some years. Certainly the area had not been unduly disturbed at the time of visiting (July,

1958). Tipping, however, had recommenced and is still continuing. I have unfortunately not revisited the area at the appropriate time and so have no record of the butterfly's presence there since the Summer of 1958.

As far as I can see (though my observations are very limited) this butterfly has a long period on the wing. I have seen it flying as early as 12th July and as late as 24th August in the same year.

Incidentally, I have in my collection only one female example of this species—the only female I have ever caught, though I have several males. Most of my specimens were caught in the last week of July, 1958. I may have been too early for the females—this I cannot tell from my own experience because I have not since searched specifically for this Skipper. Could any Member account for this?

20.2.62. R. J. Swindells (2619\*).

## NOTES AND OBSERVATIONS

### HYDRAECIA PETASITIS DOUBLD. IN BUCKINGHAMSHIRE

Mr P. G. Taylor's record of this species (*Bull. amat. Ent. Soc.*, 21: 12) at Wendover on 2-3.9.61 is of great interest, as it appears to be of very rare occurrence in Bucks. It is not included in the Victoria County List, but I took a specimen at Chalfont St Peter in my mercury-vapour light-trap on 11.9.58. I know of no other record from this county. In "The Moths of London and Its Surroundings" (and Supplements) Dr de Worms mentions, in addition to my capture at Chalfont St Peter, re-

cords of single specimens from Enfield, Middlesex; Penden and Westerham, Kent; Burford, Box Hill, Surrey; and "larvae plentiful near Pinner in 1958" (Goater).

I should be very interested to hear of any other captures in the London neighbourhood, and particularly in Buckinghamshire.

3.3.62. Sir Eric Ansoerge (2508).

### LUCANUS CERVUS LINN. (STAG BEETLE) IN ESSEX

While out for an afternoon stroll on 18th June 1961 I saw a most extraordinary insect flying around a group of miscellaneous trees on the outskirts of a stretch of pasture-land at Stanford-le-Hope, Essex. I watched the creature for several minutes, when suddenly its flight became very undulating, and it was during this erratic period I managed to knock it down with the palm of my hand. The insect hit the earth with quite a thud. On a closer inspection it turned out to be a male Stag Beetle (*Lucanus cervus* Linn.), the one and only specimen I have ever seen alive.

I have not heard of any other record for this part of Essex.

D. G. Down (2453).

In his First Report on the Stag Beetle Survey he is conducting, Mr D. G. Hall, Secretary of the Entomological Section of the London Natural History Society, gives the following localities in South Essex (*Lond. Nat.*, 40: 80-82): Brentwood (1917), Chingford (1948), Dagenham (1941), Grays (1948), Loughton (1960), Romford (1935), Stifford (1948), Theydon Bois (1955), Tilbury (1959), Upminster (1960), West Thurrock (1959).

Ernest Lewis (952).

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EDITED by PETER G. TAYLOR, B.Sc., F.R.E.S.

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In good English.

Preferably typewritten, double-spaced, with wide margins, and on one side only of quarto paper.

Heading in capitals, NOT underlined.

Correct scientific names, consisting of name of genus (capital initial, and underlined), name of species (small initial, and underlined), authority (conventionally abbreviated, NOT underlined).

English names of species, etc., with capital initials.

Your name at end, on the right, followed by your AES Membership Number in parentheses.

Date of writing, all in figures (e.g., 15.8.27.), opposite your name.

Number of words, in pencil and ringed round, in top right corner of first sheet.

Return proofs promptly.



**STOP PRESS**



**PRESIDENT'S LETTER**

Dear Members,

Once again a President of the Society has to appeal for offers of help. At the present moment the Council has to find Members to fill the position of

- (a) SECRETARY ;
- (b) MEETINGS SECRETARY.

You must all realise the importance of these two positions. It is of the utmost necessity that Members come forward with offers to undertake these positions.

At present several members of the Council are overworked and have been so for many years. Several Members have served the Society loyally for a very long time, yet they are unable to have a well-earned rest because of the great lack of response to past appeals.

Of the Society's Membership a large proportion lives in the London Area and it is on these Members that I hope my remarks will have some effect. We are all conscious of the need for improvements in the Society, but such improvements will not make rapid progress whilst its Members are willing to allow the responsibility to rest too heavily on too few.

Offers of help in any capacity will be gratefully received and give encouragement to the Council. Do not dismiss this appeal because you feel you are not qualified to undertake some responsibility—let us judge. Act now, as your Council members have had to do for many years. I look forward to hearing

from many Members, ALL stating their willingness to help and share in a more active responsibility for the Society.

G. D. Trebilcock (2976),  
42 Normandy Avenue,  
Barnet,  
Herts.

Tel : BARnet 9935.



**EDITORIAL**

It is with the deepest regret that I have to announce the death of my predecessor as *Bulletin* Editor, Mr W. N. Lawfield, only a few months after relinquishing the Editor's chair, following a long illness. I am sure that all other Members would wish to join with me in expressing our most sincere sympathy to Mrs Lawfield and all others who knew him.

Members will no doubt be as pleased to hear that copy for the *Bulletin* is now coming to me in a form that makes it far easier to cope with as I am to receive it, and the main obstacle to catching up on our publication schedule is now the administrative one of short-circuiting our printer's cycle of work. I was attempting to do this by piling up as much *extra* copy as I could get through each month, so as to form a gradually increasing reserve of material set up in type. When there was enough, I intended to have two *Bulletins* run off at the same time. This is why many of you who have written to me, with or without enclosing contributions for publication, have not yet received replies.

Please don't worry or feel offended : you can rest assured that I shall reply to your letters just as soon as it's humanly possible to do them justice. However, this has not worked out as I had hoped, and Council has agreed that, to make the name of the month of publication mean something, we should produce this "telescoped" issue.

On the subject of letters, I have received a number of general enquiries from Members. I shall, of course, try to answer them myself, but my first duty as Editor is that of producing the *Bulletin*, which takes up an enormous amount of time, and I should be very grateful if such enquiries could be sent to the Hon. General Secretary, as requested inside the front cover of every *Bulletin* (facing this page). Would those of you who do write to me please use *my full name and address*—of the 300 people at present living here, at least six are named "Taylor", and several mistakes have already occurred. It would be very helpful, too, if Members writing to Officers of the Society, especially to Mr Friend and myself, would include a telephone number at which we could contact them, and give some indication of when it was possible to catch them (*i.e.*, "home" or "business").

Apart from the Meetings Secretary's Letter, which follows immediately after this Editorial, there are three items in this issue to which I should like particularly to draw your attention.

First, I want to convey to one of our older Members, Captain T. Dannreuther, on the occasion of his eightieth birthday, the warmest good wishes and congratulations of us all. As a glance at his

Membership Number (60) will show, Capt. Dannreuther has been a staunch supporter of the AES for very many years—he joined the Society in 1937—and for most of this time acted as the "clearing-house" for all information and reports concerning migrant insects, in his capacity as Hon. Secretary of the Insect Immigration Committee which he initiated. If this were not enough, he was for seventeen years Hon. Editor of the *South-Eastern Naturalist and Antiquary*, the publication of the South-Eastern Union of Scientific Societies. In fact, his boundless energy and enthusiasm have been, and indeed still are, a source of inspiration and wonder to all who have had the pleasure of meeting him.

It is a pleasure to announce that the Council has decided to express our appreciation of Capt. Dannreuther's valuable support of the Society and tireless services to entomology in general, by electing him the second Honorary Member that we have had. It is fitting that, as such, he joins Dr C. B. Williams, FRS, with whom, for many years, he collaborated so closely. Elsewhere in this issue there appears a review by Capt. Dannreuther of a monograph of, appropriately, our most magnificent immigrant species of butterfly, the Monarch.

Secondly, there is the first appearance of what I hope will be a regular feature of future *Bulletins*—a contribution *From Our Northern Correspondent*, namely Mr W. E. Collinson, whose idea it was. Both he and I hope that it will go some way towards overcoming the feeling of neglect and isolation experienced by many of our Members in the North (where does "the North" start?),

and it should also provide some information, for incorporation in future entomological textbooks, about the abundance, times of appearance, regional foodplants, etc., of species that occur there. This is particularly important for those species whose range embraces South and North, for at present many of the so-called "standard works" are written with an eye to the South and a knowledge limited to its insect fauna. I am sure that Mr Collinson would welcome letters from northern and other interested entomologists. His address is: "Stanbury," Kebroyd Mount, Triangle, Halifax, Yorks.

Lastly, it is a rather painful duty to bring to your notice the short, but all-too-significant, note from the Nature Conservancy's Insect Liaison Committee concerning damage caused to habitats as a result of the use of toxic chemicals, and to urge you to lose no opportunity to co-operate with them in every possible way, before it is too late and we have no more beautiful and fascinating insects to study.

Peter G. Taylor (719).

### MEETINGS SECRETARY'S LETTER

I should like to start by thanking most sincerely everyone who exhibited at the Exhibition last year. I think that practically everyone who came brought an exhibit, and this is very encouraging. However, there were not quite as many visitors last year as in previous years, and I hope that this year the Annual Exhibition will be even better

attended. It will again be held at the Hugh Myddelton Secondary School, Corporation Row, London, E.C.1, this year on Saturday, October 6th, at 2.30 p.m.

I shall be sending out with either this, or the next, *Bulletin* a typewritten form with a tear-off slip at the bottom. Will those intending to exhibit please use this to let me know how much space they require, and the probable nature of their exhibit.

Last year we had lectures and a film-show in one of the class-rooms. The class-rooms were small and uncomfortable for the purpose, and we have decided to do away with lectures this year. Instead we are having demonstrations on the setting of both Macrolepidoptera and Microlepidoptera, and Coleoptera. I should be very grateful if Members interested in insects of any of the other groups would kindly volunteer to give demonstrations on the setting or preservation of these. If there are any volunteers would they please write or telephone and let me know?

It only remains for me to add that I hope the poor weather this year has not prevented you all from catching something worth exhibiting!

Kenneth J. Fox,

*Hon. Meetings Secretary.*

Dr Fox's address and telephone number appear in the "Where to Write" panel inside the front cover.—  
*Ed.*

## NATURE CONSERVANCY— EFFECTS OF TOXIC CHEMICALS

Research is now being done by the Nature Conservancy on the side-effects of toxic chemicals on the British fauna. New chemicals and new methods of application may result in new hazards to the rarer and more interesting species. The entomological societies are represented on the Conservancy's Entomological Liaison Committee, which is kept informed of the progress of this research, and all entomologists are asked to help in keeping the review of this subject up to date by recording new developments in their areas in the use of toxic chemicals which may harm the insect fauna of hedges, ditches, roadside verges, etc. Observations should include time, place, name of spray, method of application and brief description of habitat affected, and should be sent to Dr N. W. Moore, Toxic Chemicals and Wild Life Section, The Nature Conservancy, Monks' Wood Experimental Station, Abbots Ripton, Huntingdon.

## FROM OUR NORTHERN CORRESPONDENT

In response to the request of the Editor it will be my hope that from time to time articles will appear in the *Bulletin* under the title given above. Apart from helping our Editor in his unenviable task, the main object of these articles will be to give a particular emphasis to the northern aspect of our hobby. There are so many difficulties and peculiarities that the young collector will come up against in every industrial area, and these, added to the climatic and other hazards of the

North, make the study of insects a much more exacting task than it is for our more fortunate brethren of the South.

How many of our younger Members in, say, Leeds, Manchester or Newcastle can make head or tail of the comments in the standard books on Lepidoptera, for instance. When I started out, with no-one locally to advise or help, I read that *Smerinthus ocellata* Linn. (Eyed Hawkmoth) is common and well distributed. How was it then that after five years of hard searching and enthusiastic study I had never seen one? Of course, I know now that one specimen was taken in Halifax in 1832 and the second did not appear until I took one 124 years later. I have yet to see those "common and widespread" Hawkmoths, the Lime (*Mimas tiliae* Linn.) and the Privet (*Sphinx ligustri* Linn.), although I have searched for over thirty years for them.

One recalls the slightly astonished look on the face of one of our well-known London Members when I proudly pointed to a local *Dicranura vinula* Linn. (Puss Moth). He would have been rather less amused had he known the scores of hours that I, and doubtless many other beginners, had spent fruitlessly seeking this "fairly common" species.

Nor is the only error that of a misuse of the words "common" and "widespread." Dates are often wildly at sea so far as the North is concerned. Most textbooks will state, for instance, that *Hydroecia petasitis* Dbld. (Butterbur Moth) is on the wing in early August. The young enthusiast will find, as I did, that all his carefully reared specimens have not only emerged by mid-July, but have also battered themselves to

pieces whilst he fondly believed them to be safely tucked up in their earthen cocoons. However, one hopes to give the odd hints from time to time and to make particular reference to lines of study which can be especially rewarding to those who live in the places less likely to give rewards.

The first article (the present one being only by way of introduction) will refer to species feeding on Heather (*Erica* spp.) and found on northern moors, and will refer to alternative foodplants. Some guidance concerning the assembling of the larger species will also be included. At a later date there will follow something about a ten-year breeding programme of easily obtained moths (I am at present about two-thirds of the way through such a programme with var. *radiata* of the Buff Ermine (*Spilosama lutea* Hufn.), and every year produces fresh and exciting results).

There is much to commend our hobby even to the Member who is confined almost exclusively to his northern town, provided that he is willing to make the best of every opportunity and provided also that he is willing to specialise and breed. Even the commonest species will produce exciting and unexpected results.

W. E. Collinson (247).

24.5.62.

### ON SETTING METHODS FOR LEPIDOPTERA

I recently purchased a copy of a very fine work by Mr Harold Oldroyd on the collecting, preserving and study of insects, for my own use as a reference

book. My appreciation turned to dismay, however, when I read through his section on the setting-up of butterflies and moths for the collection. He advocated the piercing of the wings with small pins positioned behind the main veins. Happily, his particular guinea-pig is a robust silkmoth, but the thought of using such methods on, for example, our own Silver-studded Blue causes me to shudder. His particular account is not, however, alone in suggesting this unusual *modus operandi*. I must, perhaps, confess at this point that I have never been a man to work exactly by the book—owing, doubtless, to a long series of disappointments concerning practical material, which always seems to do its best to deviate from the carefully laid down methods of investigation which appear in the textbooks.

I have been "playing about" with insects for most of my life, but it was not until 1956 that Mr C. D. Gadd and I decided to collect Lepidoptera on a scientific basis. I pored over Worthington-Stuart's chapter on setting, gleaning many details of the process which have stood me in good stead. Then I sent away for my apparatus, experiencing a first disappointment in the fact that my setting-boards varied in width but not in depth (about  $\frac{1}{2}$ "). I turned to my books and read "insects should be pinned with two-thirds of the pin projecting beyond the body." A  $1\frac{1}{2}$ " pin would not, I found, pass through plywood! I made some measurements, and then very carefully drilled holes at intervals along the underside of each board, so that when pins were pushed through from the cork above, a length of the pin projected through the ply-

wood itself. The disadvantage is, of course, that the boards have to be propped up when large insects are set on them, but this can easily be remedied by gluing a length of  $\frac{1}{2}$ "-square beading at each end. Later I made my own larger boards from plaster-board. Further boards which I obtained from a well-known dealer are good from the point of view of depth and, although unpapered, are easy to complete oneself: but why, I wonder, are they only 12" in length instead of the more usual 14"?

A few further points which I feel may be of use to anyone just beginning to set Lepidoptera are these:—

(i) Relaxing—I find that a damp rag or pad of cotton-wool is by far the best thing to use. Before placing large insects (especially Pierids and Nymphalids) in the tin, inject them with dilute ("Household") ammonia solution—this softens up hard tissues considerably. I once relaxed a specimen of a large foreign Swallowtail, *Papilio bianor*, in 30 seconds by injection!

(ii) Pinning—only practice can make perfect here. It is best to vary the position of the wing-bases according to whether the particular species tends to droop or to spring. If an insect seems more likely to droop, the specimen should be pushed downwards so that the wings become very slightly raised above the surface of the board.

(iii) When moving the forewing up, should it become necessary to apply the setting-needle behind the costal vein, follow the natural curve traced out by the wing as it pivots about its base. My first specimens all have long grooves in the wings as a result of moving the

setting-needle forwards in a straight line.

(iv) I have never used tracing-cloth over the first set of paper strips, as is recommended in many books: the first strips seem to be sufficient.

(v) Remember that, in setting, "the end justifies the means." Who shall know when the finished article is placed in the collection, whether it took five minutes or half an hour to set; or whether six pins or six dozen were ranged about it? I've had people laugh at the forests of pins adorning my boards, but they don't laugh at my collection.

I hope these few ideas may be of use to someone who finds, as I have done, that an actual insect is a little more difficult to manage than a hand-drawn illustration in a book. In due fairness, however, I must add that my first specimens were a truly ragged lot. Here I must close. . . . I feel an attack of "Setter's Cramp" coming on!

Leigh S. Plester (2968).



## THE USE OF PLASTICS IN ENTOMOLOGY

The use of plastics, especially the types known as Polythene, PVC and Polystyrene, has increased over the past twenty years in most fields of engineering, food packaging, building and horticulture.

The term "plastics" covers a wide range of materials, and I should like to confine my remarks to Polythene (e.g., Alkathene) and Polystyrene, and to sug-

gest a few uses for these materials in the field of entomology. Here they may be used to make breeding-containers, unbreakable tubes and pupa-containers, and for lining storeboxes and cabinet-drawers instead of cork.

What are their advantages? Taken generally, as a group, they are light and clean to handle, chemically inert, except with certain solvents such as ethyl acetate, and cheaper than many of the standard materials at present in use.

Here are a few possible uses:—

*Larva containers.* These can be bought already made up, in the form of sandwich-boxes. They are excellent for such larvae as those of certain Coleoptera feeding on stored products, aquatic larvae, etc. They are not altogether satisfactory for the larvae of most Lepidoptera or for any others that feed on leafy parts of plants as, unless adequate ventilation can be provided, there is considerable danger from diseases, owing to the great humidity providing ideal conditions for the incubation and spread of organisms causing them. However, for some lepidopterous larvae, such as those that overwinter, e.g., the Lappet Moth (*Gastropacha uercifolia* Linn.) and certain Noctuidae, they are ideal because they conserve humidity and prevent the larvae from drying out.

*Pupa-containers.* These can consist of either (a) sandwich-boxes or other similar containers, or (b) simple Polythene bags such as woollens and food-tuffs are now packed in. The advantages of these containers over wooden, tin or glass ones are considerable. For one thing, they retain a constant humidity, the importance of which cannot be over-emphasised. Polythene,

especially, allows the smaller molecules of the gases of the air to pass through while at the same time retaining the larger molecules of water. Therefore pupae are in no danger of becoming suffocated. In addition, the containers do not rust or decay, and are practically unbreakable.

*"Sleeves."* Polythene can be obtained ready-made into collapsible ("lay-flat") tubes of various widths, and these can be perforated with holes of any size. This material makes ideal sleeves, for use either outdoors on growing trees, shrubs, etc., or indoors on cut foliage. The advantages over conventional muslin are obvious: it is cheaper, weather- and rot-resistant, and can, with careful use, be made to last for several years. Furthermore, it is proof against the investigations of small birds!

*Specimen-tubes.* These are made of Alkathene, and are already being manufactured and in regular supply. They can be obtained through most good dealers. The top of each tube is hinged to it by means of a simple attachment which allows it to be removed from the tube with one hand without being dropped—a simple point, but how many collectors, I wonder, have missed a good specimen through losing the cork of a conventional specimen-tube? These tubes can be home-made to any size from Alkathene tubing, which is obtainable from plumbers, ironmongers, etc. Other advantages are that they are light in weight, unbreakable, and inexpensive when one considers the number of glass specimen-tubes that get broken. The only disadvantage is that the material has a slight milky appearance which can make identification of specimens difficult.

*Storebox lining.* Recently a new material, expanded Polystyrene, has been making its mark as an insulating material. It can be obtained from dealers in sheets 24"×36" in area and anything from three-eighths of an inch to two feet thick. The thinnest of these can be used instead of cork for lining storeboxes and cabinet-drawers. The advantages are numerous: it is extremely light in weight; soft, yet firm enough to hold pins, to such an extent that micro-pins can be used direct instead of adopting the double-mounting technique; and, perhaps most important of all, pure white, thus removing the necessity of papering the inside surface of storage accommodation. Should it become stained, it can be cleaned with a damp sponge.

*Setting-boards.* The thicker sheets of expanded Polystyrene make good setting-boards, especially for the smaller Lepidoptera, and can easily be cut to shape with a sharp razor-blade.

*Double-mounting.* Where the conventional cork lining is used in storage accommodation, expanded Polystyrene can be used in place of the more usual *Polyporus* pith (which is very expensive) in the double-mounting technique for the smaller Lepidoptera, and it is rigid enough to allow short series, say, up to six specimens, to be mounted as single units.

4.2.62.

A. J. Tuton (2639).

### BAD WEATHER ?

Once one has obtained the common species, bug-hunting becomes a tricky business. If one decides to go out and collect a certain insect, the chances that the weather will be suitable are usually

about fifty-fifty, or less! With suitable weather and given the right locality—if one knows of one—even then one may be unlucky. The season may be late or early, and one may find, often after a long journey, that one is just those few days out in one's calculations. Sometimes, when all factors are favourable, one still fails to find what one wants—for reasons best known to the bugs themselves. However, this is one of the reasons why entomology is so fascinating—one never knows what will turn up.

This year (1962) I wanted to get the Lead-Coloured Drab (*Orthosia populeti* Fab.) and as it was a late season I went with a friend to a Kentish woodland area where its foodplant Aspen (*Populus tremula* Linn.) abounds, on April 28th.

The day was cloudy and overcast, but a strong north-east wind was blowing—always a bad sign, in my experience. However, as it was overcast, we decided that the temperature would probably stay up, and off we went. On arrival all the clouds had blown away, the wind had dropped and it was very cold. At 9 p.m., when it was dusk, the temperature had fallen to 37°F., and as we lit the mercury-vapour lamp we felt very gloomy about the whole procedure. By 9.30 p.m. the temperature had fallen again to 32°F. and our sheet was already slightly stiff with the frost. The only moth we had seen was an Early Thorn (*Selenia bilunaria* Esp.) at rest in a hedge. We were about to pack up and leave when a light wind sprang up and we noticed some cloud coming over from the North-East. Half an hour later, the temperature was beginning to rise and the moths started to come sporadically to the light. After a

further half-hour the temperature had risen to 42°F. These were unique weather conditions indeed and suddenly the moths started "flocking in." I have never seen so many moths coming to the light at this time of year.

First of all the Lunar Marbled Brown (*Drymonia ruficornis* Hufn.) and the Frosted Green (*Polyphoca ridens* Fab.) arrived, closely followed by all the common *Orthosia* species, and two *O. populeti* came in a little later on, which pleased us very much. The Red Chestnut (*Cerastis rubricosa* Schiff.) and the Early Grey (*Xylocampa areola* Esp.) were everywhere, and soon after 11 p.m. a beautiful, freshly-emerged Purple Thorn (*Selenia tetralunaria* Hufn.) came to the light. Geometers were scarce and apart from the two Thorns we saw only the Brindled Pug (*Eupithecia abbreviata* Steph.), which was common, and one Early Tooth-striped (*Trichopteryx carpinata* Borkh.). At 1.0 a.m., as we were packing up to leave, one Blossom Underwing (*Orthosia miniosa* Schiff.) came in—a very welcome addition, and in all we noted 16 species, the largest number so far seen this season.

A break in the weather followed during the next few days and the temperatures were becoming more normal for the time of year, so the following Saturday, May 5th, I decided to go with another friend, Mr Cyril Bruce, to the Kentish coast and look for larvae of the Dark Tussock (*Dasychira fascelina* Linn.) during the afternoon, and then to run the light there that evening, as we had never before worked the coast at this time of year.

On our arrival it was pouring with rain, and everything was steeped in a deep sea-mist. Having come so far we

decided nevertheless to look for the larvae, which are supposed to be found "sunning themselves" on the top of their foodplant. What a hope! By a stroke of luck we found just over two dozen in an hour-and-a-quarter's search. It will be interesting to see what percentage is parasitised. Actually the rain helped us, as it clung to the hairs on the caterpillars and they looked just like tiny pieces of wet spider's-web on their foodplant, the Broom (*Sarothamnus scoparius* Wimmer ex Koch) glistening in the rain. The mist was very heavy and there was also a strong south-west wind, and conditions were impossible for running the light in the open, so we decided to return to the woods where I had collected the week before.

By the time we arrived the rain had stopped, but to our dismay there was a heavy mist even in the woods—and moths do not like mist. In my experience, moths often fly quite happily in heavy rain and seem unharmed by it, but stop flying in very fine rain or mist. Perhaps the large drops roll off whereas fine drops get in amongst their scales and cause them to get wet. Has any Member a more learned explanation?

On lighting our lamp the temperature was 52°F. and stayed at this level all evening. Almost immediately the Nut-Tree Tussock (*Colocasia coryli* Linn.) arrived, closely followed by a fine male Scalloped Hook-Tip (*Drepana lacertinaria* Linn.). It was the largest and darkest specimen I had ever seen. The mist cleared from time to time in the now light south-west wind and at these times moths came much more readily. All the common *Orthosia* species arrived, but in small numbers, and we got one rather worn *O. populeti*. The next

moth to come was the Scarce Prominent (*Odontosia carmelita* Esp.), which pleased us very much, and two more came in the course of the evening. For some unknown reason few of the species turned up in large numbers, but we had a great variety of them, and moths of the [normally] scarcer species were just as numerous as, say, *O. stabilis* Schiff., the Common Quaker. At about midnight the mist cleared and we had a very heavy shower of rain, during which time the Clouded Drab (*Orthosia incerta* Hufn.) "flocked in," together with several of the Swallow Prominents (*Pheosia tremula* Clerck and *P. gnoma* Fab.), the Pebble Prominent (*Notodonta ziczac* Linn.) and the Frosted Green (*Polyploca ridens* Fab.). We waited until 1.30 a.m. but unfortunately did not see the Great Prominent (*Notodonta anceps* Goeze)—a moth I wanted. However, we noted 22 species, an increase of six on the previous week.

I think that on both these occasions I was very lucky with the weather; on the other hand, on many others I have drawn a blank owing to poor conditions, so I would say to you all—"Do not be put off by the weather: with bug-hunting you never know what will happen!"

8.5.62. Kenneth J. Fox (1459).

### VIRUS INFECTION OF CATERPILLARS

Recent experience with the latter half of a brood of caterpillars of the Common Blue Butterfly (*Polyommatus icarus* Rott.) reinforces my dissatisfaction with the theories of infection with virus. About 40 larvae from a female *ab. antidiscoelongata* were being reared

in a rectangular plastic box. The first dozen or so came through successfully, pupated, and are now emerging (some resembling the female parent).

Some difficulty was experienced in keeping the foodplant replaced and frass cleared, as I was away from home for part of the larval period. Casualties began to arise, the affected specimens becoming lethargic and developing darkened patches, then dying. This is a classic example of the effects of neglect, and it is generally stated that virus infection is responsible. If this is in fact virus disease, it seems to me it should develop irrespective of the conditions of rearing.

We are told that insects have no resistance to virus—once they have picked it up they are bound to succumb. Now either the virus is present on the foodplant we provide or it is absent. No matter what disgusting state this food gets into, the virus cannot arise spontaneously. Perhaps it is present in minute quantities on most foodplant and becomes infective or multiplies in the decaying plant tissues or larval frass. But if it is present, some larvae must eat it and become infected even under good rearing conditions—when the chances are that it will be passed on to the rest of the stock—unless they can detect and avoid the virus in favourable circumstances.

I have sometimes thought that what we interpret as virus disease is not always so—perhaps attack by mould or other fungus. However, this would not account for all the cases when I have neglected stock and observed undoubted virus symptoms, the larvae becoming crisp and brown, attached to the foodplant, and their contents liquefying.

I am afraid that all the best entomologists, who care for their stock, observe most carefully, and could no doubt have cleared up my problems, will be unable to help because they will never have been troubled by the diseases that ravage the stocks of the careless (or preoccupied) breeders like me! To be serious, though, I should like to receive the opinions of experts, because there is certainly some flaw in the explanation (or perhaps only in my understanding of the explanation) of the relation between poor environmental conditions and virus infection.

14.8.62. T. S. Robertson (2417).



### THE EMERGENCE OF THE PUSS MOTH (*CERURA VINULA* LINN.)

This article is about a pupa of a female Puss Moth prised away from a piece of wood for the AES Annual Exhibition.

On the 10th May 1962 a split appeared along the line in front of the head. The thoracic "hair" showed through, and the pupa was active if touched.

On the 11th May the pupa was very soft to touch and appeared to be dead. I then proceeded to investigate the reason for this by opening the shell of the pupa.

As soon as I had freed the legs and wings the moth became very active, vacated the pupa-case and climbed to a suitable resting-place, the time being 8.25 a.m.

Then began a series of convulsive movements of the abdomen and front legs, as though the moth was trying with great difficulty to pump fluid into her wings.

[Insects are very "automatic" creatures, i.e. most of their actions are governed by more-or-less rigid patterns of behaviour, each stage of which must be completed before the next can be started. In view of the characteristic movements of fore-legs and abdomen, therefore, may I suggest that these were more likely to have represented the "working-off" of pupal-emergence movements which, thanks to Mr McCormick's assistance, had not been normally carried out, and that the moth had to go through the motions of completing them before it could go on to wing-expansion movements.—Ed.]

This procedure went on for approximately half an hour with no change in the size of the wings. By this time I had abandoned hope of getting a perfect specimen and left the moth, no longer active, but just gently moving her abdomen.

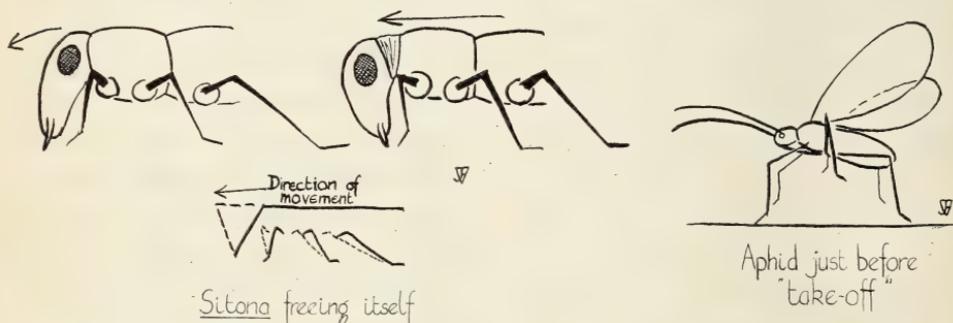
At 9.25 a.m., one hour after emerging, the moth began normal wing expansion, with steady, even movements of her abdomen.

At 9.40 a.m. the wings, vertical over the back ("airing"), were fully expanded and perfect.

R. F. McCormick (3375).

## TWO ASPECTS OF INSECT BEHAVIOUR

The following two aspects of insect behaviour have puzzled me for some time. No-one I have met and to whom I have mentioned them has been able to give a good explanation—especially of the second phenomenon. I will describe them and append what explanations I have come across.



(1) Observed: 5.2.59.

Subject: A weevil (*Sitona* sp.).

In a moment of idle fascination with a bean weevil (*Sitona* sp.), I started "teasing" it. In the course of doing so, I happened to hold its abdomen between my finger and thumb, thus holding it supposedly helpless. The insect promptly took hold on my thumb with its mandibles and levered itself forward to freedom (see diagram). I repeated this experiment several times, and each time the same response was elicited with but little hesitation.

The best interpretation of this that I have yet formulated is that in feeding, the weevil often has to crawl through small openings (e.g., into and out of bean- or pea-pods); or perhaps this

reaction aids it in digging its way down to the roots to lay its eggs (if this were the case, one might suppose that this instinctive action could be sex-inherited—an interesting thought!). I do not know much about this weevil's habits, but it would be interesting to compare it with a closely allied one with different habits, and with a non-allied one with similar habits.

(2) Observed: 16.6.61.

Subject: *Aphis* sp.

I first noticed the behaviour described below in an aphid which landed on me while I was sunbathing. I subsequently observed it performed to a greater or lesser degree in many aphids, all, I think, *Aphis fabae* Linn.

When the aphid is about to fly away, it spreads and folds its wings rather hesitantly as if flexing itself. Then it lifts its mid-legs off the ground and tucks them into the hollow formed by the constriction between its thorax and abdomen (see diagram). It then balances rather unsteadily on its remaining four legs, and again unfolds its wings before taking off. Often it does not take off even then, but lowers its mid-legs, and having steadied itself, raises them and tries again. In some in-

stances, it will apparently abandon preparations for flight and walk around, stabbing the ground with its proboscis. Then, once again standing on four legs, it will take off.

For this aspect of behaviour I have no explanation; nor has anyone to whom I have mentioned it. All I can say is that there appears to be a specific set of conditions which must be realised before the aphid will take off. These conditions may be internal or external to the aphid [or both—Ed.].

I have not been able to think of any experiments to throw light on this second phenomenon. Perhaps it would help to observe the insect in flight, but I have been unable to do this.

I should be very grateful to anyone who would proffer suggestions about these two behavioural phenomena: the improbable is often very near the truth!

9.3.62. J. F. Vincent (3027).

## ADVENTURES OF A DRAGONFLY-COLLECTOR

For many years I collected Dragonflies (Odonata) in India, Ceylon and Burma; in the literature I had found records of about 120 species that had been taken in this wide area of the Orient, but at the time of my retirement I had, by my own collecting and the willing help of others, swollen this number to nearly 550. In one area alone, Coorg, a native state about the size of Devon, I had taken 200 species, many of them new to science.

This collecting, carried out mainly in wild jungle, was naturally attended by many exciting incidents and encounters with wild animals and poisonous snakes.

In South Kanara, situated in the Western Ghats of India, I was searching for species of *Idionyx*, *Macromia* and *Chlorogomphus*, in the company of an old friend, Charles Souter. We were up some 8,000 or more feet, on grassy hills with great outcrops of rock singularly reminiscent of Dartmoor and its granitic tors. We had had a long day's collecting and were returning to our camp when Souter spied a bear grubbing roots for food; it was almost directly in our line of march, so that if we continued in the same direction we should inevitably pass quite near it. These brutes can be highly dangerous and I have seen terrible wounds inflicted on natives who have had the misfortune to be mauled by them, so that prudence advised us to keep well clear of the animal; nevertheless we decided to go on and get a close-up view; thus we duly arrived within a couple of hundred yards of the beast, which had now obviously become aware of our presence but still continued grubbing roots. If we had continued to walk on, I feel sure that it would have gone on peacefully feeding, content to see us pass by. However, Souter, in a provocative mood, pulled up and after watching it for a few minutes, said, "Let's chuck rocks at the blighter and see what it will do."

Before I could advise caution and check the foolhardy suggestion, he had picked up a piece of rock and hurled it at the beast. It struck the animal on the snout and, bouncing off, rolled some distance down the slope. It was fortunate for us that it did so, for the bear, evidently thinking the rock was the offender, turned and ran down the hill after it, slapping it viciously with

its paws. All at once it seemed to realise who were the real aggressors and, turning, came rushing up the hill like a greyhound, its lips curled back and its formidable rows of teeth gleaming white. We turned and ran for our lives.

Fortunately, some way up the hill stood a great granitic tor round which we darted, and then crouched hidden from view as the bear raced on and passed us. We kept the tor between us and the animal which finally pulled up abruptly, apparently bewildered at our sudden disappearance. Bears are notoriously blind, especially in the glare of a midday sun. Anxiously we watched it from our concealment until, to our great relief, it turned and ambled down the hillside and was soon out of sight. Turning to Souter, I asked what he would have done had the bear come to close quarters. Souter replied, "I had decided to clap my butterfly net over its head." "And so had I!" I shouted, roaring with laughter.

On another occasion I nearly stepped on to a sleeping tiger. I was motoring with my wife from the West Coast, the road winding through dense jungle on each side. I had stopped at a small stream which crossed the road, where I had found previously a new Dragonfly (*Pseudagrion williamsoni* Fraser) hoping to find more. The stream ran down to a marsh and pond, which had been visible on my former visit but was now hidden by a new growth of *Lantana*, a bush of the raspberry family introduced from South America by Lady Horton, the wife of a former Governor of Ceylon, that had since spread widely, through the agency of birds carrying the seeds, throughout the East; it is

a thorny bush and is known as "Horton's folly." To avoid tearing my net, I held it aloft as I made my way through the *Lantana* scrub towards the pond. Quite suddenly, there was a terrific roar (Shall I ever forget it?) and the next moment I saw a huge tiger making an incredible leap away from me, describing an arc of over twenty feet as it leapt. Crash! it went into the *Lantana*, and then followed a series of similar bounds until it finally disappeared and the noise died away in the distance. I turned and ran for my life in the opposite direction. The animal had evidently been sleeping and, suddenly awakening, saw the white net waving above it. It was fortunate that this sudden apparition had scared it and that it had made off in the opposite direction. Arrived back on the road, I asked my wife if she had heard the terrible roar of the beast. "No," she replied, "I had fallen asleep" !!

On another occasion, whilst motoring in Coorg, I saw what I at first took to be a cow standing in the middle of the road. My wife was of a different opinion and thought that it was striped. Sure enough, as we approached I saw that it was a full-grown tiger, and decided to try to run it down. The tiger did not wait for the impact but strolled leisurely off the road and then stood on the edge of the jungle, lashing its tail. We pulled up, and animal and man surveyed each other at quite close quarters. Then it turned and disappeared silently into the jungle; I had, unfortunately, no gun and it was a sitting shot! I never carried any weapon more lethal than a butterfly-net when collecting, as I had learnt that wild animals will rarely, if ever, attack

when met with ; on the contrary, I had found that carrying a gun was a serious impediment and it could be safely deleted from the desiderata carried by the entomologist.

Wild elephants were dangerous as their behaviour was usually unpredictable, especially if the elephant happened to be a "rogue." I nearly ran into one of these in my last District, Coimbatore. I had entered the jungle, making my way up the bed of a stream, when I came suddenly on a great heap of steaming elephant-droppings. The heap was evidently quite fresh and as a matter of fact, the rogue was standing sleeping in the midday heat just round the bend of the river ; had I not been warned by the "visiting-card," I must have inevitably walked right into it [the elephant, of course—*Ed.*]. I retraced my steps very quietly and gingerly hardly daring to breathe before I regained the road and my car, for this rogue had killed quite a number of natives.

Lt-Col. F. C. Fraser, I.M.S., Retd (890).

## REVIEWS

**The Monarch Butterfly**, by F. A. Urquhart, M.A., Ph.D., Curator of the Royal Ontario Museum. Pp. xxiv and 361. Published by the University of Toronto Press, 1960, and obtainable from the Oxford University Press, London, at 52/-. (Public lending-libraries can obtain copies by post temporarily.)

This is a remarkable book showing Dr Urquhart's life work on a single species of butterfly of which over 100 specimens have been recorded in the

British Isles. His book is dedicated to his assistant, Miss Hilda White, and Dr C. B. Williams, F.R.S., for the latter's "pioneer studies of insect migration."

The book is devoted to the life-history and migrations of the Monarch—otherwise known as the Milkweed or Black-veined Brown—butterfly, *Danaus plexippus plexippus* Linn., but also ranges over other *Danaus* species. In particular it records the marking or tagging of specimens locally caught or reared for Toronto Museum and the subsequent recoveries due to press and broadcast requests. On Plate XII, in colour but reduced in size, are shown the distances covered by about a hundred recoveries to the South-West or South-East, over many hundred miles until the sea is reached in the Bay of Mexico. The maximum range tabled is no less than 1,870 miles. A table shows the actual details of each recovery with dates and place of releases and recoveries, giving the approximate distances apart and general direction flown. It is the first comprehensive list of its kind to be published and bears comparison with the work done with birds.

If this were all that the book contained it would still be remarkable; but in the chapters of laboratory and scientific fieldwork will be found details of the development of the egg, larva, pupa and imago ; and in the second part, devoted to research data and reference material, are also to be found details of its special foodplant, the Milkweed *Asclepias*, of which there are 97 species, all in some degree poisonous to sheep. It is a perennial plant producing aerial growth in the Spring in North America and Canada, but dying down when the temperature falls in late Autumn.

Though this is not mentioned in the text, in some States there are laws to prohibit drovers from driving flocks of sheep whilst the Milkweeds are in full leaf, as they are wild plants found in grass verges of roads, upon which flocks might feed while on the move. The Milkweed likes a temperature above 70°F. (21°C.), and only where this is constant all the year round is the Monarch continuous-brooded. The foodplant does not occur wild in Europe; but in the Canary and Cape Verde Islands the Monarch is established and found below 1000 ft altitude all the year round, in all larval stages feeding on *arbol de seda*, a local Milkweed bearing a very bright red-and-gold flower, sometimes cultivated in European gardens and known technically as *Asclepias curassavica* Cramp.

In North America some Milkweeds thrive up to 3000 ft and some even in swamps. The flowers are important for egg-laying and perhaps *A. syriaca* is the most important as it is found along the main migration tracks.

In the British Isles the Monarch is the largest of our immigrant Lepidoptera. Since 1876 over 100 have been recorded, with a maximum of 40 in 1933, but the average is only two or three a year. As it is unlikely that any come to us from the Canaries against the north-east trade winds, and records in Spain and Portugal are so rare, there is an equal chance of its crossing the Atlantic with strong westerly winds or possibly assisted by passage in shipping. So far, no tagged specimen has been found in the British Isles. The reviewer possesses a 4½"-wingspan male Monarch taken at Hastings, New Zealand (North Island), in 1950.

T.D.

**The Study of Ants**, by S. H. Skaife. Longmans, Green and Co., Harlow, Essex. Price 25/-.

This book by a famous South African naturalist describes a few of the commoner South African species that he has studied over many years, gives a variety of simple suggestions for artificial nests, and recounts a number of interesting experiments on behaviour, food selection and brood rearing. This author has already published a companion volume, *Dwellers in Darkness*, giving a fascinating account of termites, a little-studied group of social insects, but has simultaneously interested himself in the true ants, or Formicidae, which have a similar but generally less complex social organisation. Dr Skaife has himself lived in a kind of ant paradise for the past 35 years—120 acres of narrow mountain valley overlooking the sea, with poor, boulder-strewn soil and scattered, heathy vegetation. Here some 20 species of ants abound and were available for close study by the author in his self-built laboratory on the site.

A description of 13 of these species and their habits in the wild is given. Chief of these is the notorious Argentine Ant (*Iridomyrmex humilis* (Mayr) Emery), a small species that has been spread by commerce from its original home in the Argentine to most of the larger ports of the world, and thence has successfully colonised large areas of coastal South Africa, among other regions of similar climate, including the Mediterranean and South Australia. As the author remarks, this ant has occasionally been introduced into Britain and has sometimes successfully taken up residence in heated premises. Fortunately the British climate is not

suitable for its outdoor survival here. Its chief menace from the naturalist's point of view is that in areas of suitable climate it competes very successfully against native species of ant.

Another biologically successful species is the Spotted Sugar Ant, *Camponotus maculatus* Fab., which is widely distributed in many varieties through Africa, with similar forms in America and South Asia. This species, however, does not owe its wide distribution to man's commerce, but to its adaptability to a wide range of habitat and climate in the warm temperate and subtropical regions of the world. In areas of coastal South Africa which the Argentine Ant has invaded, the much larger *Camponotus* has retreated to the mountain-slopes. Two similar *Camponotus* species are also described and have provided the author with abundant experimental material for laboratory study.

Two other successful species are compared—one of the carton-building Cocktail Ants, *Crematogaster peringueyi* Emery, and the Brown House Ant, *Pheidole megacephala* Fab. (Roger). The latter has also been widely distributed by commerce through the temperate areas of the world, and has often been found in hothouses in Britain. This species was historically an earlier invader than the more successful Argentine Ant which is steadily replacing it over much of its territory. *C. peringueyi* is one of a large number of *Crematogaster* species in Africa, where some 33 species occur in South Africa alone. *C. peringueyi* can keep the Argentine Ant at bay by the ejection of a noxious fluid, as the author describes, but these two species do not actually compete in Nature, as

the *Crematogaster* does not live in the ground but in shrubs or in the hollow stems of large herbs, where it builds carton nests of interwoven vegetable fibres.

The most interesting part of this book describes various kinds of easily constructed and cheaply made artificial nests that can be used to house these ants, and the great variety of fascinating experiments that the author has been able to carry out with simple devices. The chapters on artificial nests and the feeding of housed colonies indeed probably constitute the most valuable part of the book for the British enthusiast, as the author's comments and experiences, though based on species and even genera that do not occur in Britain, will apply equally to our *Lasius*, *Myrmica* and *Formica*. Much of his apparatus can easily be adapted for work with our species, and the same guiding principles of management will apply to nearly all species of ants.

The experiments with various foods, repellants and mazes, and observations on reproduction and behaviour show all the variety and challenging inconsistency, even with closely similar species, that have so often been found by other observers. Reproduction, mating-behaviour, feeding-habits and general activity are still to be discovered for individual species even within our own relatively well-known fauna, and Dr Skaife points the way to many rewarding fields of study that could be explored among our British ants. One of the author's important contributions to our knowledge of ants is the confirmation that some *Camponotus* species, at least, can exist in queenless colonies: both worker and soldier castes are

capable of laying eggs that give rise to more workers and, occasionally, males, so that the colony is potentially self-maintaining, at least for a time. Indeed, with another South African species, the bearded Myrmicine ant *Ocymyrmex barbiger* Emery, no queens have been found. By contrast, neither the Argentine Ant nor the *Crematogaster* species studied can reproduce through their workers, and colony-perpetuation is entirely dependent on fertile queens, as it is with most ants.

Dr Skaife's book has the outstanding merit of honest reporting of original experiments. It is written in clear, non-technical language and at the same time it is free from the humanistic and sentimental kind of writing that mars almost every popular work on this subject. Many of the author's experiments proved somewhat inconclusive, but this is in no way glossed over, and indeed serves to stimulate the enthusiast to similar efforts to unravel the many mysteries of ant life. The text is supported throughout by the author's own excellent black-and-white illustrations.

C.A.C.

**Animals of Britain.** Edited by Dr L. Harrison Matthews, Sc.D., F.R.S. This is a series of books, of which the first eight to be published are entitled: The Badger, Horseshoe Bats, Hedgehogs, Water Voles, Red Squirrels, Grey Seals, and Otters. Price 3s. 6d. per book. Published by Sunday Times Publications Ltd.

Although this series of books does not deal specifically with entomology, I feel that perhaps a brief mention of them may be of interest to Junior Members.

The books are written by eminent naturalists who have studied for many years the habits and behaviour of the animals about which they write. The series is edited by Dr L. Harrison Matthews, Sc.D., F.R.S., Scientific Director of the London Zoo and well known to viewers of Children's Television, and has been described as containing one of the finest collections of animal photographs and skeleton drawings ever to be printed. The standard of photography is well up to the high standard we have come to expect from the *Sunday Times*. The books are in paperback form, consisting of an average of twelve pages.

Eight new titles will be published in the Autumn and even more titles are planned, so that the series will eventually cover a very wide range of animals indeed. Titles to be published include: Black Rats, Dormice, Harvest Mice, Mountain Hares, Polecats, Stoats, Wild Cats, Shrews, Rabbits, Deer, The Fox, and Weasels.

M.J.F.

## REQUEST FOR INFORMATION

I am studying the chemical senses of *Stomoxys calcitrans* Linn., the Stable Fly, and I should be interested to hear of any observations Members may make of this blood-sucking fly visiting flowers or other non-mammalian food sources. Ideally I should like to have fully detailed observations with, if possible, specimens of the fly.

18.5.62. Barbara A. Hopkins (827).

**CORRIGENDUM TO "AN ASPECT OF INSECT ECOLOGY"**

Mr R. W. J. Uffen has kindly written to me to point out that the specimens recorded in the above article (*Bull. amat. Ent. Soc.*, 20: 109) as the Pyralid *Myelois cribrumella* were probably representatives of the similar tineid genus *Yponomeuta*, as the former is a species frequenting waste ground, whereas the latter is often found in gardens, the larvae feeding on Apple (*Malus* sp.), etc. Subsequent reference has shown this to be so: thus the commonest Tineids were *Yponomeuta* sp(p). and the commonest Pyralid, in fact, was *Pyrausta coronata*, followed closely by a number of *Crambus* species.

H. V. Danks (2907).

**CENTROTUS CORNUTUS LINN. IN WYRE FOREST**

I was most interested to read Mr A. L. Capener's article concerning this unusual bug, in the April-May *Bulletin*. During the Summer of 1959 I took two specimens of the species on a patch of Rosebay Willowherb (*Chamaenerion angustifolium* (Linn.) Scop.) growing among oak (*Quercus* sp.) in the Forest of Wyre, Worcestershire. I was then concerned almost entirely with Lepidoptera, and the bugs were placed away in a glass tube, until last Winter when, having developed an interest in the Rhynchota, I brought them out and set them on card.

A few weeks ago I was poring over a pair of ancient tomes, the title of which I forget, in the University library, when I came across an illustration of the

species. Identification was made easy by the presence of an unusual curvature emanating from the thorax of the specimens, the like of which I have not seen in any other British Membracid, though it may occur. I resolved to spend a little time searching for further specimens in the forest, but I am afraid that this will not be possible this year. Unfortunately, the specimens were not accompanied by a data-label (let us learn from this lesson!), and I cannot, therefore, give an exact date of capture. I feel fairly certain, however, that it was much later in the Summer than May. The fact that nymphal stages are as yet undescribed in detail has provided me with an incentive to search for the species next Summer, and I look forward to further comments from Members.

Perhaps this will provide an instance in which amateurs can fill a gap in insect taxonomy.

20.7.62. Leigh S. Plester (2968).

**LETTERS TO THE EDITOR**

Sir,—I read with interest the article by Mr J. H. Drake (*Bull. amat. Ent. Soc.*, 20: 119-120) respecting butterflies of the Voralberg, Austria. My interest was stimulated because I spent my holiday in exactly the same place, and left Feldkirch as Mr Drake arrived. What a pity we did not know beforehand as we could probably have spent some enjoyable hours collecting together. Fortunately I was prepared for some serious collecting with my father, mother and brother. Our base was a small village called the Maria Gruen

situated at about 2,000 feet above sea-level, at the foot of Three Sisters Mountain, which looked down on Feldkirch. On my arrival I was immediately confronted with the wonderful sight of many different species of butterflies on the wing. On 25.7.61 the weather was warm and sunny as we began our collecting in the lower meadows, and our bag for the day included the following species: Marbled White (*Melanargia galathea* Linn.), Wood White (*Leptidea sinapis* Linn.), Green-veined White (*Pieris napi* Linn.) and Pale Clouded Yellow (*Colias hyale* Linn.). All these species were in great abundance except the Pale Clouded Yellow.

On the following day we began collecting in the gardens of the houses around us and took the Peacock (*Nymphalis io* Linn.), Small Skipper (*Thymelicus sylvestris* Poda) and Marbled White. We then moved out to a drainage basin at the foot of a hill, where we took the Small Heath (*Coenonympha pamphilus* Linn.), Large Heath (*C. tullia* Mull.), Brimstone (*Gonepteryx rhamni* Linn.), and Large White (*P. brassicae* Linn.).

Next we moved to a meadow which had been freshly cut and was enclosed on three sides by pine-woods, the open end facing up the mountain. I had only been there for a few minutes when I was thrilled to see my first Swallowtail (*Papilio machaon* Linn.) on the wing. What a glorious sight! Its elegance has to be seen to be believed. It eluded my net and those of my father and brother, much to my disappointment: however, this was to be remedied the next day. In this meadow we took the Dark Green Fritillary (*Argynnis aglaja* Linn.) and Pale Clouded Yellow.

On the next day we got up early (6.30 a.m.) to climb the first part of the mountain, as we had been told that the Swallowtail was in abundance at about 4,500 feet. On our way up we took the Arran Brown (*Erebia ligea* Linn.), Dark Green Fritillary, and Small Tortoiseshell (*Aglais urticae* Linn.). By the time we reached the height at which we were going to start collecting, the weather was very warm and after some much-needed refreshment we began our search for the Swallowtail. It was not long before we realised that it was not as abundant as we had been led to believe. An hour elapsed before the first one was sighted, and those Members who have collected this species on the wing will know just how difficult it can be: its speed is quite fantastic. Several more were sighted before this one was taken and it proved to be a very tattered specimen.

During our descent we took many other species, as follows: Silver-washed Fritillary (*Argynnis paphia* Linn.), High Brown Fritillary (*Argynnis cydippe* Linn.), Dark Green Fritillary, Heath Fritillary (*Melitaea athalia* Rott.), Small Skipper, a kind of Grizzled Skipper, but not the English one, Scotch Argus (*E. aethiops* Esp.), Arran Brown, Common Blue (*Polyommatus icarus* Rott.) and Chalkhill Blue (*Lysandra coridon* Poda). My efforts for the day were rewarded when, on a *Buddleia* bush in the garden of the house next to ours, I took a near-perfect specimen of the Swallowtail.

During the afternoon I took the Chalkhill Blue, Wood White, Small Tortoiseshell, Brimstone and Common Blue.

The day after this proved to be much cooler and ended in rain: I took the

Common Blue, Adonis Blue (*Lysandra bellargus* Rott.) and Small Heath.

Our last day's collecting was on 1.8.61. The weather was warm and sunny, and our collecting was confined to the surrounding meadows and woods. We took: Pale Clouded Yellow, Red Admiral (*Vanessa atalanta* Linn.), Marbled White, Common Blue, Speckled Wood (*Pararge aegeria* Linn.), Scotch Argus and Silver-washed Fritillary.

I hope I have been able to enlarge on the previous article. In ending I should like to say that I was joined on most of my excursions by an Austrian boy of my own age, and his sister who had never previously collected, but who joined in with great enthusiasm.

Yours truly,

G. M. Newman (3319\*).

Sir,—I am certain that many naturalists heard with regret of the proposed shutting-down of rural railway lines and the subsequent development of the land they occupied. These long stretches of embankments and cuttings, having been left in a relatively untouched state for a long period, afford a happy hunting-ground for the entomologist, the botanist, and others of that kin.

Our available countryside dwindles every year, and this would be a golden opportunity to preserve some from the demands of the motor-car and the builder.

Selected portions, under the auspices of a responsible body such as the National Trust, could be reserved for walkers

only. Disused railway-stations, presumably already fitted out with essential services, could be adapted as hostels where refreshment and lodging could be obtained.

It seems unlikely that such large areas of our countryside will ever fall vacant again. Is it possible to take advantage of this opportunity to preserve some of them for the future?

26.8.62.

R. D. Hilliard (99).

Sir,—I was interested to read Mr R. J. Swindell's letter (*Bull. amat. Ent. Soc.*, 21: 55-6) with regard to the Essex Skipper Butterfly (*Thymelicus lineola* Ochs.) in N.W. Surrey [this was an error, overlooked by both author and Editor—it should have read "N.E. Surrey"; our apologies!]. Until recently I lived in N.E. Surrey, and employed the same method as he did of catching all the small Skippers in sight at several localities to obtain the Essex Skipper. I was successful at two places: firstly at Addington in Surrey; and secondly, which is more interesting, not far from my home in Croydon.

At the side of South Norwood Lake there is an old golf links which was used as an anti-aircraft site during the war. After the War it was left untouched and became quite wild and overgrown. In so doing it became a haven for many species of grassland Lepidoptera. I am not, however, able to say whether the Essex Skipper still flies there, as the Corporation took the land over and converted most of it to allotments and playing-fields, though parts of it still remain fairly overgrown.

This, I think, is even closer to London than the Beddington specimens, the golf links being in the London postal area (S.E.25).

It is surprising how many species one can come across in these oases amongst Suburbia. Just a short way ( $\frac{1}{2}$  mile) from these links was another area of field, woodland and allotment (now built upon, leaving just a small patch of wood). This was also overgrown just after the War and existed like this until 1956. Species I caught or saw there were quite numerous, and apart from the common species of Whites (*Pieris* spp.), Satyrids, and Nymphalids, included the Holly and Common Blues (*Celastrina argiolus* Linn. and *Polyommatus icarus* Rott. respectively), Large and Small Skippers (*Ochlodes venata* Br. & Grey and *Thymelicus sylvestris* Poda respectively), Small Coppers (*Lycaena phlaeas* Linn.), Purple Hairstreaks (*Thecla quercus* Linn.), Clouded, and one Pale Clouded, Yellows (*Colias croceus* Fourcr. and *C. hyale* respectively), Brimstones (*Gonepteryx rhamni* Linn.), and a Silver-washed Fritillary (*Argynnis paphia* Linn.).

3.8.62. T. R. L. Bigger (3261).

### CONSERVATION & ECOLOGY

Sir,—Further to the comments of Mr T. G. Howarth and Mr A. N. Brangham on Conservation (*Bull. amat. Ent. Soc.*, 20: 86 and 121), may I add some remarks of my own?

I think that most of what Mr Brangham writes is true, but I also think there are more reasons than he indicates why the interest of the amateur entomologist, particularly the young

amateur, in conservation does not appear to have been aroused. Of course, the amateur would like many more "tiny open-air museums", but he cannot really bring himself round to thinking about his insects in the same terms as the crude bustle of industry and population which threaten to wipe them out. His entomology is self-centred.

In addition, though, ecology seems from outside to be a somewhat dull science, involving listing, recording, processing of data—in a word, routine: and it is not until ecology is, so to speak, examined from the inside, that its extreme interest is seen. As the interest spreads, however, a number of points arises. Each group of insects which must be integrated into the ecological plan of the particular habitat under study, itself tends to assume an interest equal to that of the plan. It is easy to be drawn off into the study of one of these groups, and, indeed, it is rewarding to study one of them in depth, rather than to obtain a smattering of knowledge of every group. Furthermore, the very people who would be liable to have the inclination to study the broader aspect—those to whom science has more meaning than just "bug-hunting"—would be those who would likewise prefer to study in depth in order to achieve some new scientific understanding, so that ecology is likely to languish.

Moreover, since conservation requires the integration of insect lives with those of all other living things, the concept becomes so vast that to attempt to understand it without the knowledge which comes from several such studies would be impossible—to extend Mr Brangham's analogy, certainly "con-

ervation" is a pale-grey word on a pale-grey background, but, unlike the homomorphic insect, each of its parts is on a separate tree. Only when these parts have been searched for and found will their outlines be imprinted on the memory [and we shall be able to see the word for the trees!—Ed.]; and by the time they have been found it will be early too late, even for the present generation. For the middle generation too, without the lead to "other orders" given by ecology, have studied only one, it is probably already too late.

Should not the older generation, therefore, try to educate the younger, not by confusing instruction on the huge concept of conservation, but by giving them an insight into ecology, from whence they can radiate out, as Mr Brangham says, and learn enough to be able, in time, to do their part. Perhaps Mr Brangham should write on insect ecology, rather than Mr Howarth on conservation.

Even then, when the younger generation of amateurs are interested in ecology, they can at best only appreciate the inadequacy of their knowledge, and hope that, by the time they are experienced enough to look back and themselves practise conservation, the older generation will not have let them down, but will have left them something to conserve.

H. V. Danks (2907).

•

Mr.—I should like to comment on some of the points raised by Mr J. Vincent in his letter on the sense of smell in carrion beetles (*Bull. amat. Ent. Soc.*, 20: 81).

Several workers have published the results of experiments on this subject.

Dethier studied the orientation to carrion traps of 314 specimens of *Necrophorus* spp. and 105 specimens of *Silpha* spp. He released beetles at a minimum of 15 feet from the bases of trees in which were hung carcasses of squirrels. Of the beetles so liberated, 85% were caught again on the traps. Marked beetles frequently located the dead squirrel in 15 minutes from a distance of 30 feet. By removing portions of the antennae Dethier was able to demonstrate that the ability to orientate to a carcass from a distance was dependent upon the presence of segments of the flagellum of the antennae. Antennaless beetles could still locate buried carrion at a distance of a few inches by means of sense organs on their palps. These results establish that carrion beetles have a good sense of smell. I have been unable to find references to work on the determination of threshold of response to smell in carrion beetles but Dethier mentions the work of Warnke on *Geotrupes*. Warnke found that the threshold concentration of skatol (a substance with a smell, associated with decaying organic matter) to which *Geotrupes* would respond was in the region of 0.003 to 0.009 milligrammes/litre.

I hope Mr Vincent will continue his experiments, for few spare-time entomologists seem to have studied the senses of taste and smell in insects. Perhaps this is because behaviour is such a complex subject to study, as both the organism and its environment (unless this is kept artificially constant) are usually in a state of change. It is known that the behavioural response to odour may change during the life of an animal; Thorsteinson has shown that the Sweet

Clover Weevil (*Sitona cylindricollis* Fahraeus) responds to the smell of coumarin (a component of the smell of clover) only when it is on the wing on its dispersal flight.

Yours truly,  
(Miss) Barbara A. Hopkins (827).

#### REFERENCES

- DETHIER, V. G. (1947): *Journal of the New York Entomological Society*, 55: 285-293.  
 THORSTEINSON, A. J. (1960): *Annual Review of Entomology*, 5: 193-218.  
 WARKNE, G. (1931): *Zeitschrift fuer Vergleichende Physiologie*, 14: 121.

### A POCKET BREEDING-CAGE

When on holiday one can often collect interesting larvae which, however, are difficult to keep alive until the end of the holiday because no breeding-cage is available. It is possible to keep larvae for a few days in ordinary collecting-boxes, but this is never very successful, since most British larvae require good ventilation. Again, portable cages consisting of long wooden members with wooden corner-pieces are awkward both to carry and to make.

The ideal is a cage which will take up, when collapsed, no more space than a two-ounce tobacco-tin, and the secret of cramming the straight struts of an erected cage into such a tin for transport is to use plastic-covered expanding curtain-wire, coupled with the right design of cage. The simplest type of cage is constructed on a plan similar to that used in making a pairing-cage for silkmths—that is, a cylinder of netting with a netting top around two (or three) wire rings spaced out down the cylinder. Simply coil the lengths of curtain-wire, together with the folded

netting, into a tin. When required, the curtain-wire lengths may be fastened into loops by overlapping the ends and binding with a few short pieces of wire, and attaching the netting by means of press-studs operating through the mesh, the skirts of the netting being gathered at the base to be tied round the food-plant jar.

However, although this cage is useful for pairing moths and can normally be packed out of the way, there are usually no convenient places in hotels, etc., from which to hang it for rearing, and although the owners of such establishments may not object to a cage standing on a suitably protected table, they might view with concern something hanging from the ceiling!

A self-supporting cage is therefore advisable, and the design I am suggesting, though unorthodox, is one which gives maximum rigidity (together with ease of erection) for the netting supports the frame if it is a good fit, as well as *vice versa*. The size can be varied, provided the width is greater than the height, but remember that doubling the length of each strut gives eight times the volume and requires four times as much netting. I shall describe a fairly small example.

The two-ounce tobacco-tin, which has a circular hole cut in the lid, contains the following materials: an eight-inch square of thin polythene sheet; a two-inch length of bamboo cane of the widest bore available; four one-foot lengths and one three-foot length of plastic-covered curtain-wire with three-eighths of an inch of the plastic cover removed from each end, and two one-foot lengths with the plastic removed from one end only and a hook screwed

into the other ; four three-eighth-inch thick slices of a cork three-quarters to one inch in diameter ; four flat lead weights (anglers' one-and-a-half-ounce coffin-leads will do) ; and a few aluminum milkbottle-tops.

A piece of netting cut and sewn to the required shape, with plenty of overlap at the bottom, may be folded and secured to the outside of the tin by means of a stout rubber band. It is better to use lightweight nylon netting, although for a small cage such as that described cotton net-curtain material, for instance, can be used, but its weight may be prohibitive for a larger cage. In a small cage, too, comparatively limp plastic-covered wire will do, but it is better, and in a large cage it is imperative, to use wire with a very thick plastic coating, in order to obtain rigidity in use.

The cage is constructed as follows. Screw the four one-foot pieces of curtain-wire into the corks in such a way that a horizontal square frame is formed, the corks at the corners resting on one of their flat surfaces. Into two of the upper flat surfaces screw the two remaining (hooked) one-foot struts vertically. Screw the three-foot length at both ends into the two remaining flat cork surfaces, so that an arch of wire is formed. Bend the vertical one-foot lengths to hook them over this arch about a foot from each cork (the hooks should be squeezed with pliers to give a tight push-fit over the plastic), and turn the cage over so that the three-foot length and one one-foot length form the base. The netting should fit exactly over this frame, the overlap at the bottom being turned outwards.

The cage can be stood on a few thicknesses of newspaper, and the netting overlap turned inwards under the edges of the newspaper and held in place by means of lead weights at the corners.

This procedure should result in a ridge-tent of netting about one foot high and a little over one foot square, the struts being slightly bent to take the strain of the netting, which should be pulled taut downwards and outwards.

If a foodplant bottle is available use that. Otherwise line the tin with the polythene sheet, fastening it by trapping it when the lid is put on (any untidy edges of polythene may be retained by means of the rubber band). In order to enable the foodplant to be stood up, the length of bamboo cane may be pushed into the hole in the lid, which should be cut to such a diameter that a tight fit is produced when this is done. A milkbottle-top folded over the top of the cane will hold the foodplant firmly and prevent frass from reaching the water, and is more convenient than the traditional cotton-wool plug. Do not fill the tin too full of water or leakage may occur at the lid and rust the tin—the water lasts for a long time, however, because the tin, though shallow, has quite a large volume.

Although this contraption looks somewhat strange, it appears no more so, if well made, than many other kinds of cage, and it has the great advantage over them that, when collapsed, it may be carried in the pocket.

28.4.62.

H. V. Danks (2907).

## PUPATING-CHAMBER FOR EXOTICS

Although several plans for pupating-chambers have appeared in the *Bulletin* over the past ten years, yet all seem to have been designed primarily for British Lepidoptera, and the problem of constructing a chamber for the rearing of tropical pupae does not seem to have been solved. The following is an attempt to provide such a chamber, which should be within the financial scope of all readers, and is at the same time basically simple to construct, yet provides a constant temperature and humidity together with easy accessibility and all-round vision.

All that is needed is an aquarium tank, which as an example will measure  $12'' \times 9'' \times 9''$ , a sheet of zinc gauze  $15'' \times 12''$ , two sheets of wood, one  $15'' \times 12'' \times \frac{1}{8}''$  the other  $13'' \times 6'' \times \frac{1}{8}''$ , a length (33") of  $\frac{1}{4}'' \times \frac{1}{4}''$  beading, a heater, a thermostat, a thermometer and a thistle-funnel.

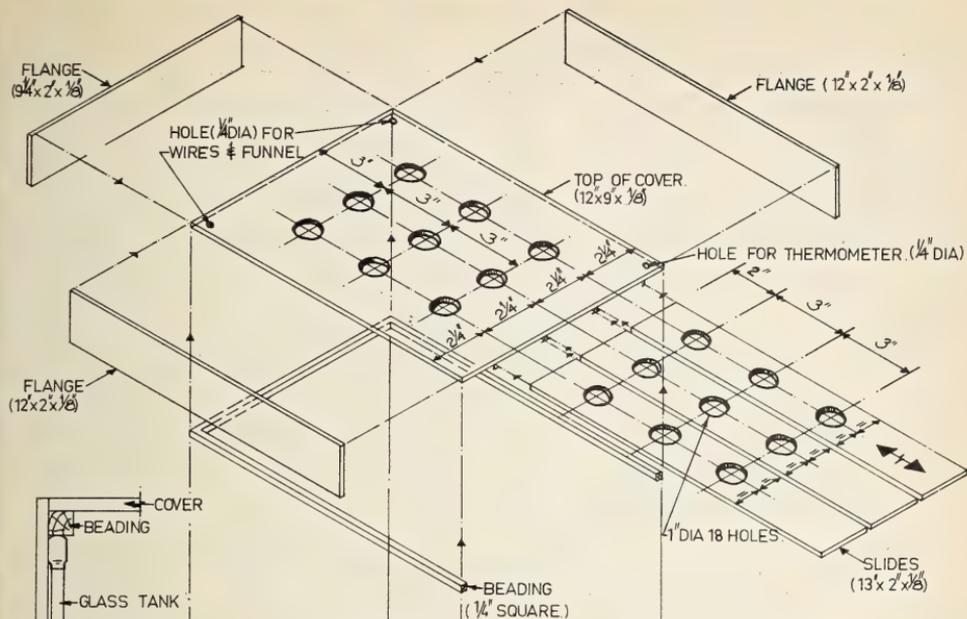
Cut a mitre of  $45^\circ$  in each corner of the zinc gauze and bend down the  $1\frac{1}{2}''$  flange (see inset on diagram) so that the resulting "tray" slides snugly down inside the aquarium tank. Drill two holes, each of  $\frac{1}{4}''$  diameter, in two of the corners.

From the  $15'' \times 12''$  sheet of wood cut a piece measuring  $12'' \times 9''$  which will serve as the chamber's top cover. In it drill nine holes, each of 1" diameter, in the positions shown in the diagram. Drill holes of  $\frac{1}{4}''$  diameter in three of the corners of this sheet (two of these holes *must* be in alignment with the two holes in the zinc gauze). From what is left of this same sheet of wood cut the three flanges, two of  $12'' \times 2'' \times \frac{1}{8}''$

and one of  $9\frac{1}{4}'' \times 2'' \times \frac{1}{8}''$ . (Owing to the width of the saw cut, each of these flanges will necessarily measure slightly less than 2". *Care should be taken to see that all these flanges are of the same width, if a good finish is required.*) First glue and tack the two 12" flanges to the long edges of the  $12'' \times 9''$  sheet, then add the shorter flange to one end. Into the right-angle formed by the top of the cover and each of the flanges glue and tack the  $\frac{1}{4}'' \times \frac{1}{4}''$  beading (see section). To prevent warping, it is suggested that the cover should next be thoroughly painted.

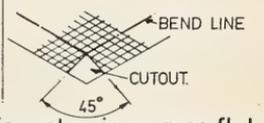
From the  $13'' \times 6'' \times \frac{1}{8}''$  sheet of wood cut three 13" lengths, each of 2" width. Drill nine holes, each of 1" diameter, in the positions shown in the diagram. Invert the already completed cover, and place the slides so that the two series of 1" diameter holes correspond exactly. Into the underside of the cover hammer  $\frac{1}{2}''$  panel pins, just touching the edges of the slides. Space the pins in pairs (about 6 pairs per slide), and knock the tops of the pins over the slides, thus forming runners. Thoroughly paint the slides.

To assemble the chamber, place a thermostat and a heater in the bottom of the aquarium, and cover with water to a depth of approximately 1". Thread the wires of the thermostat and the heater through one of the  $\frac{1}{4}''$ -diameter holes in the zinc gauze. Lower the gauze into the aquarium, flanges downwards. Place a layer of peat or similar material on the gauze. Thread the wires of the thermostat and heater through the corresponding hole in the cover, which is then in turn lowered on to the top of the aquarium. Insert a thistle-funnel into one of the  $\frac{1}{4}''$ -dia-

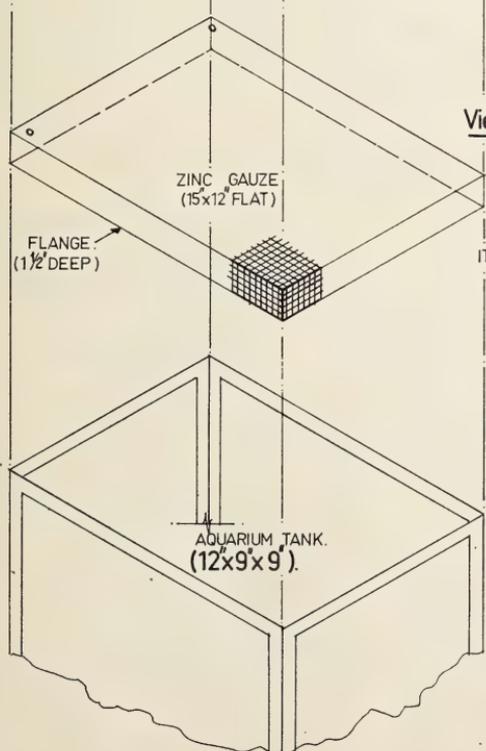


Exploded view of cover.

Section thro' flange.



View showing gauze flat.



ITEMS NEEDED:-

1. AQUARIUM TANK.
2. SHEET OF ZINC GAUZE, (15 x 12")
3. SHEET OF WOOD (12 x 15") FOR TOP OF COVER AND FLANGES
4. SHEET OF WOOD (13 x 6) FOR SLIDES
5. 33 x 1/4" SQUARE BEADING.
6. HEATER AND THERMOSTAT.
7. THERMOMETER AND FUNNEL.

**PUPATING CHAMBER FOR PALEARCTIC AND EXOTIC LEPIDOPTERA.**

meter holes in the cover so that the base of the funnel passes through the remaining hole in the zinc gauze. Into the remaining hole in the cover insert the thermometer.

The chamber is now complete. Air circulation and regulation of humidity can be obtained by manipulation of the slides.

10.6.62. A. M. Freebrey (3359).

## NOTES AND OBSERVATIONS

On August 26th this year, whilst walking near Lemsford, Hertfordshire, with Mr L. Christie, I found a full-grown larva of the Alder Dagger Moth (*Apatelealni* Linn.). It began to pupate on August 27th.

This was the highlight of the day: we caught little else, except for a female White-letter Hairstreak Butterfly (*Strymonidia w-album* Kn.) taken within 50 yards of its foodplant.

27.8.62. G. D. Trebilcock (2976).

### ESSEX SKIPPER BUTTERFLY (*THYMELICUS LINEOLA* OCHS.) IN SURREY AND KENT

Following up the recent reports of the occurrence of this species in Surrey, I investigated several areas within a few miles of Croydon. Unfortunately I was unable to find the time to explore the areas mentioned in earlier communications in the *Bulletin* (*Bull. amat. Ent. Soc.*, 21: 16-17; 55-56), but searched several other likely spots in the district.

In all of them I found the Essex Skipper and in most of them it was commoner than the Small Skipper (*Thymelicus sylvestris* Poda) which nevertheless was on the wing in company with it. In fact, at one locality at Elmers End, Kent, it was very common indeed. Other localities where I found it were near Shirley, Surrey, and on the outskirts of Croydon itself, to the South-East.

I should very much like to hear from Members familiar with the areas immediately to the South and South-West of Croydon, in the hope that our knowledge of the distribution of the species might be extended further. Hitherto, most of these reports have referred to localities on Bracklesham Pebble Beds and Thames River and other gravels and sands, but I have found it on the chalk scarp slopes at Royston, Herts., in 1943. It would be very interesting to know whether it extends its range to the Chalk to the South of London.

Peter G. Taylor (719).

### LEAST CARPET MOTH (*STERRHA RUSTICATA* SCHIFF.) IN SOUTH-WEST LONDON

Mr R. F. McCormick's record of this species (*Bull. amat. Ent. Soc.*, 21: 12) at Streatham on 17.7.61 seems to be the first from that area. Dr de Worms mentions records from Hampstead Heath and Harefield (Middlesex) in 1890, but there appear to be no records from S.W. London. The main locality for the species is in Kent on the outskirts of London. It was recorded from Dulwich, Surrey, in 1957.

3.3.62. Sir Eric Anson (2508).

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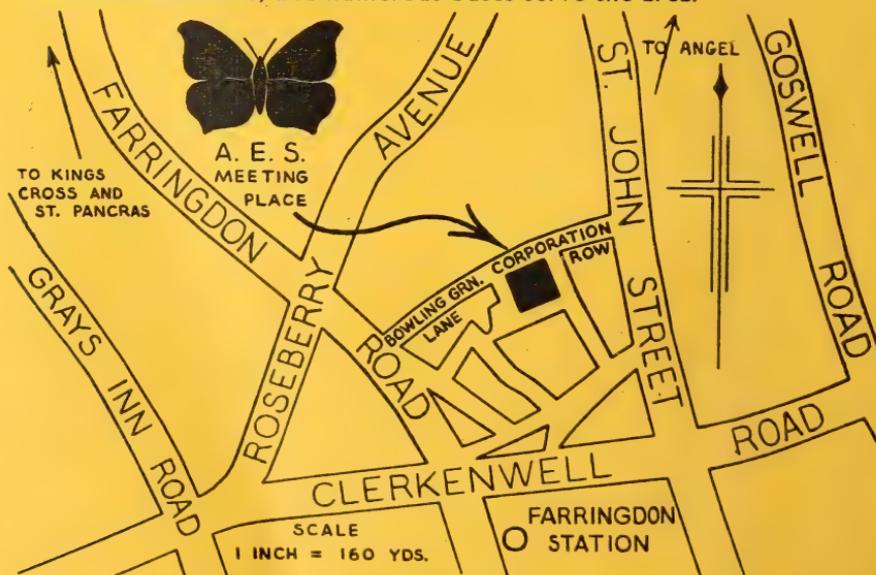
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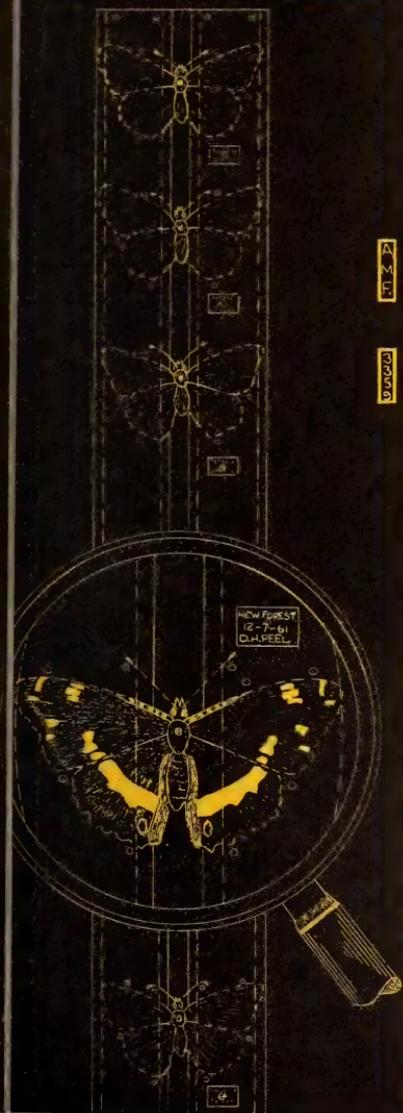
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EDITED by PETER G. TAYLOR, B.Sc., F.R.E.S.



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#### HOW TO WRITE FOR THE BULLETIN

In good English.

Preferably typewritten, double-spaced, with wide margins, and on one side only of quarto paper.

Heading in capitals, NOT underlined. Correct scientific names, consisting of name of genus (capital initials, and underlined), name of species (small initial, and underlined), authority (conventionally abbreviated, NOT underlined).

English names of species, etc., with capital initials.

Your name at end, on the right, followed by your AES Membership Number in parentheses.

Date of writing, all in figures (e.g., 15.8.27.), opposite your name.

Number of words, in pencil and ringed round, in top right corner of first sheet.

Return proofs promptly.



## EDITORIAL

I am sure that Members who have been with us for some years will not need to have their attention drawn to the two magnificent new drawings that grace the front covers of this present *Bulletin* and the previous issue. For these latest embellishments of our magazine we are indebted to our Member Mr A. M. Freebrey, who also drew the splendid illustrations for his own article in the last issue (*Bull. amat. Ent. Soc.*, 21:82-4). Mr Freebrey has kindly offered to produce illustrations for articles written by other Members who may not be so accomplished as artists, so if you have an idea for an article that needs illustration but don't feel up to it yourself, you can now submit it, accompanied by rough sketches, knowing that it will be in very capable hands.

With the setting up of the World Wildlife Fund for the conservation of what remains of the natural flora and fauna of the World, those of us who prefer watching beautiful and interesting creatures going about their business to impaling their desiccated corpses on pins or mummifying them in alcohol or what not, have seen a great step forward towards the attainment of our ambitions. It is all the more regrettable, therefore, that there should still be so many collectors intent on making survival even more difficult than it already is, for the objects of our interest.

One sunny Summer's day some time ago I chanced to find a friend and me renewing our acquaintance with some

of the delightful chalk grassland butterflies at a well-known scarp slope in the South of England. On our arrival, we saw a middle-aged man, red in the face and perspiring freely, marching to and fro along the contours of the slope and repeatedly making a puff with his net at some insect invisible from where we were. It was a simple matter to guess what he was doing, so, knowing how outspoken I tend to become on such occasions, I steered clear.

As soon as he saw us, he came straight over to where we were and hailed my companion. "Any luck?" he asked, and was told that we had only just arrived. "There's nothing about", he went on (the slope was teeming with butterflies and other insects), and added, as if realising what he had said, "No 'vars.' at all — they're all typical". Receiving a non-committal reply, he expanded his theme: "I've been here every year for the last twenty years — nothing like the 'vars.' there were in the old days". He did not seem to notice anything ridiculous about what he had said, and my friend was too much of a gentleman to enlighten him. But if he, and other variety-hunters like him, have been combing such 'localities' relentlessly and methodically for even twenty years — and how many before him? — perpetually bleeding off such genetically abnormal forms as show unusual wing-patterns, what hope have those forms of surviving?

One of our Members tells me that he has seen two parties, each of three or four collectors, equally assiduously

combing the slopes at another well-known 'locality', heedless of the damage they were doing to vegetation, including, of course, the very foodplants that made this place so famous, and certainly killing off the early stages of species not then on the wing, to boot. Is it any wonder that everywhere one goes one hears the complaint, often from these vandals themselves, that "butterflies/moths seem to be getting scarcer every year"? In face of such tremendous adverse selection-pressure, how can they possibly survive?

In the early days of any branch of science, collections of the material to be studied are a necessity, so that there can be some reliable source of information available concerning what there is to study, and here amateurs can give valuable help to the professional researcher, who is, after all, the eyes and ears of society. All too often, though, the amateur fails to see the true function of collecting, which appeals to some immature side of his nature and becomes an end in itself.

In the 18th and 19th centuries, particularly, archaeology consisted of digging up ancient earthworks hunting for 'curios', botany consisted of seeking and pressing plants, the rarer the better, and ornithology consisted of making collections of the shells of birds' eggs — the whole clutch if you could get it, and taking pot-shots at any rare bird that was misguided enough to show its beak on our shores. Fortunately for the birds and plants, and not less for the archaeologists, botanists and ornithologists, these sciences have grown up, so that in these fields the emphasis is on careful observation and recording of results — and who would deny the

interest of radio and television broadcasts dealing with these subjects? Is it not high time our hobby came of age, too, so that for Members of this Society, at any rate, the word "Entomologist" in our title (which my dictionary defines as "one who studies insects", not "one who collects insects") really meant something?

Elsewhere in this issue will be found a number of contributions directly or indirectly concerned with the collecting of insects, either as a tool for serious study or as a means of indulging selfish greed — though the latter may be known by one of a number of euphemisms, to ease the consciences of those concerned. One of the contributions mentions leaving "well over 25% behind as a residual breeding stock to provide cocoons for future seasons". After the next, like-minded collector has visited the area and done the same, leaving 25% of what *he* finds, there will be 6.25% of the original population; and, should the process be repeated, barely three specimens will be left of every 200 originally present. These remarks refer, of course, to a species that is (at present) numerous, but has not the same excuse been made over and over again by bewildered collectors in this country, scratching their heads and saying "But that's strange — it used to be very common" or "wonder what caused such-and-such to die out — we used to take it freely to light there when I was a young man. Oh well, I suppose it must be insecticides, drainage, climatic changes" or something equally vague.

What chance have our rarer species of the larger and more attractive insects at least, to survive the determined

attempts to exterminate them by self-styled 'entomologists'?

Starting with the next issue, the first part of Volume 22, the Council have reluctantly decided, with my equally reluctant agreement, that as the difficulties of keeping to a monthly schedule for the *Bulletin* appear to be too great, future issues will appear, for a trial period at least, quarterly — on February 1st, May 1st, August 1st and November 1st. Owing to the lateness of this present issue, the first of these will be a little late, but we hope that that will soon be remedied.

The size of the new quarterly *Bulletin* will, of course, depend on how much copy is sent in to me by you, the Members, but it is intended to be 36 pages per issue. If this can be kept up, it will give 144 pages in the year — rather more than the usual amount accumulated.

Peter G. Taylor (719).



### **'WANTS & EXCHANGES LIST' — AN IMPORTANT CHANGE**

In view of a number of complaints about the content of certain entries in the *Wants and Exchanges List*, received over the past year or so, the Council has decided that in future all entries be examined by a member of Council before acceptance. The most suitable Officer to carry out this rather delicate duty was obviously our General Editor, who fortunately volunteered to do it. In future, then, all matter for insertion in the *Wants and Exchanges List* must be sent to Mr R. W. J. Uffen, Vaughan Avenue, Stamford Brook, London, W.6.

### **SECRETARY'S LETTER**

Many Members will no doubt have been surprised to read in the June — October *Bulletin* that a new Hon. General Secretary was required yet again. However, I am afraid that personal circumstances have prevented me from continuing in the Office, which from now on will be taken over by Mr D. E. Dodwell, whose address appears in the lower left panel inside the front cover of this issue, and who, despite being a comparative newcomer to the Society, has generously come forward to help in this most critical capacity. I am sure all Members join me in thanking him and wishing him well.

In addition, I have to inform you of the following further changes on the AES Council; all are subject to the results of elections to be held at the next Annual General Meeting, and in the case of the Hon. Assistant Treasurer and that of the Hon. Meetings Secretary are also subject to co-option by Council.

Mr T. S. Robertson, our Hon. Youth Secretary, has now finally resigned from this Office and all youth matters should in future go to our new Youth Secretary, Mr Martin C. Birch, Hooton Vicarage, Little Sutton, Wirral, Cheshire. I should like to thank Mr Robertson for all the very hard work he has put in and to wish his successor the best of luck. Mr Birch's task will be made the more difficult as he will unfortunately be unable to attend Council Meetings owing to his living so far away in Cheshire.

Mr B. R. Stallwood replaces Mr K. H. Bobe as Hon. Assistant Treasurer,

and in future all subscriptions must be sent *not* to Mr Bobe but to Mr Stallwood, 17 Claremont Avenue, Sunbury-on-Thames, Middlesex. I should like to thank Mr Bobe for doing an exacting job which we all tend to take for granted. His successor needs no introduction as he was Hon. Bulletin Editor for several years.

Mr B. F. Skinner, 85 Elder Road, West Norwood, London, S.E.27, replaces Dr K. J. Fox as Hon. Meetings Secretary. I am sure we are all most grateful to Dr Fox for arranging two excellent Annual Exhibitions and for supervising the 'move' to the Hugh Myddelton Secondary School. All Members who have attended the last two Exhibitions will know what a great improvement this has made. His successor also needs no introduction as he was Hon. Assistant General Secretary until this Office was dissolved earlier in the year.

At a recent Council Meeting it was agreed to change the Society's Registered Address from 1 West Ham Lane, London, E.15 to 42 Normandy Avenue, Barnet, Hertfordshire. The new Registered Address is in fact the address of the Hon. Treasurer who is also our present Hon. President. I should like to thank Mr C. B. Pratt for allowing the Society to use his address as its Registered Address for longer, probably, than most of us have been Members.

Members are reminded that our Registered Address is not to be used for general Society correspondence as it is purely an official address mainly for the use of various non-Members, particularly organisations who would probably have it recorded as our only

address. It is the address which will appear on all future *Bulletins* and other publications.

There will soon be a few vacancies on the Council, owing to the expiry of normal terms of office; any Member who would like to serve on it should write to me.

All these changes are bound to cause some initial confusion, but may I support the Editor's recent appeal to send letters to the correct Officer. If there is any doubt as to the correct Officer then please send the communication to Mr Dodwell.

Michael J. Friend (2786),  
8.10.62. *Hon. General Secretary.*

## XIIth INTERNATIONAL CONGRESS OF ENTOMOLOGY

The XIIth International Congress of Entomology will take place in London from 8th—16th July 1964 under the presidency of Professor O. W. Richards FRS.

The Congress will be divided into twelve sections and emphasis will be placed on sessions organised around selected topics of current importance to which contributions will be invited from intending members. Visits are being planned both to research institutes and to well-known collecting areas.

Social functions will include evening receptions and excursions to places of historic or general interest, while a special programme is being arranged for ladies. Longer tours of the scien

tifically more interesting parts of Great Britain will be available after the Congress.

Full Membership is open to all AES Members at a fee of £8. Full Members' families and undergraduate students are eligible for Associate Membership at £4 but will not receive the printed Proceedings and may not read papers.

The languages of the Congress are English, French and German.

Any AES Member wishing to attend the Congress should write for a preliminary invitation to Mr Paul Freeman, c/o British Museum (Natural History), Cromwell Road, London, S.W.7.

#### THE SECTIONS OF THE CONGRESS

- Section 1. Systematics (including Phylogeny).
- Section 2. Morphology, Anatomy and Palaeontology.
- Section 3. Physiology and Biochemistry.
- Section 4. Genetics and Cytology.
- Section 5. Behaviour (including that of Social Insects).
- Section 6. Ecology.
- Section 7. Geographical distribution.
- Section 8. Insecticides and Toxicology.
- Section 9. Agricultural and Stored Products Entomology.
- Section 10. Forest Entomology and Pests of Timber.
- Section 11. Insect Pathology and Relationships between Insects and Micro-organisms.
- Section 12. Medical and Veterinary Entomology.

Michael J. Friend (2786),  
Hon. General Secretary.

8.10.62.

#### ANNUAL EXHIBITION — 6th OCTOBER 1962

In order to cope with the increase in size and scope of the Annual Exhibition a move was made, last year, to the Hugh Myddelton Secondary School, London, E.C.1. All present were unanimous in their approval of the change, and the same venue was booked again for this year.

The weather was perfect, and despite the setback of a serious delay in printing the notices Members rallied round and produced a first-class effort. A poor collecting-season slightly decreased the number of British exhibits, but this was offset by a welcome increase in collections from other countries. Among our guests we were particularly pleased to have with us representatives from The Bee Research Association, Croydon Natural and Scientific Society, London Zoological Gardens, the Ministry of Agriculture, Fisheries and Food (Infestation Control), St Ivo Natural History Society, and the Virus Research Unit, Cambridge; likewise Mr Arthur Smith, illustrator of many entomological books.

As usual, leading entomological dealers were present shewing a complete range of equipment and books, as well as an interesting selection of living and set material. The Members' sale and exchange tables were extremely popular, and the setting demonstrations of Lepidoptera (Mr T. S. Robertson) and Coleoptera (Mr L. S. Whicher) and the general discussion (Mr R. W. J. Uffen and others) were keenly attended. Last but not least, the refreshments were excellent.

The large number of Members and friends present was very encouraging. Many of us meet only once a year, and

the discussion of the past season's activities and results makes for a memorable day. It only remains for the Council to thank Dr K. J. Fox and his helpers for a well-planned and enjoyable Annual Exhibition, and to extend a welcome to Members and friends to come again next year.

A note of exhibits was received from each of the following:—

*Aly, P. (3400J)*

British Lepidoptera and Coleoptera.

*Anley, R. L. B. (3107)*

Lepidoptera from Ceylon.

*Bayliss, R. (3257)*

Swiss butterflies and moths.

*Bee Research Association*

Showed a full range of their publications, and Members were available to give advice.

*Betts, B. (3110J)*

Series of larvae and pupae of the Speckled Wood Butterfly (*Pararge aegeria* Linn.) to show variation.

*Birch, M. C. (3048)*

Coleoptera from the Wirral, Cheshire.

*Bradford, E. S. (3068)*

Collection of Microlepidoptera and large-size illustrations.

*Bush, D. J. B. (CNHSS)*

Representative collection of the genus *Heliconius* from South America.

*Castle, M. E. (2490)*

Full life-histories of some spiders, including *Tapinauchenius plumipes* Koch and *Delopelma steindachneri* Ausserer, with typical localities and parasites. (Specimens on loan from Messrs C. F. Harbison and D. T. Newall of California, U.S.A.). Also home-made 10-drawer insect-cabinet.

*Cole, S. G. (2934J)*

Beetles from the Camargue and Basses-Alpes, France.

*Coleridge, W. L. (2194), Cribb, P. W. (2270) and Cribb, H. J. (2044)*

A full account, with maps and photographs, of their expedition to the Pyrenees in July 1962, together with the Lepidoptera, Coleoptera and specimens of other Orders collected.

*Corke, D. (2962J)*

Thermostatically controlled cage for Silkmoths, Locusts, etc.

*Cribb, H. J. (2044)*

Collection of aquatic beetles.

*Cribb, P. W. (2270)*

Bred series of British *Melitaea* (Fritillary Butterflies) to illustrate local variation.

*Croydon Natural History and Scientific Society*

A large exhibit, including insect pests from India, Orthoptera and Neuroptera from Greece, Diptera and Lepidoptera from South London area.

*Danks, H. V. (2907)*

Typical British garden insects. Also a large, collapsible rearing-cage (described in *Bull. amat. Ent. Soc.*, 21:80-1) to fit in a pocket.

*Duncan, P. J. (3274J)*

Collection of butterflies from France.

*Ford, M. L. (3031J)*

Larvae of British Lepidoptera.

*Ford, R. (2332)*

Insect photographs and British moths.

*Fox, Dr K. J. (1459)*

Moths taken at Sallow blossom in Spring, and the more interesting captures from a light-trap.

*Friend, M. J. (2786)*

Representative collection of Silkmoths (Saturniidae).

*Gardiner, B. O. C. (225)*

Set and living specimens of exotic Lepidoptera, together with drawings and photographs.

Harman, A. (2721) and Harman, G. J. E. (2723J)

Coleoptera from Jugoslavia, and a collection of Arachnids.

Heslop, Mrs J. (3356)

Living and mounted larvae, cocoons and imagines of exotic Silkmoths.

Hilliard, R. D. (99)

British Grassmoths (Pyrilidae: sub-family Crambinae).

Houlihan, D. (3365)

Silkmoths of the Old and New Worlds. Also apparatus for collecting and killing.

Jarman, R. A. (2706)

Large wasp's-nest (*Vespa norvegica* Fab.) showing early stages. Also larvae of British Lepidoptera.

Knight, T. F. (3190)

Varieties of British and foreign Lepidoptera.

London Zoological Gardens

A large selection of insects and other creatures from the London Zoo, shewn by Mr G. J. Ashby (2252), Curator of the Insect House.

Leach, A. B. (3064J)

A general collection of insects.

Lewis, E. (952)

Collection of Ladybird beetles (Coccinellidae).

McCormick, R. F. (3375)

Typical Lepidoptera from Mitcham Common, Surrey.

McGeeney, A. (3283J)

Butterflies from Nyasaland.

Middleton, A. R. (2482)

Dissected bird-pellets of the Little Owl (*Carine noctua mira* Witherby). Ministry of Agriculture, etc. (Infestation Control).

Living examples of the insect pests affecting our basic foodstuffs usually stored in bulk.

Moore, R. S. (3174J)

Pupae of Hawkmoths (Sphingidae).

Muggleton, J. (3253J)

A general exhibit of local beetles, and stages in the lives of Silkmoths.

Muggleton, R. (3475J)

Living larvae of moths and beetles.

Nash, R. (3358J)

The larger British Diptera.

Ollevant, D. (1514)

A representative collection of the Microlepidoptera of the London area. (Any assistance and records especially requested from Members in the district).

Osborne, R. J. (2437J)

Some of the more usual larvae of Lepidoptera found in the Autumn.

Payne, R. M. (2982)

Collection of Crane-flies (Tipulidae) from Epping Forest.

Pearce, C. J. (3139)

Lepidoptera taken in 1962.

Robertson, T. S. (2417) and Robertson, A. S.

Geographical variation of British butterflies.

Robinson, R. (3201)

A chart illustrating genetic studies of the Tiger-moths (Arctiinae), and larvae from experiments now in progress.

St Ivo Entomological and Natural History Society (2941A)

A comprehensive general natural history display of creatures ranging from Locusts to Alligators.

Roche, J. (3096J)

British Microlepidoptera.

Sadler, E. A. (2966)

Overwintering larvae of Lepidoptera, and interesting insects taken recently.

Skinner, B. F. (2470)

Lepidoptera from Aviemore and English localities.

Smith, A. E. (2136)

Original drawings in line, half-tone and colour prepared for recent entomological publications.

Speight, M. C. D. (3044)

Montane Scottish Syrphidae (Diptera).  
Taylor, P. G. (719)

Antique and rare entomological books. Examples of Lepidoptera attacked by birds. Birdwing butterflies from South-East Asia. Some rare varieties of British Lepidoptera, including one of the Brown Argus Butterfly (*Aricia agestis* Schiff.) not yet described.

Thorne, K. J. (3055J) and Fordham, B. E. (3296)

Collection of Lepidoptera taken in Brighton area, 1959-62.

Trigg, P. H. (3271J)

Model file for recording breeding and collecting data.

Venton, D. C. (3305J) and Watkinson, I. A. (3130J)

An example each of every species of Lepidoptera taken at two ordinary light-traps in the Orpington area of Kent during the past two years.

Virus Research Unit, Cambridge

A detailed survey of the use of viruses to control insect pests, presented by Mr C. F. Rivers (1443). An interesting sideline for breeders was the fact that only 16 per cent of dead larvae sent to them for examination were in fact killed by virus diseases (see *Bull. amat. Ent. Soc.*, 21: 66-7).

Whicher, L. S. (1345)

A comprehensive representative collection of Aphodiinae (Coleoptera).

Wright, L. A. (3434J)

Typical specimens and varieties of British Lepidoptera, and living examples of all stages.

8.11.62.

R. D. Hilliard (99).

## FROM OUR NORTHERN CORRESPONDENT

### *The Moorland Moths*

Every northern entomologist has within fairly easy reach large areas of moorland, often covered with heather, and these moors are usually abounding in wild life of every kind. When I was a Junior Member of our Society I spent every spare hour on them and never failed to find a constant supply of insects and many other creatures. How often one finds that a northern lepidopterist will bewail the fact that many species are never to be obtained in his own district, and yet his cabinets are woefully short of the splendid varieties of many others which can be obtained by regular visits to the local moors.

In a short article it is not possible to list all the species one might expect to find on northern moors, but we might refer to a few of the most rewarding ones and give some hints regarding the collection and rearing of them.

*Lasiocampa quercus* Linn., var. *callunae* (Northern Eggar Moth).

Some most important work is at present being carried out on this fine moth. There are several splendid varieties which are still not recorded in the textbooks, but which are to be found on the moors. The large larvae, when about 15 months old, may be found in the early Summer of years of even date, e.g., 1960, 1962, 1964, etc. I cannot give any scientific reason for this phenomenon [see footnote], but the fact is that the larvae occur only in "even" years. In the "odd" years between these the moths appear, the

species having a two-year life-cycle. Larvae are best collected in June, for they have by then shaken off the effects of wintering but have not yet fallen prey to the many parasites which beset them later. It will be found that Heather (*Erica* spp.) is a troublesome foodplant in captivity and the larvae will take readily to Hawthorn (*Crataegus* spp.). Another useful plant, though not so readily accepted, is green Privet (*Ligustrum ovalifolium* Hassk.).

*Saturnia pavonia* Linn. (Emperor Moth).

One never tires of rearing and breeding this splendid insect. The strange fact, however, is that some entomologists, particularly in the South-East of the country, never seem to succeed in rearing the larvae beyond half growth. In some years I have had almost 100 per cent success, whilst in others I have lost almost every larva. Undoubtedly virus disease has a great bearing on the situation, but in addition one notes that a hot, dry year invariably produces the best results. There is a completely black form of the larvae which is now appearing on our moors, and the resulting imagines are somewhat dark and "greasy" in appearance.

*Macrothylacia rubi* Linn. (Fox Moth).

I have never seen the larvae in the huge numbers which are said to be typical of this species. On northern moors it seems rather to be a fairly rare, though constant, resident and I have seen just two or three each year. There are several handsome variations and this species could do with a good deal more work. Bringing the fully grown larvae through the Winter is a constant challenge, and various hints on how to do so have been given in

the *Bulletin* from time to time.

*Parasemia plantaginis* Linn. (Wood Tiger Moth).

The coming of every Spring brings another opportunity of finding the fully fed larvae of this interesting moth. They love to sun themselves on wisps of dry grass. Indeed, it is always interesting to the naturalist to note how many attractive creatures are to be found in such situations. One recalls seeing countless spiders (not to mention those of our Members who study them), lizards newly up from hibernation, and many other creatures all competing for a place on the tufts of dead grass catching the early shafts of sunlight.

*Phragmatobia fuliginosa* Linn. (Ruby Tiger Moth).

In a good season one may find three complete generations of these moths on our moors, beginning with cocoons in early April or even late March. The wild, heather-feeding larvae produce small, darkish moths, but rearing the larvae in captivity, and using Dandelion (*Taraxacum* spp.) or Dock (*Rumex* spp.) as foodplant, will produce quite startling results. It is no exaggeration to say that the offspring so reared will be half as large again as their parents. An amazing point, too, is that they will be much lighter in colour, approximating to the southern form.

*Apatele menyanthidis* View. (Light Knot-grass Moth).

This handsome species is always welcome to the northern collector, particularly since it is not easily obtained anywhere. So far as our moors are concerned, it is never common but always to be found by careful searching.

Only by rearing the moths can perfect specimens be obtained, for they seem to damage themselves almost immediately in the wild.

There are, of course, a great many other species which reward the moorland naturalist, but I want to use the remaining portion of this article to make reference to assembling. Almost all the species named above, and many other moorland species, are day-flying and subject to strong assembling tendencies. To obtain success in assembling males requires some knowledge, good weather conditions, and more than a little luck.

First, as regards the females to be used: they should be unmated, of course, but can be several days old. Sometimes a delay cannot be avoided, as, for instance, when they emerge perhaps on a Monday and you cannot reach the moors until Saturday. The female should then be kept in a dark and cool place until about two hours before you are to carry out the assembling, at which stage she should be placed in the gauze-sided box and allowed some fresh air and sunshine.

Regarding weather conditions, most species will simply not operate at all if the temperature is lower than, say 45°F. (7°C.). A cool wind is also very unhelpful. Sunshine is not absolutely necessary; indeed, my best results have been on a sultry, overcast day. Always get to windward of the part of the moors to be covered, so that the breeze is taking your [?] scent directly across the heather. Be prepared to wait patiently for the moths to arrive. Often there is no delay at all (I have had Northern Eggar's trying to get

into my satchel before I had reached the moors) but sometimes one must wait with no results at all for perhaps an hour, until quite suddenly a dozen males will arrive. It is a good idea to box the first few males, both to allow others to arrive in peace and to be sure of one or two for mating purposes.

Finally, brother naturalists, and most important, remember that no other form of collecting is more likely to wipe out a local species than assembling; therefore take only what you need, and perhaps follow a golden rule that many of our older Members have long observed — to put back into any particular locality every year at least as many of each species as one collected from that locality in the first place.

9.10.62. W. E. Collinson (247).

Temperature is a means of comparing the speeds at which the molecules of a substance are moving to and fro, and, since molecules of different substances can only react together chemically if they collide, the frequency with which collisions take place — and therefore the overall speed of a chemical reaction — depends, among other things, on the speed at which the molecules involved are moving, *i.e.*, on the temperature of the participants. Thus, the higher the temperature, the faster the molecules are moving, the more frequently they collide, and the sooner they all react together.

Since the speed at which living things — “cold-blooded” ones such as insects, at least — live their lives depends to a large extent on the speed of the total chemical changes going on in their bodies (their metabolic rate), it follows that this will increase as the temperature

rises, at any rate until key substances start decomposing. Conversely, of course, as the temperature falls they become more sluggish and take longer to live out their lives, and it has often been observed that the nearer the Poles are approached, the longer animals take to develop, to become sexually mature, and to die.

This is not, of course, the whole story, space being limited, but it is probably true to say that it is the most important single factor producing the effect that puzzles Mr Collinson.

— *Editor.*

### SOME OBSERVATIONS ON THE BUTTERFLIES OF THE WESTERN PYRENEES JULY 1962

As in 1959 and 1960, Mr W. L. Coleridge made the travelling arrangements for an expedition in July to France. The members of the party were Mr Coleridge himself, of course, Messrs H. J. Cribb and H. A. Kennard, and myself. We travelled by the car-ferry from Newhaven to Dieppe and, after driving to Paris, used the *Auto-couche* train service to Biarritz. From there we motored *via* Pau into the Basses-Pyrenees and stayed for part of the first week at Eaux Chaudes, which is in easy striking distance of the Parc d'Ossau area and some sixty miles from the Ordesa Natural History Reserve in Spain.

The Ossau area has the Pic d'Ossau as its centre, and the mountains around it have many lakes at about 7,000 feet

formed by the melting snow. All the slopes are fairly heavily grazed by cattle and sheep, and grazing takes place right up to the levels above the permanent snow. The consequent reduction in flowers and herbage means that the butterfly population is nowhere as abundant as that found in the French Alps, and we had to cover a lot of territory in order to seek out the best places. We found that the most fruitful areas were those spots where grazing was difficult and restricted: the steep slopes on the edges of mountain streams and torrents; others on the road-sides; and meadows set aside for hay. In these areas there were still plenty of flowers to be seen, and the butterfly population of the region was concentrated in them.

Over the frontier, in Spain, the picture was somewhat different. There was very much less grazing, and beyond the Col du Portalet the mountainsides were covered with lush grass and plenty of flowers. Lower down, on the way to Ordesa *via* the town of Biescas, we found the countryside hot and dry, with much rock and little cultivation except in the bottoms of the valleys. The number of butterflies on the wing was much nearer to Alpine standards, and every roadside stop brought forth several species new to us.

The Ordesa valley, which ends in a sheer wall of rocky buttresses, was well wooded, and in the small alps between the woods there were swarms of butterflies on the wing. This valley is behind the Cirque de Gavarnie, which is on the French side, and it is a known migration-route. We saw

the Clouded Yellow (*Colias croceus* Fourcr.) and Pale Clouded Yellow (*C. hyale* Linn.) in large numbers, and several Bath Whites (*Pontia daplidice* Linn.) travelling at high speed along the valley, the general movement being in an easterly direction. In the Ossau area movement had been south-easterly contrary to what we had anticipated. Unfortunately we were able to spend only one day in the Ordesa Reserve, which is the home of the Ibex (*Capra ibex* Linn.) and the Bearded Vulture (*Gypaetus barbatus aureus* Hablzl), as there was no vacant accommodation in the Reserve.

Among the interesting species which we took in Spain were the Long-tailed Blue (*Lampides boeticus* Linn.), which was depositing eggs on the Everlasting Pea (*Lathyrus latifolius* Linn.) along the roadside, the purple, oak-feeding butterfly *Laeosopis roboris* Esper, and *Melanargia syllius* Hbst., a species rather like a large Marbled White (*M. galathea* Linn.) but with the black tracery much finer.

In the Ossau area we took a species new to us, *Pararge hiera* Fab., like a very dark Wall (*P. megaera* Linn.), and the following species of *Erebia*:—*E. euryale* Esper, *E. epiphron* Knoch forms *cassiope* Fab. and *pyrenaeica* Elw., *E. triarius* Prun., *E. gorge* Esper form *gorgone* Bdv., *E. mnestra* Huebn., *E. tyndarus* Esper, and *E. meolans* Prun. (= *stygne* Ochs.). Above the lakes we found only the Small Heath (*Coenonympha pamphilus* Linn.), which occurs everywhere, and migrating butterflies. Every group of thistles, whatever the species, seemed to harbour larvae of the Painted Lady (*Vanessa cardui* Linn.).

The butterfly was also on the wing, and where observation was possible the flight appeared to be in the direction of Spain. We also observed the same movement in the second area we visited, the Bastan valley, near Bareges, Hautes-Pyrenées.

After leaving Eaux Chaudes we climbed over the Col d'Aubisque, famous as a hill-climb during the Tour de France. On this pass we took a further species of *Erebia*, *E. caecilia* Esper, which is almost completely black. It was flying freely beside the road at about 6,000 feet. Here we saw also *Limenitis sibylla* Linn. (= *rivularis* Scop.) and the Dark Green Fritillary (*Argynnis aglaia* Linn.), which was very common.

Bareges is an interesting village, being the highest in the Pyrenees (4,000 feet) and lying on the road to the highest pass, the Col du Tourmalet. Above the village is the Pic d'Ayre, and although the place is pretty deserted in Summer, it is the centre of the French winter sports. There are several téléfériques and a funicular, the latter making collecting on the Pic d'Ayre much less arduous. The Bastan runs through the village, and this torrent has some very interesting slopes above it which yielded a good crop of butterflies. It was here that we took, in bright sunlight, two specimens of the Striped Hawkmoth (*Celerio livornica* Esper).

Mist was a constant hazard, and for three days collecting was restricted to searching for larvae and Coleoptera. Whenever the sun broke through it was very hot and we made the most of it.

Above the Col du Tourmalet is the Pic du Midi de Bigorre, and on its slopes we added to our score another species of *Erebia*, *E. lappona* Esper. The Fritillary *Boloria pales* Schiff. was common everywhere, and we also took another, new to us, which at we at first mistook for the Pearl-bordered Fritillary (*A. euphrosyne* Linn.). Also fairly common at high altitudes was *Colias phicomone* Esper.

We spent several days down in the lowland valley just north of Lourdes, on the flats beside the river Gave de Pau. Here the Short-tailed Blue (*Everes argiades* Pall.) was fairly common. A mass of *Buddleia* there attracted swarms of butterflies, amongst which were the Swallowtail (*Papilio machaon gorganus* Fruhst.) and — a special prize — the southern form of *Apatura ilia* Schiff., form *clytie* Schiff. The brown (typical) form of *Pararge aegeria* Linn.— of which our own Speckled Wood is the subspecies *aegerides* Stdgr. — was also fairly common. Above Bareges, in addition to *Parnassius apollo* Linn., we took the smallest species of this genus, *P. mnemosyne* Linn. As the altitude was over 6,000 feet and the slopes pretty steep, the netting of each specimen was a considerable effort.

We had intended to visit the Cirque de Gavarnie, but as we were told that this was a centre of *tourisme* we went instead to the Cirque de Heas (Tromouse). It was a wonderful spot, with a fast stream running down through a rocky valley. In two hours we took 56 species of butterfly! We took another form of *Erebia caecilia* Esper which had yellow spots, and several specimens of the Copper, *Heodes alciphron* Rott. ssp. *gordius* Sulz. The commonest

butterfly was the Fritillary *Melitaea didyma* Ochs. form *lesora* Fruhst., and we also captured some specimens of the Silver-spotted Skipper (*Hesperia comma* Linn.). This area would probably have produced much more, but unfortunately we were not able to visit it again.

On our way back to Biarritz we made a short *sortie* into the Landes, an area of sand, pine trees, sharp grass and furze. Despite its inhospitable sound we found the area to be fairly fruitful. We took the two species of Swallowtail, *Papilio machaon* and *P. podalirius* Linn. and seven species of Blues (*Lycaenidae*). The most interesting find was the Skipper *Cyclopides morpheus* Pall., which flies with a very jerky movement whenever disturbed or when the sun comes out strongly: it dives into the long grass when being pursued and is not easy to find. Another new addition to our list was *Minois dryas* Scop., like a huge Ringlet (*Aphantopus hyperantus* Linn.) with blue eye-spots.

During the trip we listed 124 species of butterfly captured and several dozen kinds of moths, while Mr H. J. Cribb took a fine selection of beetles (Coleoptera). I took one salamander on the slopes of the Pic de Bigorre, and we saw several interesting kinds of birds, including a huge flock of Alpine Choughs (*Pyrrhocorax graculus* Linn.) and a Griffon-Vulture (*Gyps fulvus fulvus* Hablizl).

In all it was a most exciting fortnight and will long be remembered. Entomologically the western half of the Pyrenees is not so fruitful as the Alps, but they have their own attraction and interest.

P. W. Cribb (2270).

21.10.62.

## THE LYON HYPOTHESIS AND THE MAGPIE MOTH

Most readers of the *AES Bulletin* will only need to be reminded that as regards sex chromosomes Man and most other animals have an X and a Y in the male and two X's in the female. In the case of the male the single X can only have been inherited from the mother (since the Y must have come from the father), but in the female one X must be maternal and the other one paternal. This situation is reversed in the Lepidoptera, where it is the females which are XY and the males XX.

Recently Lyon (1961) has proposed an hypothesis which postulates that in any given cell containing two X chromosomes *only one of them is operative, the other being inactive*. Furthermore, and quite randomly, in some cells it is the paternal X which is active and in others the maternal.

Lyon has demonstrated that this is true, at any rate in mice, and the proof rests on two main foundations. First, a female mouse which, because of an abnormal nuclear division in one of its parents, has received only one X chromosome and is therefore XO instead of XX, is a normally fertile female. This shows that only one X is necessary to make the animal appear normal and be capable of reproducing itself.

The second point is a little more complicated. There is in mice a series of alternative genes controlling coat colour which are situated at the same position on the X chromosome. A female mouse can therefore receive either two like or two unlike genes

controlling coat colour from her parents (a male will receive only one such gene on his single X). Lyon noted that if a female received two unlike genes and was therefore heterozygous for coat colour, she was always variegated — i.e., had patches of both colours — and suggested as an explanation that the mouse was a mosaic made up of two different kinds of cells: in one lot, scattered randomly over the animal, one X chromosome was active, producing one coat-colour; and in the rest the other X chromosome was active, producing the other colour. As males have only one X this has to work in all their cells, and they are uniform in colour. Tortoiseshell cats, which are always female, are at last beautifully explained — they have black on one X chromosome and yellow on the other, and hence the explanation of the variegation.

It would be very interesting to know whether there is support for the hypothesis in the Lepidoptera, and if we consider one of the aberrations of the Magpie moth (*Abraxas grossulariata* Linn.) light might be thrown on the matter. It will be remembered that there is a sex-linked recessive mutant in this insect called *ab. dohrnii*, in which the females are cream and much less spotted with black than the typical form. (The very rare males homozygous for the mutant will also appear similar.) If the Lyon hypothesis applies, then the heterozygous *male* moths should be variegated like the heterozygous *female* mice because sometimes one X will be working and sometimes the other. (The female moths, having only one X, should be uniform, and so should the males homozygous for

the aberration).

If, therefore, anyone has bred families in which *ab. dohrnii* has occurred it would be of the very greatest interest to examine the *male* heterozygotes which, at a superficial glance, will probably look normal, but closer inspection of the scales may show variegation. It must be emphasised that such variegation should occur among only the *male* relatives of the moths showing the aberration.

I should be most grateful if anyone who possesses either (1) bred broods which could be inspected, or (2) available living stock would get in touch with me.

The Lyon hypothesis is arousing the greatest interest in the genetical world and is likely to have great value in elucidating some problems of human inheritance.

31.8.62.

C. A. Clarke (1569).

#### REFERENCE

LYON, Mary F. (1961), *Nature*, **190**: 372. Gene action in the X chromosome of the mouse (*Mus musculus*).



## BREEDING RARE VARIETIES OF LEPIDOPTERA

(Slightly adapted from the duplicated notes supplied by Mr Robinson to cover his exhibit at the Annual Exhibition this year).

The principle underlying these breeding experiments is that many moths are carriers of latent aberrations. In the usual circumstances of random mating, the probability of these hidden aberrations being revealed is extremely small. However, by a series of carefully planned breeding experiments, this probability may be greatly increased.

The following programme of pairings should be adopted.

Likely sources of potential carriers of hidden aberrations reside in moths reared from collected larvae, or reared from ova laid by captured females. A pairing of these moths should be made. This act of pairing may be assumed to represent the initial generation, and from this the first bred generation will be obtained. The moths of the first bred generation will doubtless be fully normal in appearance.

It is not until the second inbred generation that any aberration derived from the initial generation may be expected to appear. The moths of the first bred generation should be paired brother with sister (*i.e.*, strictly inbred), the mating pairs being segregated and the resulting broods of larvae housed individually so that the progeny of each pair is known with certainty. These progeny will be referred to as the second bred generation.

Thus, to fulfil the programme, it is necessary to breed two generations in captivity: to inbreed the first of these, and to examine the second carefully for aberrations. The important item to observe throughout is that no mistakes of parentage should occur at any time, but particularly during the making up of the brother-to-sister matings.

It is possible to foresee a snag to these experiments, namely, that although an aberration may have been latent in the initial generation, it may not be discovered in the second bred generation because of chance factors. By the laws of chance, it is possible that an aberration may not be discovered because (1) insufficient brother-to-

sister pairings were set up and (2) insufficient second-generation larvae or imagines were examined. To overcome this snag, it may be suggested that a specified number of brother-to-sister matings be set up and that a certain number of second generation progeny be examined from each. The 50:50 ratio of success to failure in discovery is provided by three brother-to-sister matings and the examination of 16 progeny of each pair. If more than three matings are set up and more than 16 progeny of each are examined, the chances of success are increased. It is more profitable to undertake additional brother-to-sister matings than to examine more progeny.

The probability of discovery may be enhanced in another manner. More than one initial pairing should be made and the whole programme of breeding, as described, carried through for each pairing. Indeed, an attempt should be made to test as many initial pairings as possible; a test being defined as the whole programme of breeding. It should be realised, of course, that only a proportion of the moths in the initial pairings will carry latent aberrations; therefore, if the first attempts are negative, further pairings with newly obtained moths should be made.

It may be appreciated that any sort of aberration may turn up and be manifested at any stage of development, for example, in the colour of the ova or the shell of the pupae, or in the wing-pattern of the imago. On the other hand, inherited defects may occur, such as the peroneural defect (crumpled wings) or miniature wings. These anomalies are of biological interest and should not be destroyed

without first being reported.

Finally, what should be done with any aberration which may be discovered? At first sight, the temptation may be to set it immediately. However, if this is done, the aberration may be for ever lost. It is far more sensible to obtain a mating with the aberration and the mate should be chosen from the same progeny (if possible) or from related progeny. The aberration should be set after ova have been obtained. The rearing and breeding of the moths from these ova will soon demonstrate if the aberration is inherited and, if so, will produce numerous similar aberrations. Some of these could be set immediately (if perfect specimens are desired) and the others exchanged or sold. In fact, to ensure against mishaps or disease, it would be advisable to distribute some of the ova to other interested breeders.

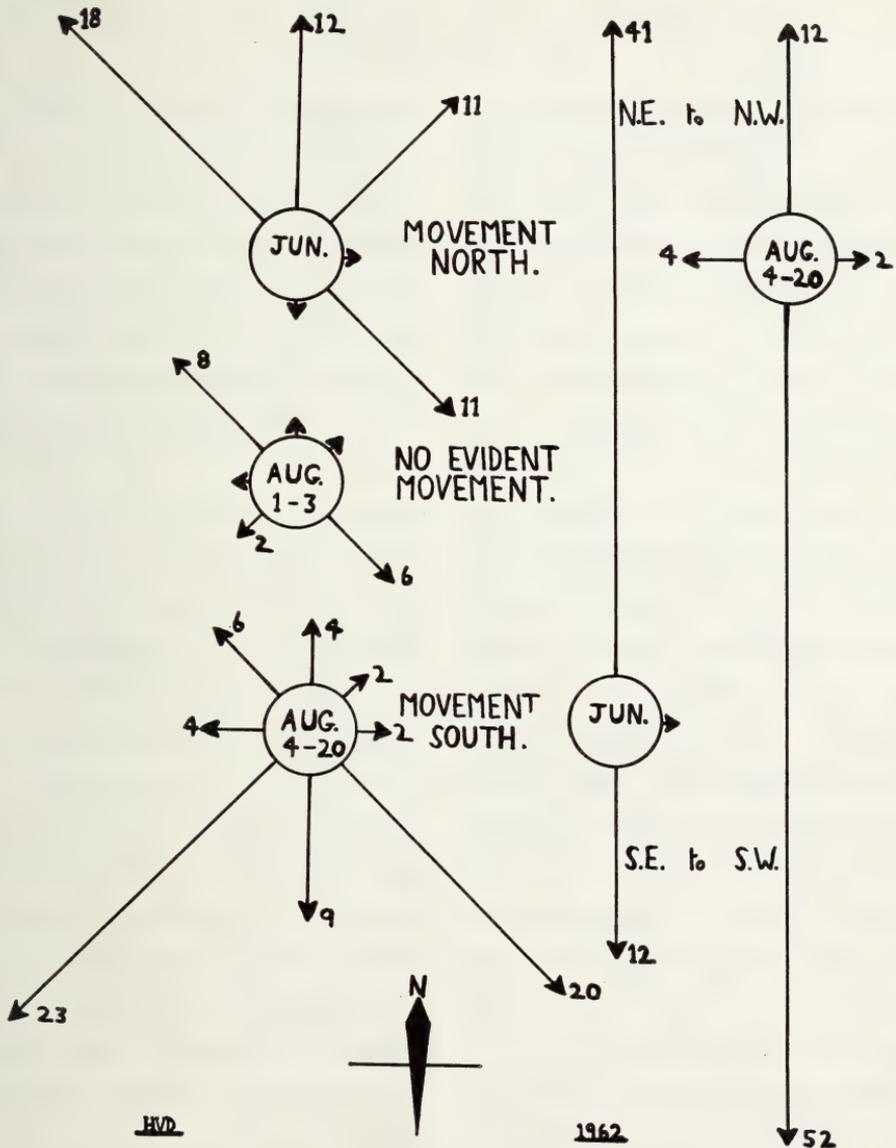
Roy Robinson (3201).

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### MIGRATORY FLIGHT TENDENCIES IN *PIERIS RAPAE* LINN.

This year the Small White Butterfly (*Pieris rapae* Linn.) has been more common in Surrey than I have ever before seen it. When in the Spring, I realised this, I decided to keep records of flight-directions in the hope of determining a migratory trend in the species, and accordingly noted the direction of flight of only those specimens which flew more or less steadily in one direction for as far as they remained visible, provided that this was at least thirty yards.

The species began to appear patchily



in May, but large numbers of specimens were not seen until about the second week in June, by which time a fair proportion were flying steadily, by contrast with the wandering flight of the earlier specimens.

Towards the end of June, too, the majority of specimens showed wander-

ing flight, and on inspection proved to be very worn: they were, in fact, the end of the Spring brood.

Analysis of the records showed a northward-flying tendency, as illustrated by the diagrams. Numbers on the arrows refer to the numbers of specimens observed flying in the direc-

tion indicated, and the length of the arrows themselves is proportional to this number.

The Summer brood was very large, and although no real tendency towards directional flight was observed early on, a definite tendency began to appear in the first week of August, flight being generally towards the South. However, those specimens that were observed to be flying in one direction during the first few days of August have been recorded in the figure.

During the week 11th-18th August I was on holiday on the East Kent coast, and although no records were taken, the impression gained was that the specimens seen (of which there were considerable numbers, probably associated with the *Brassica* crops in the district) were flying generally southwards, for of the dozen or so specimens whose flight-direction I checked, three-quarters were flying South-East to South-West. None of these observations, however, has been included in the figure.

With the end of August came the end of the Summer brood, and nearly all specimens taken in the last week were very worn and had obviously been 'out' for some time.

Taken as a whole, then, the observations seem to show that *P. rapae* tends to fly northwards in Spring and southwards in Summer; and although I do not claim to have witnessed 'migrations' in the rather narrow, generally accepted sense of the word, I think that the records show that *P. rapae* has a tendency to fly in that way — a tendency shown, perhaps, only in years of great abundance of the species, such as 1962. 30.8.62. H. V. Danks (2907).

## INSECT PESTS OF GARDENS

### Introduction

It has struck me that many entomologists must be keen gardeners, and that some, perhaps not so keen, have gardens nevertheless!

Being a horticulturist by profession and an entomologist by nature prompted me to write a series of articles on insects that are generally considered to be pests, yet are extremely interesting to study from an entomological point of view. These articles are intended to include as wide a range of Orders as possible.

Because of the size of the task it has been necessary to lump together certain insects into groups, e.g., Aphids, Plant Bugs and Scale Insects, and to exclude altogether many kinds of lepidopterous and coleopterous pests, mainly because they are over-studied.

Finally, the insects mentioned are intended to be fairly topical, e.g., Winter Moths in Winter, etc., though this will not always be possible because the appearance of insect pests is obviously correlated with the period of greatest abundance of their particular foodplants. This, of course, is during late Spring and throughout the Summer months. Necessarily there will be some overlapping, but this is unavoidable.

### Winter Moths

The caterpillars of three species, namely, the Winter Moth (*Operophtera brumata* Linn.), the Mottled Umber (*Erannis defoliaria* Clerck) and the March Moth (*Alsophila aescularia* Schiff.) are among the chief leaf-eating pests of fruit trees, particularly Apple and Plum, and many forest and ornamental trees and shrubs of the same and

related genera, especially species of *Pyrus* and *Prunus*, and also of the oaks (*Quercus* spp.).

The larvae are typical geometers and similar in general appearance. (For a full description of their life-histories and colour plates depicting the adults consult South: *Moths of the British Isles*: Series II.) The life-cycles of *O. brumata* and *E. defoliaria* are very similar. The male moths are fully winged and fly at dusk during the period from October to December. The females of both species are flightless and superficially spider-like, but whereas that of *E. defoliaria* is wingless (apterous), that of *O. brumata* has very short wings (brachypterous).

Both of these species lay eggs singly or in small groups in crevices in the bark or around the fruiting-spurs, and often on pruned surfaces. The ova of *O. brumata* are at first light green, later becoming reddish, and those of *E. defoliaria* more elongated and rusty-coloured. When fully grown, the larvae descend from their host plants and pupate in the soil.

The male of *A. aescularia* is on the wing any time from January to March, and is about the same size as that of *O. brumata*—about one inch long. The female is apterous, brown, and has an anal tuft of hair-like scales which are loosely attached and stick to the bands of ova when these are laid round shoots of the host plant, thereby protecting them.

The eggs of all three species hatch in early Spring, and the larvae feed on the developing buds, and later the leaves, until the end of May or June, when they let themselves down to the ground on silken threads and pupate.

13.11.62.

A. J. Tuton (2639).

## COLLECTING THE CYNTHIA ADVENA (BROOKLYN, NEW YORK)

For those ardent lepidopterists of Europe, whose homelands do not afford much in the way of cocoon collecting, I would reveal some of the thrills of collecting the pupae of the large silkmoths which prevail in the Long Island area. The *Samia cecropia*, *Callosamia promethea*, *Telea polyphemus*, and particularly the *Philosamia cynthia advena* still prevail in numbers justifying collecting trips in many of the suburban areas.

In the following paragraphs I have set down the experiences of a typical's day collecting in Brooklyn, where the *cynthia advena* are known to abound. Due to the severity of the winters here in New York, the collector is limited and any clear days that come along have to be taken to best advantage. It was late in December before conditions permitted a collecting trip but generally one afternoon's search in Brooklyn with the aid of fine weather is sufficient to provide the collector with enough *advena* to satisfy all but a limitless demand, and thusly it pays to wait for a good day. We traveled by auto to the flat-lands on the water front which seem so utterly out of place so as to deny the onlooker the realization that the great metropolis of the world lies within ten miles. That is to say that the vast marsh land seems so under-developed in respect to its proximity with the city. From our experience with the *advena*, we knew that these areas would produce the highest yields. As barren as these parts seem, rest assured that they are not entirely untouched by the outward

thrusting hands of industrialization. Here in the manifestation of junkyards, mas has established his always present commercial concerns. Yet in these, the most undesirable conditions thrive the *cynthia* and it should be noted that only in these conditions do they survive! \*

To return to collecting; we located several groves of the *ailanthus*, their favorite food-plant, and to our heart's delight found hundreds of the cocoons with the first attempts. Some were draped over the branches, many on the ground and still more were to be located in the matted and tangled underbrush. Their prevalence was inconceivable; they hung in clusters wherever we turned. We gathered in as many as we could carry and left well over 25% behind as a residual breeding stock to provide cocoons for future seasons. Of course, many of the cocoons we found were lifeless shells and others proved parasitic but over 65% proved viable upon opening. Needless to say the *advena* are not as common throughout all of Brooklyn, but in a few select haunts they appear in these incomprehensible numbers. Often every leaf of a single stalk is concealing a cocoon. It also often happens as it did in this instance that we never get beyond the initial groves because so much time is involved in gathering up the hundreds upon hundreds that were but a partial yield.

To partake in such collecting is the only justification of such an account. Figures seldom convey accurately the real enjoyment involved and unless exposed to this sort of thing, the

European breeder is wanting in something that is second nature to his western counterpart.

An afterword to clarify my purpose in writing this and a previous article on the pairing of *cecropia* in the wild; I don't wish to belittle the European lepidopterists and point out their misfortunes but rather to reveal some of the excitement which unfolds to the collectors on this side of the Atlantic involving experiences strange to their own . . .

Bruce Feller (3316).

## JUNIOR NEWS SECTION

As the new Youth Secretary it is with no little apprehension that I am taking over from Mr T. S. Robertson, who has held the Office for the last three years. It will, I know, be extremely difficult to keep up his very high standard of editing in the monthly Junior News. I sincerely hope that you will give me your full support in this. The *Bulletin* in which Mr Robertson wrote his first article as Youth Secretary was, in fact, the first that I received as a new Member some three or more years ago.

I hope that all Junior Members will write to me as soon as possible, telling me of their particular interests so that I shall have some idea of what sort of thing appeals to them. Everyone could at least write a short letter telling me which insect Order he is keen on, and perhaps how large his collection is, or something similar. It would be a great help, too, if you could let me know if there are any special subjects which you would like to see discussed in the

\*Unknowing of those conditions prevalent in Europe I can only speak for conditions here in the U.S. and as of recent investigation, this conclusion seems to stand valid.

*Bulletin*, such as the internal and external structure of an insect, with which Mr Robertson has recently been dealing.

I shall try to reply to all letters, but some replies may have to be through the medium of the *Bulletin*, so do not be discouraged if you do not hear for some time. If by any chance you should think that I have forgotten or mislaid your letter, a reminder will produce a swift answer.

I have just returned from the annual meeting of the British Association (for the Advancement of Science) in Manchester, where every conceivable aspect of science was covered. Among the hundreds of talks, activities and films, there were several with a bearing on entomology, and a number of very well set up displays of insects in the exhibitions. I was, in fact, privileged to give a paper to the meeting on the Coleoptera of Burton Marsh, a salt-marsh in the estuary of the River Dee. If any Juniors went to the meeting, here is something ideal to write to the *Bulletin* about.

I hope that, by the time you read this, I shall have met many of you at the Annual Exhibition, and that even those who did not manage to get there will be writing to me very soon.

7.9.62. M. C. Birch (3048),  
Youth Secretary.

### LETTERS TO THE EDITOR

Sir,—May I record an opinion on the collecting of insects, in the hope that it will prove beneficial to our native species?

It seems to me that lepidopterists, in particular, tend to obtain far more

specimens of any insect than they really need. Many books on the subject, too, whilst apparently decrying useless slaughter, still indicate that a series should contain, for example, sixteen normal specimens, plus a larger number of "varieties". My own method is to complete a series of four normal insects (male and female, upperside and under-side) and add a few carefully chosen varieties, unless the species concerned is a subject for special study.

A series of *Coenonympha pamphilus* Linn. (Small Heath), for instance, is adequate if it contains a specimen with a strongly spotted upperside and a broad border to the wing; one with little or no spot on the forewing and little or no black border; and an under-side variety of some sort. These three varieties sum up the normal range of variation, and, together with the typical forms, give a series of seven individuals.

I was disgusted therefore, when an "entomologist" (though not an AES Member) whom I met recently, remarked that he knew a good locality for *Lysandra coridon* Poda (Chalkhill Blue), and had himself taken not seven, but seventy members of the species on one visit lasting a few hours. Why, I asked him, did he require all these; or was he studying the aberrations using Bright and Leeds' monograph? "No", he replied, "I haven't got the monograph".

Even if he were studying the species fully, a far better method would be to take a single female, and from her eggs rear as many specimens as he could wish for: by this means he would acquaint himself not only with the imaginal varieties, but with the life-history and habits of the living insect,

without decimating a local population. Alternatively, field notes of the range of variation would be quite as interesting as the actual specimens showing it.

Some people maintain that, by the accumulation of vast numbers of specimens, they are showing "Regional Variation" — but in nearly every collection of Lepidoptera which I have seen, the data labels cannot be read without removing them from the pins. This is often found particularly when insects have been "hoarded" in numbers — and it should be borne in mind that an ideal collection, according to one well-known authority, is "an interesting and legible set of data-labels illustrated by specimens".

Even in the *Bulletin*, articles occasionally appear which mention the taking of excessive numbers of pupae or imagines of certain species. The reply is always the same when such activity is queried — "Well it is common enough, isn't it?" . . . Comes the answer in turn, "*It was*". So too were a number of other species of British butterflies years ago: species exterminated or brought to the brink of extinction, if not entirely, then mainly, through the activities of greedy collectors.

"Collectors", I wrote, not "entomologists".

16.10.62. H. V. Danks (2907).

While not in any way wishing to decry Mr Danks's noble sentiments on a topic near and dear to my heart, I should like to add a few remarks of my own.

Whether we like to admit it or not, it is a shameful truth that quite a high proportion of our Members — to say

nothing of those of other entomological societies — consists of those same "greedy collectors" to whom Mr Danks refers. When we are children and taking our first steps towards finding out what the world is like, we all find it a very bewildering place, and, probably in a subconscious attempt to reassure ourselves that things do indeed remain the same, we love to collect the objects that we discover. The more objects we collect, the more confident we become that they don't change, but the more difficult it becomes to find items in our collections, so that we have to classify them. This is a great step forward in our exploration of the world, and foreshadows our appreciation of order in it.

While we are reassuring ourselves in this way that the world really is an orderly, predictable place, we begin to notice that the ways in which the objects we have been collecting behave, can also be classified, and we develop an interest in processes, *i.e.*, phenomena. To our dismay, however, we can't collect phenomena, and until we are really confident of the permanence of objects and our classification of them we tend to treat the phenomena with suspicion, if not actual distrust. If we eventually manage to overcome our caution, we try to reassure ourselves of the reliability of phenomena by repeating our observations time after time, either "in the field" or under experimental conditions ("Do it again, Daddy!"), and as we grow up, this kind of investigation occupies more and more of our attention, culminating in a study of the interplay of complex personalities, both in real life and in the arts.

What I have been describing could, of course, as I am sure those of you who have bothered to read so far will have noticed, equally well be looked upon as an outline of the rudiments of the scientific method.

Unfortunately, however, the imperfections in our upbringing that inevitably occur in such a complex and varied society as ours prevents us from growing up properly — some more than others, and some, more in some ways than in others — so that we never complete the process of psychological development, but get bogged down in one of the earlier stages.

Of course, this does not mean that anyone who makes collections is mentally retarded: to deduce that would be quite ridiculous — a collection of specimens is often a prerequisite to carrying out some serious investigation. But the amassing of a collection *for its own sake*, or worse, for monetary gain, is quite unjustifiable and a sign of an immature personality. Even if, as adults in years, we are unable to restrain ourselves from the selfish extermination of the living creatures we profess to love, surely we ought to refrain from encouraging younger people to take such an irresponsible attitude.

I am afraid that Mr Danks and other like-minded young people have a man-sized job ahead of them in trying to eradicate such deep-rooted selfishness, at least until his own generation reaches maturity. — *Editor*.

Sir, — I was worried, when I read the current "Wants and Exchanges List", to see a request for "fresh queen bumble bees from any part of the

country". It seems to me that such requests could easily lead to haphazard collecting of a most undesirable sort. In any case, have not our unhappy bumblers got enough to put up with? What worries me especially about requests of this nature is that they are not fortified by reasons of any kind. If this is merely the gratification of an urge to collect them, entomology is reduced to the same level as small-boy philately, except that this does no-one harm and gives small boys much harmless satisfaction. If there is a reason which is remotely scientific it should be stated. In its absence those of us who wish our small boys to be able to see bumblers — in plenty — will continue to ignore such requests.

Solid evidence of any kind that numbers have decreased is notoriously difficult to produce, but surely parallel situations are sufficient to warn us all that depletion of population size and of number of species is taking place. The countryside is regularly attacked by farmers and local authorities with toxic chemicals of innumerable sorts. Lush roadside verges receive especial attention, being sprayed, burnt and mown at intervals so regular that resting bumblers can hardly have a chance. Hedgerows, such suitable resting-sites, are seemingly no longer fashionable and are replaced by trim wire — more possible resting-sites destroyed! All these factors can only act against the survival of the genus.

Apiarists up and down the country are complaining of decimation of their stocks: few people are pinning honeybees, so why should the AES supplement the chemical warfare which is being waged against the bumble by

encouraging apparently haphazard collecting of this or any other insect. I suggest that if the Society is really conservation-minded, a firm editorial policy should be adopted which rejects any requests for collecting insects that are made by Members who cannot establish a valid reason.

13.12.62. A. M. Tynan, B.Sc., F.M.A.,  
The Curator,  
Hancock Museum (3344A),  
Newcastle-upon-Tyne.

There has recently been a number of complaints about some of the advertisements inserted in the "Wants and Exchanges" list, which the Council considers justified, and feel that all future entries should be sent to our General Editor, Mr R. W. J. Uffen, who will forward those acceptable to the Society for inclusion in the next available list. — *Editor*.

Sir, — I wonder if your readers would be interested to hear of a delightful and (to me) unique experience I had recently?

On August 4th this year I found a small (c. 1 inch), very pale brownish "looper" caterpillar feeding on the purple flowers of a species of Hardheads (*Centaurea*). Unfortunately I never identified the larva or described it in detail, and as I subsequently lost it my description is from memory.

But to the incident — One day (August 6th), as I was watching it feeding, a piece of frass, of almost the same colour as the purple flower on which the larva was feeding, appeared at its 'hindquarters'. The larva twisted

round, deftly removed the offending item in its jaws, and dropped it to the ground.

Has anyone observed anything similar, or is it commonplace — or even something peculiar to "loopers"?

1.9.62. Anthony Wootton (3331).

### A RARE MIGRANT — AND AN URGENT REQUEST

In yet another year of scarcity of Lepidoptera, particularly the migrant species, the presence of so many of the Pale Mottled Willow Moth (*Laphygma exigua* Heubner) is especially interesting. This moth, which was first recorded in Britain in 1856, has only twice before exceeded 200 records per year — in 1906 (235) and 1958 (300). In both of these years there was almost certainly an early immigration followed by successful breeding during the Summer. It is probable that the same situation has occurred again this year. An immigration into southern England took place in early May, and the moths involved gave rise to large numbers of offspring which appeared on the wing in August and September. In view of the fact that 1962 is likely to turn out to have been a record year for this species I should very much appreciate details of any records of its occurrence, and also those of any other immigrants which occurred at the same time.

R. A. French (2129),  
Rothamsted Experimental Station,  
14.11.62. Harpenden, Herts.

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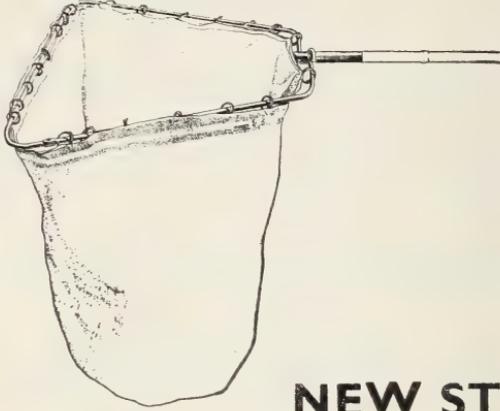
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# MEMBERSHIP LIST

New Series No. 1  
1962

## EDITORIAL

The last Membership List was published in June 1956, and since that time there have of course been many changes. It is inevitable therefore that, after six years, this List will contain several errors. I have made every effort to minimise these, but I am still without information on many Members. This is why some names appear without a Membership Number and/or entomological interests. Would these Members please write to me and supply the missing information. All Members are asked to check their entries and inform me of any errors. Corrected entries will then appear in any future Supplements and Lists.

I should like to thank Miss K. A. Morley for re-typing two card indexes and for typing all the copy submitted to the printers. The vast amount of typing involved would have been quite beyond me and without her help this publication would not have been possible. Thanks are also due to the various Councillors for their advice and help, particularly to Mr B. F. Skinner, with whom I spent many hours checking card indexes and address plates.

Finally, I hope that this List will promote meetings between Members, and that the length of time between this List and the next will be considerably less than six years.

Cobham, Surrey.  
November 1962.

Michael J. Friend,  
*Hon. General Secretary.*

## ABBREVIATIONS

<i>agric.</i> = agricultural	<i>Hr.</i> = Heterocera (moths)
<i>An.</i> = Anoplura (lice)	<i>L.</i> = Macrolepidoptera (larger moths and butterflies)
<i>aq.</i> = aquatic	<i>m.</i> = migration
<i>Ar.</i> = Araneae (spiders)	<i>mic.</i> = microscopy
<i>b.</i> = biology	<i>ML.</i> = Microlepidoptera (smaller moths)
<i>bot.</i> = botany	<i>N.</i> = Neuroptera (alderflies, snakeflies, lacewings)
<i>C.</i> = Coleoptera (beetles)	<i>nh.</i> = natural history
<i>Col.</i> = Collembola (spring-tails)	<i>O.</i> = Odonata (dragonflies, demoiselle-flies)
<i>D.</i> = Diptera (two-winged flies)	<i>Orth.</i> = Orthoptera (grasshoppers, crickets, cockroaches)
<i>Der.</i> = Dermaptera (earwigs)	<i>P.</i> = photography
<i>e.</i> = ecology	<i>Ps.</i> = Psocoptera (booklice)
<i>econ.</i> = economic	<i>R.</i> = Rhoplocera (butterflies)
<i>ent.</i> = entomology	<i>S.</i> = Siphonaptera (fleas)
<i>Eph.</i> = Ephemeroptera (mayflies)	<i>T.</i> = Trichoptera (caddisflies)
<i>exot.</i> = exotic	<i>z</i> = zoology
<i>fw.</i> = freshwater	
<i>H.</i> = Hymenoptera (sawflies, ants, bees, wasps, Ichneumonids, gall wasps)	
<i>Hem.</i> = Hemiptera (true bugs)	

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- ANDERSON, D. W. S. (2809), "Moray," Claremont Drive, Esher, Surrey. *L.*
- ANDREWS, L. J. (3417), 101 Park Avenue, Longlevens, Gloucestershire. *L.*
- ANLEY, R. L. B. (3107), "Monks Well," Southam, Nr Cheltenham, Gloucestershire. *ent., p.*
- ANSORGE, Sir E. C., C.S.I., C.I.E., F.R.E.S. (2508), "Timbers," Welders Lane, Chalfont St Peter, Buckinghamshire. *C., L.*
- ANTHONY, D. (3455J), 43 Frankland Close, Croxley Green, Rickmansworth, Hertfordshire. *C., L., O.*
- ARCHER, D. R. (3119), 3 Ramsay Road, Headington, Oxfordshire. *C., D., L.*
- ARCHER, J. R. (2883), 15 Hillview Terrace, Edinburgh, 4, Midlothian, Scotland. *L.*
- ARCHER, N. W. (2975J.), 37 Parkhurst Road, Bexley, Kent. *L.*
- ARNOLD, Miss W. I. (3311J), 26 Windsor Road, Thornton Heath, Surrey. *L.*
- ASHDOWN, P. D. A. (2823J), 30 Cuckmere Lane, Millbrook, Southampton, Hampshire. *C., L.*

- ASHFORD, R. F. U. (3475J), "Woodlands," Sandleheath, Fordingbridge, Hampshire. *L.*
- ASHTON, R. N., A.M.I.PROD.E. (2987), 12 Dare Road, Erdington, Birmingham, 23, Warwickshire. *L.*
- ASPDEN, E. G. (2724), "Lanreath," North Charford Estate, Hale, Nr Fordingbridge, Hampshire. *L.*
- ATKINSON, R. S., F.Z.S. (1336), 46 White Hill Avenue, Barnsley, Yorkshire. *ent., nh.*
- AUSTWICK, W. M. (2794), 24 Ash Road, Penketh, Nr Warrington, Lancashire. *L.*
- BADMIN, J. S. (3406J), 24 Park Avenue, Solihull, Warwickshire. *L., ML.*
- BAILEY, Dr N. M., M.B., CH.B., B.SC., M.R.C.S. (1230), 90 Lincoln Road, Peterborough, Northamptonshire. *ent.*
- BAILEY, W. J. (3473), 210 Southwark Road, London, S.E.16. *C., ent.*
- BALDREY, A. (3272J), 21 Lyford Road, Wandsworth Common, London, S.W.18. *L.*
- BALDREY, P. E. (3084J), 81 Victoria Drive, Wimbledon, London, S.W.19. *L.*
- BALLARD, J. O. (3129), 4 Macauley Buildings, Widcombe Hill, Bath, Somerset. *L.*
- BAND, G. H. (2605), 516 North Drive, Cleveleys, Nr Blackpool, Lancashire. *C., L., O.*
- BANNER, Dr J. V. (103), 41 Varndian Gardens, Brighton, 6, Sussex. *L.*
- BARHAM, C. S. (2796), 19 Westbury Road, Ipswich, Suffolk. *C.*
- BARK, A. W. (3341J), "Newlands," Droxford, Southampton, Hampshire. *L., H.*
- BASDEN, A. (2552J), 7 Leyden Park, Bonnyrigg, Midlothian, Scotland. *ent.*
- BASSETT, R. J. (2643), 15 Seymour Road, Hampton Hill, Middlesex. *L.*
- BAXTER, L. N. (1664), 16 Bective Road, Forest Gate, London, E.7. *ent., L.*
- BAXTER, R. (1267), 16 Bective Road, Forest Gate, London, E.7. *L.*
- BAYLIS, R. (3257), 3 Plaitford Close, Rickmansworth, Hertfordshire. *C., L.*
- BAYLIS, R. B. (3430), The School House, Chittlehampton, Umberleigh, Devonshire. *L., p.*
- BAYNES, E. S. A., O.B.E., F.R.E.S. (1221), 2 Ashendale Road, Glenageary, Co. Dublin, Eire. *ent., L.*
- BEARMAN, J. E. (3463J), 64 Rother Crescent, Gossops Green, Crawley, Sussex. *L.*
- BEAUFOY, L. S., M.A. (628), 51 Bradbourne Lane, Ditton, Maidstone, Kent. *L., nh.*
- BEAUFOY, S., B.SC., A.M.I.E.E., F.R.P.S. (627), 98 Tuddenham Road, Ipswich, Suffolk. *L.*
- BECK, W. (2930), 18 Aspin Lane, Knaresborough, Yorkshire. *H., L., O.*
- BELL, A. (3122), Little Stockings House, Little Berkhamsted, Nr Hertford, Hertfordshire. *L.*
- BELL, D. (3389J), 15 Windsor Road, Gee Cross, Hyde, Cheshire. *C., D., L.*
- BELSHAM, S. R. (3209J), 128 Woodman Road, Brent Wood, Essex. *L.*
- BENNETT, M. J. (830), Leechwell Cottage, Totnes, Devonshire. *L.*
- BENSON, M. L. (3393), 18 Moorcroft Road, Allerton, Liverpool, 18, Lancashire. *C., L.*

- BENTON, R. B. (3237), 46 Booth Lane South, Weston, Favell, Northamptonshire. *L.*
- BERRY, D. (3059), 44 Victoria Avenue, Thirsk, Yorkshire. *L.*
- BETTON, J. H. (3419J), 127 Tile Kiln Lane, Bexley, Kent. *C., D., H.*
- BETTS, B. F. (3110J), 41 Halley Road, Forest Gate, London, E.7. *ent., L.*
- BETTS, C. J. (3458J), Goodmoor Grange, Wyre Forest, Nr Kidderminster, Worcestershire. *L., ML.*
- BETTS, M. T. (3303J), 4 Culverhouse Road, Luton, Bedfordshire. *L.*
- BEVAN, D. (2593), 39 Gloucester Place, Portman Square, London, W.1. *L.*
- BIGGER, T. R. L. (3261), 17 Springfield Drive, Abingdon, Berkshire. *L.*
- BILBIE, W. (1679), 33 John Street, Clay Cross, Nr Chesterfield, Derbyshire. *L.*
- BINGHAM, T. H. (2696), 542 Dunstable Road, Luton, Bedfordshire. *L.*
- BINKS, I. P. A. (2935), 249 High Road, Harrow Weald, Middlesex. *L.*
- BIRCH, Miss J. M. G. (3384), 16 Sea Road, Wallasey, Cheshire. *L.*
- BIRCH, M. C., *Hon. Youth Secretary* (3048), Hooton Vicarage, Little Sutton, Wirral, Cheshire. *C.*
- BIRD, P. F. (896), The City Museum, Queen's Road, Bristol. *H. (Parasitica), L., O.*
- BIRTWISTLE, J. R. A. (3228J), 94 Westmoreland Road, Bromley, Kent.
- BIZLEY, D. (2860J), 24 Waddington Way, Upper Norwood, London, S.E.19.
- BLACK, M. J. M. (3413), The Red House, 47 Clayton Road, Newcastle-upon-Tyne, 2, Northumberland. *L.*
- BLACKWELL, H. E. O. (3432), 81 Holborn Avenue, Sneinton Dale, Nottinghamshire. *ent., L.*
- BLAND, R. C. (2197), 64 Gade Avenue, Watford, Hertfordshire. *L.*
- BLATHWAYT, C. S. H., M.A. (651), 27 South Road, Weston-super-Mare, Somerset. *L.*
- BLICK, S. R. (3427J), Court Lees School, South Godstone, Surrey. *ent.*
- BLISS, A. (287), "Golden Mist," Whitford, Axminster, Devonshire. *L.*
- BOBBITT, J. C. (2767), 27 Rydal Gardens, Wembley, Middlesex. *L.*
- BOBE, K. H., *Councillor* (912), 50 Winn Road, Lee, London, S.E.12. *D.*
- BOGUE, R. W. (3418J), "Eversley," 43 Heathfield, Chislehurst, Kent. *C., L. (Saturniidae).*
- BOMANS, H. E. (2401), 39 Avenue Charles Verhaeegen Crainham, Brussels, Belgium. *C. (Cerambycidae, Lucanidae).*
- BONNEY, Miss J. D. (3357J), 115 Blindman's Lane, Cheshunt, Waltham Cross, Hertfordshire. *L.*
- BOULTON, A. (3467), 25 Windermere Road, Muswell Hill, London, N.10. *ent., L.*
- BOYES, J. D. C., B.S.C., A.R.I.C., F.R.P.S. (850), "Wimborne," Millfields, Nantwich, Cheshire. *L. (hybrids, vars.).*
- BRADBURY, K. (2627), 83 Chellaston Lane, Ashton-on-Trent, Nr Derby, Derbyshire. *L.*
- BRADFORD, E. S. (3068), 38 Oakwood Avenue, Boreham Wood, Hertfordshire. *L.*
- BRADLEY, A. (219), "Sunningdale," Knowle Village, Budleigh Salterton, Devonshire. *L.*
- BRAIN, T. W. W. (3336), Brook House, Barlaston, Stoke-on-Trent, Staffordshire. *L.*

- BRANGHAM, A. N. (18), "Four Ways," 85 Claremont Road, Tunbridge Wells, Kent. *Formicoidea*.
- BRAZENELL, E. A. (3324), 7 Lapper Avenue, Lanesfield, Wolverhampton, Staffordshire. *ent.*, *H*.
- BRIND, C. (3140), 47 Leader Road, St Columb Minor, Newquay, Cornwall. *ent.*, *L*.
- BRITTON, M. R. (3131), 26 Howlett's Lane, Ruislip, Middlesex. *L*.
- BROMSGROVE SCHOOL NATURAL HISTORY SOCIETY (3095A), c/o J. J. Sellars, Wendson House, Bromsgrove School, Bromsgrove, Worcestershire.
- BROOME, R. R., F.L.S., F.R.E.S. (653), 47 Keswick Road, Boscombe, Bournemouth, Hampshire. *aq. ent.*, *b*.
- BROOMFIELD, R. W. (2855), 78 Court Road, Malvern, Worcestershire. *L*.
- BROWN, A. (3231J), 70 Stroud Crescent, Putney Vale, London, S.W.15. *L*.
- BROWN, D. J. A. (2723J), 28 Mill Road, Wellingborough, Northamptonshire. *L*.
- BROWN, F. C. (2414), 6 Osmond Gardens, Wallington, Surrey. *C.*, *L*.
- BROWN, P. (2819), 19 Sleapslyde Lane, Smallford, Nr St Albans, Hertfordshire. *C.*, *L*.
- BROWN, R. J. (3409J), 55 Lower Olland Street, Bungay, Suffolk. *D*. (*Tipulidae*).
- BROWN, R. M. (1573), 5 Park Close, Alice Holt, Farnham, Surrey. *ent.*, *H*.
- BROWNE, G. D. (3477), 12 Glebe Road, Market Harborough, Leicestershire. *H.*, *L*.
- BRUCE, C. G. (1746), 16 Harland Road, Lee, London, S.E.12. *L*. (*Papilionidae*).
- BRUCE, D. (3456J), 42 Bounds Oak Way, Southborough, Tunbridge Wells, Kent. *L*.
- BRUCE, G. E. (3019), 26 Watson Street, Morley, Leeds, Yorkshire. *L*.
- BRUSH, H. J. (2346), 3 Oakdene Road, Bookham, Leatherhead, Surrey. *L*.
- BUCK, W. F. A. (2877), The Hill Farm, Stockbury, Nr Sittingbourne, Kent. *L*.
- BUNKER, P. B. (3380), 57 Woodmansterne Road, London, S.W.16. *C.*, *mic*.
- BUREAU OF ANIMAL POPULATION, THE LIBRARY OF (2163A), Botanic Garden, High Street, Oxford, Oxfordshire. *ent*.
- BURGESS, P. V. (3355), 1 Turnham House, Brockley, London, S.E.4. *D*.
- BURNS, M. J. (3353), 1 The Close, Broadwell, Nr Coleford, Gloucestershire. *C.*, *L*.
- BURTON, P. J. (1199), 2 Clockhouse, New Hall, Bodenham, Salisbury, Wiltshire. *L*.
- BURTT, E. T. (1756), King's College, Newcastle-upon-Tyne, Northumberland. *D*.
- BUTLER, R. B. (2841), 15 Paulus Boulevard, New Brunswick, New Jersey, U.S.A. *L*.
- BUTTERWORTH, A. (3219J), "Weirs Croft," Armstrong Road, Brockenhurst, Hampshire.
- BUTTON, R. D. (3233J), "Caneswood," Barn Hill, Roydon Hamlet, Essex. *L*.

- BYERLEY, B. L. J., F.R.E.S. (788), 3 Courtfield Crescent, Harrow, Middlesex. *D., ent.*
- CAESAR, C. A. (2842), 31 St Stephen's Avenue, Ashted, Surrey. *L.*
- CAIGER, Rev. H. (2908), 254 Chester Road, Woodford, Stockport, Cheshire. *ent.*
- CAMPBELL, A. (3415), 3 Bramble Lane, Sevenoaks, Kent. *C., H., L.*
- CAMPBELL, B. A. (3345J), 5 Somerset Road, Bolton, Lancashire. *L.*
- CAPENER, A. L. (6), Arcadia Hotel, Beatrix Street, Pretoria, South Africa. *ent.*
- CARR, N. G. L. (2932), Apple Tree Cottage, New Road, Esher, Surrey. *L.*
- CARR, R. W. D. (1175), "Hillcrest," Totteridge Lane, London, N.20. *L.*
- CARTER, D. J. (3411), 54 Ash Road, Sutton, Surrey. *aq., ent., C., mic.*
- CARTER, S. W. (3472J), 50 Wentworth Road, Coalville, Leicestershire. *C., L.*
- CARTER-PEDLAR, Miss A. (2400), 49 Bevlan Hill, London, S.E.19. *L.*
- CASTLE, M. E. (2490), 20 Boldre Close, Leigh Park Estate, Havant, Hampshire. *L., ML., p.*
- CASWELL, W. (3133J), 46 Lewgars Avenue, Kingsbury, London, N.W.9. *L.*
- CHANDLER, P. M. (3374J), 2 Meadvale Road, Ealing, London, W.5. *ent., L.*
- CHAPMAN, D. I. (1648), 38 Horn Lane, Woodford Green, Essex. *H.*
- CHAWNER, R. G. (3176), 141 Marsland Road, Sale, Cheshire. *ent., Hem., O., Orth.*
- CHINERY, J. M. (2466), "Clifton," Orchard Grove, Chalfont St Peter, Buckinghamshire. *agric. ent., L.*
- CHRISTIE, L. (710), 137 Gleneldon Road, Streatham, London, S.W.16. *L.*
- CHURCHMAN, L. C. (3448J), 13 Beech Grove, Epsom Downs, Surrey. *ent., genetics.*
- CLARIDGE, M. F. (1420), Department of Zoology, University College, Cathays Park, Cardiff, Glamorganshire, Wales. *ent., H.*
- CLARKE, C. A. (1569), "High Cross," Thorsway, Caldy, Wirral, Cheshire. *L.*
- CLARKE, R. J. (3423J), 37 Welbeck Avenue, Tunbridge Wells, Kent. *L.*
- CLARKE, S. J. (3320), Garden House, Peacock Lane, Holt, Norfolk. *aq. ent.*
- CLASSEY, E. W., F.R.E.S. (41), 353 Hanworth Road Hampton, Middlesex. *D. (Culicidae), L.*
- CLAY, C. (3325), 8 Cambridge Gate, Allsop Place, London, N.W.1. *R.*
- CLAYESMORE NATURAL HISTORY SOCIETY (2698A), Clayesmore School, Iwerne Minster, Nr Blandford Forum, Dorsetshire. *C., H., L., O., Orth.*
- CLAYPOLE, R. C. (2688J), 196 Lawrence Street, Mill Hill, London, N.W.7. *L.*
- CLEGG, J. (2607), The Lodge, Sandy, Bedfordshire. *aq. ent.*
- CLEMENTSON, P. M. (3403), The Square, Kirkoswald, Penrith, Cumberland. *L.*
- CLOKE, A. J. (3054), 58 Lichfield Street, Walsall, Staffordshire. *L.*
- COE, M. J. O. (3387J), 40 Stafford Road, Seaford, Sussex. *L.*
- COLE, S. G. L. (2934J), 22 Putney High Street, London, S.W.15. *C.*

- COLERIDGE, W. L. (2194), "The Gnoll," Bishopsteignton, Devonshire. *b., ent., L., Orth.*
- COLLIER, Major A. E. (1066), "Lynher," Horsham Road, Cranleigh, Surrey. *R.*
- COLLIN, Miss J. R. (3225), "Boreen," 6 Downs View Close, East Dean, Nr Eastbourne, Sussex. *L.*
- COLLINGBOURNE, A. (3433J), 26 Frithwood Avenue, Northwood, Middlesex. *C., D., H.*
- COLLINS, G. B. (1036), 15 Hurst Way, South Croydon, Surrey. *ent.*
- COLLINSON, W. E. (247), "Stanbury," Kebroyd Mount, Triangle, Halifax, Yorkshire. *L.*
- CONNOLLY-BROOKS, Mrs H. (3164), 24 West Drive, Cheam, Surrey. *C., D., H., L.*
- CONWAY, G. R. (2218), Department of Agriculture, Jessleton, North Borneo. *C., pestology.*
- COOKE, N. H. (3266J), Dolphin House, Shackleford, Godalming, Surrey. *L.*
- COOPER, J. D. (3424), Wyggeston Boys' School, University Road, Leicester, Leicestershire. *ent., H., Orth.*
- COOPER, J. E. (2343), "Quantocks," New Wokingham Road, Crowthorne, Berkshire. *ent., nh.*
- COOPER, Mrs L. d'O. (1408), 12 Adel Park Gardens, Leeds, 16, Yorkshire. *ent.*
- COOPER, N. K. (3364J), The Preparatory School, Sherborne, Dorsetshire. *L.*
- COOTER, J. (3290J), 174 Seaforth Gardens, Stoneleigh, Surrey. *ent.*
- COOTER, R. J. (3166J), 174 Seaforth Gardens, Stoneleigh, Surrey. *L.*
- CORKE, D. (2962J), 45 Hawkwood Crescent, Chingford, London, E.4. *L.*
- CORLEY, M. (3292), Pucketty Farm, Faringdon, Berkshire.
- CORNES, M. A. (2800), "Little Bretby," Stanhope, Burton-on-Trent, Staffordshire. *C., L., O.*
- CRAMP, R. A. (3009), "Hazlewick," Oldfield Road, Horley, Surrey. *L.*
- CRANE, T. J. (3368J), 22 Warwick Road, Histon Road, Cambridge, Cambridgeshire. *Saturniidae.*
- CRIBB, J. (2044), "Pollard's Orchard," Ditchling Common, Hassocks, Sussex. *C.*
- CRIBB, P. W., *Councillor* (2270), 355 Hounslow Road, Hanworth, Nr Feltham, Middlesex. *L.*
- CRIPPS, C. H., M.A. (730), Bull's Head Farm, Eakley Lanes, Stoke Goldington, Newport Pagnell, Buckinghamshire. *L., R.*
- CROPPER, J. D. (3405J), 3 Cemetery Cottages, Sterrix Lane, Ford, Liverpool, 21, Lancashire. *Het., L., R.*
- CROSS, J. E. (3465), 248 Felmongers, Harlow, Essex. *L.*
- CROSSLEY, R. (3431), 7 Hunston Avenue, Quarmby, Huddersfield, Yorkshire. *D.*
- CROTHALL, Mrs E. (3114), 99 Minorities, London, E.C.3. *ent.*
- CROW, P. N., F.R.E.S. (393), *c/o* Westminster Bank, 21 High Street, Harpenden, Hertfordshire. *C., D., H., Het., L.*
- CRUTTWELL, G. H. W. (118), Oldford House, Frome, Somerset. *L.*
- CUMMING, A. (3250J), Pitcheatthill Farm, Oving, Aylesbury, Buckinghamshire. *L.*
- CURRAN, E. A. (2657), 175 Robin Hood Way, Kingston Vale, London, S.W.15. *L.*

- DABBS, E. R. (2993J), 128 The Chase, Wallington, Surrey. *e., H., L., Orth.*
- DANKS, H. V. (2907), 7 The Ridge, Surbiton, Surrey. *L.*
- DARBYSHIRE, D. A. (3123), 17 McMullen Road, Darlington, Co. Durham. *L.*
- DAVIS, C. (2881), 292 Battersea Park, London, S.W.11. *L.*
- DAY, G. V. (29), Furlong Road, Stoke Ferry, King's Lynn, Norfolk. *L.*
- DEAN, W. F. (3180), 44 Avondale Road, Liverpool, 15, Lancashire. *L.*
- DE ATH, D. (3442J), 117B Honor Oak Park, Forest Hill, London, S.E.23.
- DELL, D. (3040), 43 Oatdale, Southgate, London, N.14. *L.*
- DENT, N. J. (3065J), 84B High Street, Newmarket, Suffolk. *L.*
- DE WORMS, Baron C. G. M., M.A., PH.D., A.I.C., F.R.I.C., F.R.E.S., M.B.O.U. (260), "Three Oaks," Shore's Road, Horsell, Woking, Surrey. *L.*
- DICKENS, M. C. (2958), "Queenswood," The Avenue, Cliftonville, Northamptonshire. *L.*
- DICKIE, M. J. (2359J), 100 Senwick Road, Wellingborough, Northamptonshire. *L.*
- DILLON, T., *Auditor* (2665), 4 Alleyn Crescent, West Dulwich, London, S.E.21. *L.*
- DISNEY, Miss M. R. (3421J), 33 Windmill Hill, Brixham, Devonshire. *R.*
- DIXON, G. F. (1809), 63 War Lane, Harborne, Birmingham, 17, Warwickshire. *C., D.*
- DODWELL, D. E. (3482), 28 Summerleaze Park, Yeovil, Somerset. *L.*
- DORSET NATURAL HISTORY AND ARCHAEOLOGICAL SOCIETY (3142A), Dorset County Museum, High West Street, Dorchester, Dorsetshire.
- DRAKE, D. C. (3397), 5 Fortescue Street, Bexley North, Sydney, New South Wales, Australia. *L.*
- DRAKE, J. H. (2967), 11A Linden Leas, West Wickham, Kent. *Saturniidae.*
- DUCKER, J. B. (2748), 38 The Moor Road, Sevenoaks, Kent. *e, nh.*
- DUNCAN, P. J. (3274J), 87 Fitzjohn Avenue, Barnet, Hertfordshire. *L.*
- DUNN, A. (2963), 34 Monks' Drive, Formby, Liverpool, Lancashire. *L.*
- DUNN, T. C. (1845), "The Poplars," Chester-le-Street, Co. Durham. *L.*
- DUNSMORE-SMITH, S. J. (2832), 5 Birch Tree Drive, Ensworth, Hampshire. *C.*
- DURRANT, K. C. (1375), 31 Sandy Lane, East Dereham, Norfolk. *D., ent.*
- DURRANT, W. J. (1196), 64 Pine Gardens, Surbiton, Surrey. *C., D., O.*
- DYCE, J. W. (1602), "Hilltop," 46 Sedley Rise, Laughton, Essex. *L.*
- DYER, J. L. (2319), 66 Bishop's Oak Drive, Trench Wood North, Tonbridge, Kent. *L.*
- DYSON, R. C., N.D.H., F.R.E.S. (91), 112 Hollingbury Park Avenue, Brighton, 6, Sussex. *L. (foodplants).*
- EADE, G. J. (190), 23 Trinity Avenue, Llandudno, Caernarvonshire, Wales. *L.*
- EAGLES, T. R. (194), 32 Abbey Road, Enfield, Middlesex. *L.*
- EARLE, D. A. (3466), 150 Pilton Place, East Street, Walworth, London, S.E.17. *C., D., H., L.*
- EARWAKER, F. L. A. (2887), 83 Fishbourne Road, Chichester, Sussex. *L.*
- EBBAGE, I. (3194J), 51 Cholmeley Park, Highgate, London, N.6.
- EDHOUSE, M. J. (3077J), Slack Top Farm, Heptonstall, Nr Hebden Bridge, Yorkshire. *L.*

- EDMONDSON, R. A. (3167), The Terminus Hotel, 46/47 Cartwright Gardens, London, W.C.1. *ent.*, *L.*
- EDWARDS, G. W. R. (3479), Park Lodge Cottage, Kimbolton, Huntingdonshire. *C.*, *L.*
- EDWARDS, H. G. (2884), Tonbridge School, Tonbridge, Kent. *e.*, *L.*, *woodland ent.*
- EDWARDS, Miss K. (2063), "Weir Oaks," Sugden, Wellington, Shropshire. *L.*, *nh.*, *O.*
- EDWARDS, N. R. (3391J), 66 Jubilee Road, Retford, Nottinghamshire. *L.*
- EDWARDS, P. J. (3291J), 256 Bedfont Lane, Feltham, Middlesex. *L.*
- EDWARDS, R. C. (949), "Arlesey," Pilgrims' Way, Westerham, Kent. *ent.*
- EDWARDS, Miss S. B. (2921), "Pevensey," Woodland Way, Bidborough, Tunbridge Wells, Kent. *L.* (*Sphingidae*).
- EELLES, W. J. (3127), 11 Luker Avenue, Henley-on-Thames, Oxfordshire. *C.*, *ML.*
- ELLERTON, Captain J., D.S.C., R.N. (3399), "Cherry Hay," Meopham, Kent. *L.*
- EMMET, A. M., M.B.E., M.A. (1379), St. Edwards' School, Oxford, Oxfordshire. *L.*
- EVANS, A. W. (2901), 20 Yule Road, Coventry, Warwickshire. *L.*
- EVANS, B. E. (3284J), 30 Devonshire Road, Harrow, Middlesex. *L.*
- EVE, A. (2601), 78 Grosvenor Avenue, Carshalton, Surrey. *C.*
- EWING, K. W. (1121), The Old Malt House, Wroughton, Wiltshire. *L.*
- FAIRCLOUGH, A. J. (3302J), "Blencathra," Dean Oak Lane, Leigh, Nr Reigate, Surrey. *L.*
- FANSHAWE, J. E. (2922), "Parloes," Pages Road, R.M.D.4, Timaru, New Zealand. *L.*
- FARRELL, C. P. (3262J), 15 Westbourne Crescent, Highfield, Southampton, Hampshire. *L.*
- FAWCETT, J. E. (2512), 87 Palmerston Road, Earlsdon, Coventry, Warwickshire. *L.*
- FELLER, B. A. (3316), 29 East John Street, Lindenhurst, New York, U.S.A. *L.*
- FENN, J. L. (1665), "Fernleigh," Oxborough Road, Stoke Ferry, Nr King's Lynn, Norfolk. *L.*
- FIDLER, Dr F. H. (1256), N.A.A.S., Block 2, Government Buildings, Lawnswood, Leeds, 16, Yorkshire. *Hem.* (*Aphididae*), *T.*
- FILBEE, A. G. (3102), Forest House, Middle Road, Tiptoe, Hordle, Hampshire. *L.*
- FINLAY, I. S. (3484J), 42 Christian Fields, Norbury, London, S.W.16. *Hr.*, *L.*
- FINLAY, Captain R. A. L., M.B.E. (229), 174 Braid Road, Edinburgh, 10, Midlothian, Scotland. *ent.*
- FINN, H. C. (3408), 29 Marlborough Road, Northampton, Northamptonshire. *aq. ent.*, *C.*, *L.*
- FIRMIN, J., M.B.O.U. (3021), 12 Worthington Way, Lexden, Colchester, Essex. *C.*, *L.*, *O.*
- FISHER, J. M., M.A. (1305), Old Rectory, Ashton, Northamptonshire. *L.*
- FISHER, R. E. G. (2404), "Greenway," Gabwell Hill, Maidencombe, Torquay, Devonshire. *L.*
- FITTON, M. G. (3462J), 7 Busk Street, Chadderton, Lancashire. *C.*

- FORD, M. L. (3031J), 1 The Orchards, Copt Elm Road, Charlton Kings, Cheltenham, Gloucestershire. *C., L.*
- FORD, R. T. (2332), "The Bothy," Ashton Wold, Oundle, Peterborough, Northamptonshire. *L.*
- FOREMAN, M. J. (3079J), 26 Saxon House, Saxon Avenue, Hanworth, Middlesex. *ent.*
- FOSTER, P. (3352), Gnr 23736926, Flight Safety, R.A.G.W.R., Benbecula, South Uist, Outer Hebrides, Scotland. *Ar., C., ent., Hem.*
- FOX, Dr K. J., B.A., M.B., B.CHIR., (CANTAB.), D.OBST.R.C.O.G., *Councillor*, (1459), Tauhuri Street, Manaia Taranaki, New Zealand. *L.*
- FOX, T. H. (105), 28 Boxwell Road, Berkhamsted, Hertfordshire. *L.*
- FOXWELL, D. J. (3270), 46 Byway Road, Leicester, Leicestershire. *L. (Saturniidae).*
- FRANK, J. H. (2500), 51 Rokeby Drive, Kenton, Newcastle-upon-Tyne, 3, Co. Durham. *C., L.*
- FREEBREY, A. M. (3359), 29 Springfield Gardens, Upminster, Essex. *L.*
- FRENCH, R. A. (2129), Rothamsted Experimental Station, Harpenden, Hertfordshire. *e., ent., m.*
- FREWIN, G. L., (2370), "The Spinning Wheel," South Chard, Somerset. *C.*
- FRIEND, M. J., F.R.E.S., *Hon. General Secretary* (2786), "Clipsam," Oak Road, Cobham, Surrey. *ent. L. (Saturniidae).*
- GADD, C. D. (3033), "Rutland," 33 Wythenshawe Road, Sale, Cheshire. *L.*
- GALLAFENT, E. C. (3412), 18 New Forest Lane, Chigwell, Essex. *L.*
- GARAI, A. (3260J), "Abeny," Bagshot Road, Fox Corner, Nr Guildford, Surrey. *ent., L.*
- GARDINER, B. O. C. (225), 43 Woodlark Road, Cambridge, Cambridge-shire. *ent., L., N.*
- GARLAND, J. H. N. (3234), 18 Oaks Way, Carshalton, Surrey. *L., R.*
- GARRETT-JONES, C. (989), *c/o* Division of Malaria Eradication, World Health Organisation, Palais Des Nations, Geneve, Switzerland. *D., L.*
- GARTON, S. R. (3289J), 18 Westdale Lane, Gedling, Nottinghamshire. *C., D., H.*
- GASKELL, A. M. (2710), Moorhouse Farm, Helperby, Yorkshire. *L., nh.*
- GAYDON, Dr A. G. (3198), 43 Surbiton Hill Park, Surbiton, Surrey.
- GENT, P. J. (192), 3 Irithlingborough Road, Wellingborough, Northamptonshire. *L.*
- GERARD, The Right Hon. Lord (359), "Blakesware," Ware, Hertfordshire. *L.*
- GIBSON, L. (3410J), 57 West Carr Road, Retford, Nottinghamshire. *L., O.*
- GILBERT, A. E. H. (3025), 64 Cedar Drive, Hatch End, Middlesex. *H., L.*
- GILES, W. (2241), 22 Priory Crescent, Wembley, Middlesex. *L.*
- GLENIE, H. R. (3121J), 27 Lower Park, Minehead, Somerset. *L.*
- GLOYN, J. (3202J), 56 Westhill Road, Shanklin, Isle of Wight.
- GODDARD, P. A. (2206), 69 Weighton Road, Harrow Weald, Middlesex. *L.*
- GODFREY, B. H. (3445), "Nuthatch," Galhampton, Yeovil, Somerset. *Saturniidae.*
- GOLBY, W. A. (1412), 12 Maenglas, Cardigan, Cardiganshire, Wales. *ent.*

- GOLDING, N. G. (3287J), 48 Caernarvon Road, Woodford, London, E.18.  
*L.*
- GOLDSMITH, D. C. (3483J), 5 Whitestone Close, Millbrook, Southampton,  
Hampshire. *L.*
- GOODDEN, R. C. (2614), Seafields House, Charmouth, Bridport, Dorset-  
shire. *L.*
- GOUGH, M. E. (3116), 3 Myrtle Avenue, Eastcote, Ruislip, Middlesex.  
*L.*
- GOULD, W. H. P. (2464), The Villa, Bradley, Redditch, Worcestershire.  
*H., mic.*
- GOWING-SCOPES, E. (909), "Rosewood," Stonehouse Road, Halstead,  
Kent. *C., L.*
- GRAHAM, E. W. (1142), "Aldersmead," Spetisbury, Blandford Forum,  
Dorsetshire. *L.*
- GRAMMAR SCHOOL, THE (2844A), Bond Street, Burton-on-Trent, Stafford-  
shire.
- GRANT, G. C., B.E.H., A.R.I.C.S. (2451), 4 The Butts, Warwick, Warwick-  
shire. *L.*
- GREEN, J. W. (3469J), 18 Vaughan Street, Coalville, Leicestershire.  
*C., H., L. O.*
- GREENAWAY, P. (3372J), 13 Highbarns, Hemel Hempstead, Hertford-  
shire. *L.*
- GREENHILL, J. S. (1883), 7 Barnett Wood Lane, Ashted, Surrey. *L.*
- GRICE, S. (3402), "Hilbree," Middlecave Road, Malton, Yorkshire. *ent.*
- GRIPPER, A. G. (1836), Springates Cottage, Henham, Nr Bishop's  
Stortford, Hertfordshire. *L. (Sphingidae).*
- GROUT, M. M. (3245), The Windsor Castle, 1 Greyhound Road, Sutton,  
Surrey. *L.*
- GROVE, Rev. A. (2946), St. Mary's Vicarage, Duddington, Stamford,  
Lincolnshire. *L.*
- GROVES, E. W. (1792), 3 Richmond Way, Coulsdon, Surrey. *ent.*
- GYSELMAN, G. W. (218), 10 Vespan Road, Shepherd's Bush, London,  
W.12. *L.*
- HALLETT, K. L. (3370), 85 Chelmer Road, Chelmsford, Essex. *L.*
- HAMMOND, H. E., F.R.E.S. (423), 16 Elton Grove, Birmingham, 27, War-  
wickshire. *C., L. (life-histories), ML.*
- HAMPSHIRE, N. J. (3447J), 41 Vincent Street, Yeovil, Somerset. *L.*
- HANCOCK, E. G. (3485J), 9 Conishead Road, Ulverton, Lancashire.  
*C., L.*
- HANCOCK MUSEUM, THE (3344A), c/o The Curator, Barras Bridge, New-  
castle-upon-Tyne, Northumberland.
- HANSON, S. M. (320), 11 The Close, Spring Grove Road, Isleworth,  
Middlesex. *L.*
- HARDMAN, J. A. (1234), 39 Townsend Road, Stratford-on-Avon, War-  
wickshire. *ent., L.*
- HARDS, C. H. (176), 40 Riverdale Road, London, S.E.18. *L.*
- HARGREAVES, Miss S. (2475), 20 York Road, St Anne's-on-Sea, Lan-  
cashire. *C., L.*
- HARMAN, A. J. E. (2721), 39 Avenue Terrace, Southend-on-Sea, Essex.  
*C., D., L.*
- HARRIS, R. (2838), 77 Countess Drive, Denton Burn, Newcastle-upon-  
Tyne, Northumberland. *C., ent., L.*

- HARRIS, T. A. (2793), 452 Stratford Road, Shirley, Solihull, Birmingham, Warwickshire. *L.*
- HARRISON, D. G. (1689), 125 Manson Road, Cambridge, Cambridgeshire. *ent., R.*
- HARRISON, Professor J. W., D.SC., F.R.S., F.R.E.S. (716), "Gavarnie," The Avenue, Birtley, Co. Durham. *ent., L.*
- HARRISON-GRAY, M. (1806), 14A Lancaster Grove, London, N.W.3. *Saturniidae.*
- HART, R. (3163), 315 East Mill Street, Santa Maria, California, U.S.A. *ent., L.*
- HARWOOD, N. W. (3385), 6 Danesfort Avenue, Guisborough, Yorkshire. *L., O.*
- HATCHEL-BROWN, J. (3329), "The Willows," Roadside Delivery, Broadford, Victoria, Australia. *C., L.*
- HAWGOOD, B. (2355), E-A-T-R-O, P.O. Box 96, Tororo, Uganda. *D., mic., S.*
- HAXBY, C. R. (1508), 4 Windermere Terrace, Bradford, 7, Yorkshire. *L., nh.*
- HAYNES, R. F. (834), 29 Fairfield Drive, Dorking, Surrey. *bot., ent., L.*
- HAYNES, R. G. (1545), 79 Lucas Terrace, Lucas Lane, Plympton, Plymouth, Devonshire. *L.*
- HAYWARD, R. (2769), 41 Suffolk Road, Southsea, Hampshire. *L.*
- HEAL, Dr H. G. (3461), 5 The Green, Dunmurry, Belfast, Co. Antrim, Northern Ireland. *L.*
- HELLINGS, G. E. A. (297), The Old Vicarage, Bishopswood, Nr Chard, Somerset.
- HEMINGSLEY, A. J. (3310), 44 Lyminster Avenue, Hollingbury, Brighton, 6, Sussex. *L.*
- HERBERT ART GALLERY AND MUSEUM, THE (3232A), c/o C. F. Scott, Jordan Well, Coventry, Warwickshire.
- HESLOP, Mrs J. I. (3356), 105 Ladyshot, Harlow, Essex. *L.*
- HEWSON, F. (601), 23 Thornhill Drive, Shipley, Bradford, Yorkshire. *L.*
- HIGGS, G. A. (2891J), 30 Kendor Avenue, Epsom, Surrey. *L.*
- HILL, R. W. (3286J), 102 Frankland Road, Croxley Green, Rickmansworth, Hertfordshire. *L., mic.*
- HILLIARD, R. D., *Hon. Advertising Secretary* (99), 54 Gyles Park, Stanmore, Middlesex. *L., nh.*
- HOBBS, J. C. (2339), c/o Ministry of Pensions, 10 John Adam Street, London, W.C.2. *e.*
- HOGGE, M. A. F. (3210J), "Cowlings," Washfield, Tiverton, Devonshire. *L.*
- HOLMES, A. M. (3337), Client's Mail, c/o Canadian Bank of Commerce, 25 King Street West, Toronto, 1, Ontario, Canada.
- HOLMES, C. W. N. (2815), 30 Queen's Crescent, Falkirk, Stirlingshire, Scotland. *C., L.*
- HOOD, Rev. K. E. (3159), 310 Vicarage Road, King's Heath, Birmingham, 14, Warwickshire. *L.*
- HOOKE, J. (3062), 91 High Street, Westerham, Kent. *L.*
- HOOLEY, Miss M., B.SC., F.R.E.S. (3440), 5 Elms Road, Stoneygate, Leicestershire. *L. (Saturniidae), Orth.*
- HOOPER, A. R. (3307J), 20 Woodland Terrace, Greenbank, Plymouth, Devonshire. *C., H., Hem., L.*

- HOOPER, W. P. (2952), Medical Division, C.D.E., Porton Down, Salisbury, Wiltshire. *D.*
- HOPE PROFESSOR, THE (666), Department of Entomology, Oxford, Oxfordshire.
- HOPKINS, Miss B. A. (827), 64 Humberstone Avenue, New Waltham, Lincolnshire. *L.*
- HOPKINS, W. J. H. (2638), 9 Churchill Road, Wells, Somerset. *L.*
- HORTON-ORMEROD, S. (1370), 21 Somerset Road, Heaton, Bolton, Lancashire. *Ar.*
- HOSKINS, H. L. M. (3373), "Arbutus," 6 Acton Way, Arbury Road Estate, Cambridge, Cambridgeshire. *Saturniidae.*
- HOUGH, M. J. (3354J), 36 Kynance Gardens, Stanmore, Middlesex. *C., L.*
- HOULIHAM, D. F. (3365J), B39 Upton Avenue, Forest Gate, London, E.7. *bot., ent., L.*
- HOWARTH, T. G., B.E.M., F.R.E.S., F.Z.S. (1627), "Arrochar," Barnet Gate, Arkley, Hertfordshire. *L.*
- HOW, T., (2383), "Heatherbra," Grosvenor Terrace, Boxmoor, Hemel Hempstead, Hertfordshire. *L., ML.*
- HOWE, J. J. (3378), 1 Danesfort Avenue, Guisborough, Yorkshire. *L.*
- HUGMAN, B. P. J. (2899J), 27 Southfields Road, Solihull, Warwickshire. *L.*
- HULL, M. (2542), "Windcliffe," Alvanley Road, Helsby, Cheshire. *L.*
- HULME, D. C. (2661), 1 Melton Avenue, Littleover, Derbyshire. *ent., L.*
- HUMFREY, Dr S. H. G. (2988), The Granary, Dallington, Northamptonshire. *L.*
- HUMPHREY, S. W. (386), Pear Tree House, Roade, Northamptonshire. *R.*
- HUMPHREYS, C. J. (3065), 4 Ascot Road, Luton, Bedfordshire. *L.*
- HUTCHISON, D. (919), 246 Muirhall Road, Larbert, Stirlingshire, Scotland. *R.*
- INGLESENT, H. (3330), "Lea Holme," Archer Park, Middleton, Manchester, Lancashire. *H.*
- IRWIN, R. R. (1220), 1513 East Marquette Road, Chicago, 37, Illinois, U.S.A. *L., R.*
- ISON, C. H. (1343), 47 Orford Road, London, E.17. *H., mic., p.*
- JACKSON, H. M. (3252), The Old Rectory, Lamyatt, Shepton Mallet, Somerset. *ent., L.*
- JACOBY, M. C. (2597), 5 Battlefield Road, St Albans, Hertfordshire. *L.*
- JAMES, F. R. (3117), 18 Totteridge Lane, Whetstone, London, N.20. *L.*
- JANES, C. T. (1635), 151 Warwick Road, Edmonton, London, N.18. *ent.*
- JANES, J. A. (614), "Lyndale," Old Road, Lodge Estate, Tiverton, Devonshire. *L.*
- JAQUES, F. A. (3182), 58 Clifton Gardens, Temple Fortune, Golders Green, London, N.W.11. *Saturniidae.*
- JARMAN, R. A. (2706), 182 Blackamoor Lane, Maidenhead, Berkshire, *L.*
- JARVIS, C. M., F.L.S. (650), 19 Sloane Gardens, London, S.W.1. *econ. ent.*
- JEFFERS, P. G. (2575), 76 Lavender Avenue, Kingsbury, London, N.W.9. *L.*
- JEFFERSON, T. W. (242), 37 Riversdale Terrace, Sunderland, Co. Durham. *R.*

- JEFFS, G. A. T. (910), "Nun's Holm," Nuns' Corner, Grimsby, Lincolnshire. *ent.*
- JENNER, J. (3172J), 1 Salcombe Drive, Morden, Surrey. *ent.*
- JENNINGS, G. M. (2762J), 35 The Ridings, Ealing, London, W.5. *L.*
- JERVIS, A. R. (3247J), 13 Blenheim Road, Keydell, Horndean, Hampshire. *L.*
- JEWELL, G. G. (3321J), 181 Feltham Hill Road, Ashford, Middlesex. *C., L.*
- JOHN HAMPDEN SECONDARY MODERN SCHOOL, c/o The Secretary, Victoria Road, New Barnet, Hertfordshire. *ent., L.*
- JOHNSON, J. H. (1040), 1 Berry Street, Hephthorne Lane, Nr Chesterfield, Derbyshire. *C., H.*
- JOHNSON, M. (3464J), 5 Airedale Road, Ealing, London, W.5. *C.*
- KAY, M. A. S. (2399), "Green Gables," Broomhill Crescent, Leeds, 17, Yorkshire. *C., L.*
- KEATS, P. A. (3349), 5 Station Road, Kirby Muxloe, Leicestershire. *L.*
- KEEN, D. (3309), 90 Angel Road, Thames Ditton, Surrey. *Hem. (Heteroptera), L., O.*
- KEIL, J. A. (571), Ray Brook Hospital, Ray Brook, New York, U.S.A. *L. (Saturniidae).*
- KELLY, M. P. (3184J), 147 Raeburn Avenue, Eastham, Wirral, Cheshire. *L.*
- KEMP, R. J. (3152J), 62 Grosvenor Road, Caversham, Reading, Berkshire. *bot., ent.*
- KEMSLEY, J. (3369J), 48 Dewlands, Godstone, Surrey. *L.*
- KENNEDY, W. J. (2527), 35 Hanover Road, Willesden, London, N.W.10. *ent.*
- KENT, A. A. (3099), "Westmead," 63 Cornwall Road, Cheam, Surrey. *L.*
- KENTON, G. W. (3248J), 16 Sunny Field, Mill Hill, London, N.W.7. *L.*
- KNIGHT, J. E. (94), Doughton Cottage, Ross-on-Wye, Herefordshire. *L. (rearing).*
- KNILL-JONES, S. A. (2820), "Brooklands," Freshwater, Isle of Wight. *L.*
- KNOWLES, T. J. (3061), 39 Redhill Gorse, Tillington, Staffordshire. *L.*
- LAING, I. W. (2117), 1 Brookside, East Barnet, Hertfordshire. *L., O.*
- LANE, D. (3351), 118 Coldershaw Road, West Ealing, London, W.13. *L.*
- LANE, E. G. (2331), "Pandora's Box," Sutton Poyntz, Weymouth, Dorsetshire. *ent.*
- LANGDALE-SMITH, Dr H. G. (3097), The Doctor's House, Tarrington, Nr Hertford, Hertfordshire. *ent.*
- LASSMAN, L. R. (3254), 31 Bington Road, Winchcombe, Cheltenham, Gloucestershire. *L.*
- LAST, H. R. (117), 12 Wirkworth Road, Banstead, Surrey. *C. (Staphylinidae).*
- LATHAM, C. J. (3263J), Bolney Court, Shiplake, Nr. Henley-on-Thames, Oxfordshire. *C., L.*
- LAURENCE, T. N. (3185), 14588 Artesian, Detroit, 23, Michigan, U.S.A. *C., D., H.*
- LEACH, A. B. (3064J), 52 Storey Way, Cambridge, Cambridgeshire. *R.*
- LEE, H. (2533), Sons Gate 7<sup>11</sup>, Opg: <sup>1</sup>, Oslo, Norway. *O., R. (Sphingidae).*
- LEE, R. N. (3453J), "Wessex End," Beechwood Avenue, Ryton-upon-Tyne, Co. Durham. *Hem.*

- LEECH, A. R. (3446J), 27 Pamela Road, Northfield, Birmingham, 31, Warwickshire. *C.*
- LEECH, H. B. (3281), "Hillcrest," Pinewood Road, Samb, High Wycombe, Buckinghamshire. *L.*
- LEES, F. H. (375), "The Gables," Maidencombe, Newton Abbot, Devonshire. *L.*
- LE MASURIER, P. C. (978), "Alt-Na-Graig," Aviemore, Inverness-shire. *L.*
- LEONARD, B. G. (96), 29 Storeton Road, Oxton, Birkenhead, Cheshire. *L. (Sphingidae).*
- LEVETT, R. J. R. (1867), *c/o* "Netheroak," Stockcroft Road, Balcombe, Haywards Heath, Sussex. *L., O.*
- LEWIS, A. D. (2243), 9 Cyncoed Rise, Cyncoed, Cardiff, Glamorgan-shire, Wales. *H. (Ichneumonoidea), L., O.*
- LEWIS, E. (952), 8 Parry Road, London, S.E.25. *C.*
- LEWIS, Rev. E. S. (373), "Berwyn," Rhuddlan, Flintshire, Wales. *L.*
- LINDSLEY, P. E. (3363), 47A St Mary's Road, Ealing, London, W.5. *p.*
- LINGWOOD, D. J. (3255J), 29 De Freville Avenue, Cambridge, Cambridge-shire. *L.*
- LIPSCOMBE, K. D. (2846), 56 Christchurch Road, Streatham Hill, London, S.W.2. *agric. ent.*
- LISNEY, Dr A. A., M.A., M.D., F.R.E.S. (315), "Dune Gate," Clasence Road, Dorchester, Dorsetshire. *L., ML.*
- LITTAHORSKY, A. (3109), 3808 Union Road, St Louis, 25, Mo., U.S.A. *C., L.*
- LITTLE, J. C. (2797), Nakesero Primary School, P.O. Box 2200, Kampala, Uganda, East Africa. *L.*
- LLOYD, D. M. (3002J), 134 Elgar Avenue, Tolworth, Surbiton, Surrey. *L.*
- LOCKINGTON, N. A. (1421), 19 Spring Grove, Loughton, Essex. *C., H.*
- LOCKYER, W. (2856), 11 Herne Place, Herne Hill, London, S.E.24. *C., L.*
- LONG, A. G., M.S.C. (2278), "The Green," Gavington, Duns, Berwickshire, Scotland. *L., T.*
- LONG, D. R. M. (3052), "Whitcroft," Mavelstone Close, Bickley, Bromley, Kent. *L.*
- LONG, W. H. (1565), "Ashleigh," Limes Road, Tettenhall, Wolverhampton, Staffordshire. *L.*
- LORD WANDSWORTH COLLEGE (1019A), *c/o* F. D. Goodliffe, Long Sutton, Basingstoke, Hampshire.
- LORIMER, Dr J. A. (576), "Roycroft," 23 King's Avenue, Buckhurst Hill, Essex. *L.*
- LOUGHBOROUGH NATURALISTS' CLUB, THE (3298A), *c/o* J. Crocker, 66 Outwoods Drive, Loughborough, Leicestershire.
- LOVITT, G. J. (3327), 82 Raglan Avenue, Waltham Cross, Hertfordshire. *H. (Formicoidea).*
- LUCAS, Dr F., PH.D. (2843), 137 Parrswood Road, South, Manchester, 20, Lancashire. *ent.*
- LUNN, P. G. (2859J), 220 Yarm Road, Darlington, Co. Durham. *L.*
- LYON, F. H., M.B.E., F.R.E.S. (1026), "Green Headland," Sampford Peverell, Tiverton, Devonshire. *L.*
- LYONIAN NATURAL HISTORY SOCIETY, THE (2295A), Lower School of John Lyon, Middle Road, Harrow, Middlesex. *ent.*

- MACDONALD, E. (3306), "The Hirsell," Lamblash, Arran, Scotland. *C., D., H.*
- MACFARLANE, D. (2550), 50 Roslea Drive, Dennistoun, Glasgow, Lanarkshire, Scotland. *L.*
- MACKINTOSH, R. A. (3267J), 19 Upper Selsdon Road, Selsdon, Surrey. *L.*
- MACKWORTH-PRAED, Lt-Col C. W. (392), "Castletop," Burley, Hampshire. *ent., z.*
- MACLAURIN, A. M. (1282), Oldhall House, Kilmacolm, Renfrewshire, Scotland. *ent.*
- MACLEAN, P. G. (3437J), c/o Mr. Roberts, Heathcote House, Icen Way, Dorchester, Dorsetshire. *C., L.*
- MADDISON, P. A. (3295), 31A Nailcote Avenue, Tile Hill, Coventry, Warwickshire. *C., L.*
- MAGGS, P. (244), "Fernbank," Sway Road, Brockenhurst, Hampshire. *L.*
- MAJOR, R. F. (3094), 48 Broadcroft Road, Orpington, Kent. *L.*
- MAKINGS, P. (1892), Department of Zoology, University College, Singleton Park, Swansea, Glamorganshire, Wales. *H., L.*
- MANN, F. L. (3381J), 10 Longfield Drive, Urmston, Nr Manchester, Lancashire. *C.*
- MANNING, C. D. (2870J), 6 Long Hyde, Half Hyde, Stevenage, Hertfordshire. *L.*
- MANSFIELD, M. J. (134), 5 Chigwell Road, Bournemouth, Hampshire. *ent.*
- MARTIN, J. H. (2824), 134 Brampton Road, Bexleyheath, Kent. *Saturniidae.*
- MARTIN, P. M. (2999), 27 Burdell Avenue, Sandhills, Headington, Oxfordshire. *L.*
- MASTERS, J. H. (3441), 701 W. Washington, Osceola, Arkansas, U.S.A. *L., O.*
- MAY, A. J. (2647), 188 Upton Road, Bexley, Kent. *L.*
- MCALLEAR, L. F. (3398J), 54 Stephenson Avenue, Tilbury, Essex. *Der., H., L., Orth.*
- MCCLENAGHAN, I. (2499), Queen's University, Department of Organic Chemistry, David Keir Building, Stanmillis Road, Belfast, Co. Antrim, Northern Ireland. *C., H., L.*
- MCCORMICK, R. F. (3375), 28 Lilian Road, Streatham, London, S.W.16. *L.*
- MCDERMOTT, Miss C. A. (2488), "The Dene," Borough Green, Kent. *R.*
- MCGEENEY, A. P., *Councillor* (3283J), 112 Fitzjohn Avenue, Barnet, Hertfordshire. *L., O.*
- MCSHEEHY, T. W., (3251), Medical Research Council, Radiobiological Research Unit, Harwell, Didcot, Berkshire. *ent.*
- MEADOWS, M. I. (3315J), "Ashtrees," Aldingbourne, Sussex. *ent.*
- MEDLAND, S. H. (3273), 21 Forde Road, Newton Abbot, Devonshire. *C., D., L.*
- MERRIFIELD, R. C. J. (3444J), 5 Draycott Avenue, Kenton, Harrow, Middlesex. *Hem.*
- MESSERVY-WHITING, G. G. (2416J), 347A Upper Richmond Road, Putney, London, S.W.15. *L.*

- MIDDLETON, A. R., *Councillor* (2482), 16 Stangate Buildings, Upper March, Lambeth, London, S.E.1. *L.*
- MILES, P. J. S. (3343*J*), 92 Laburnum Avenue, Sandwich, Kent. *L.*
- MILLER, M. C. (3098), "Mickelwood," Gravelly Bottom, Kingswood, Sutton Valance, Kent. *C., L.*
- MILLS, R. E. (3118), 2 Link Road, Edgbaston, Birmingham, 16, Warwickshire. *L.*
- MILNE-DAY, D. L. (2948), "Southfield," Burley, Nr Ringwood, Hampshire. *ent.*
- MOODY, B. W. (1570), 197 Banbury Road, Kidlington, Oxfordshire. *L.*
- MOORE, J. (146), Lower Hill Farm, Kemerton, Tewkesbury, Gloucestershire. *L.*
- MOORE, Miss K. (3443*X*), 4 Maple Road, Leytonstone, London, E.11. *L.*
- MOORE, L. E. (3175), 87 Kingston Road, Earlsdon, Coventry, Warwickshire. *L.*
- MOORE, R. S. (3174*J*), 75 Phillpotts Avenue, Bedford, Bedfordshire. *L.*
- MOPPETT, A. A., B.A. (1841), 39 Fairdale Gardens, Hayes, Middlesex. *ent.*
- MOREBY, C. (3383), Toc H., Mark VII, Allhallows' House, 15 Fitzroy Square, London, W.1. *econ. ent., L.*
- MORGAN, J. R. (1515), The Red House, Low Road, Barrowby, Nr Grantham, Lincolnshire. *L.*
- MORRIS, A. (3401), 40 York Street, Mitcham Junction, Surrey. *L., R.*
- MORRIS, J. E. G. (2283), 8 Southmead Road, Southfields, London, S.W.19. *ent.*
- MORRIS, W. H. H., M.P.S. (2025), 66 Wells Road, Penn, Wolverhampton, Staffordshire. *L.*
- MORRISON, A. (3388*J*), 4 Helgiford Gardens, Sunbury-on-Thames, Middlesex. *L.*
- MORTON, J. K. (522), Department of Botany, Birkbeck College, Malet Street, London, W.C.1. *L.*
- MOSES, R. (3468*J*), 43 Churchill Avenue, Culcheth, Nr Warrington, Lancashire. *L.*
- MOSS, E. H. (3013), 10 Sydney Road, Wanstead, London, E.11. *C., D., H.*
- MUGGLETON, J. (3253*J*), 34 Penton Road, Staines, Middlesex. *C., L.*
- MUGGLETON, R. F. (3475*J*), 35 Thorney Lane, Richings Park, Iver, Buckinghamshire. *C., L.*
- MYERS, A. A. (2683), 34 Crundale Avenue, Kingsbury, London, N.W.9. *L.*
- NASH, R. (3358*J*), 51 Newdigate Street, West Hallam, Derbyshire. *D., H.*
- NATURE CONSERVANCY, THE (1901*A*), 19 Belgrave Square, London, S.W.1.
- NEAL, E. G., B.S.C. (467), "Foxcombe," Greenway Road, Taunton, Somerset. *L., P.*
- NEEDHAM, R. A. (3060*J*), 14 Coolgardie Avenue, Chigwell, Essex. *L.*
- NEILL, Miss C. P. (3215*J*), 1 Market Place, North Berwick, East Lothian, Scotland. *ent.*
- NESS, A. R. (549), 15 Homefield Avenue, Newbury Park, Ilford, Essex. *L.*
- NEVILLE, D. C. (3186*J*), 117 Firtree Avenue, Tile Hill, Coventry, Warwickshire. *L.*

- NEWBURY, A. H. J. (3108), 79 Windsor Road, Halesowen, Worcester-shire. *ent.*
- NEWLAND, R. A. (2852), 93 Arne Avenue, Parkstone, Poole, Dorsetshire. *L.*
- NEWMAN, G. M. (3319J), 7 Helgiford Gardens, Sunbury-on-Thames, Middlesex. *L.*
- NEWMAN, L. H., F.R.E.S., F.R.H.S. (503), "Betsoms," Westerham, Kent. *L.*
- NEWTON, DR A. H., M.B., CH.B., F.R.E.S. (1140), The Charles Johnson Memorial Hospital, Ngutu, Zululand, Via Dundee, South Africa. *C., O.*
- NEWTON, J. (438), 11 Oxlease Close, Tetbury, Gloucestershire. *L.*
- NICHOLLS, J. B. (3297), 7 Hallam Road, Godalming, Surrey. *aq. ent., D.*
- NOBLE, D. C. R. (3246J), 22 Gerald Road, London, S.W.1. *L.*
- NOLDE, W. F. (2964), 83 Hazlebank Road, Catford, London, S.E.6 *C., D.*
- NORTHERN NATURALISTS' CLUB, THE (1828A), 80 Fonthill Road, Aber-deen, Aberdeenshire; Scotland. *ent.*
- NOTT, J. C. (1913), 83 Martin Way, Morden, Surrey. *L.*
- NYBALD, Miss M. E. (2805), 74 Somerset Road, Newport, Monmouth-shire. *L.*
- OAKLEY, J. N. (3425J), 52 Manton Drive, Luton, Bedfordshire. *ML.*
- OCKENDEN, J. R. (3394), "The Spinney," Lye Green, Chesham, Bucking-hamshire. *L.*
- OLLEVANT, D., *Councillor* (1514), 3 Salcombe Drive, Morden, Surrey. *ML.*
- OLLEVANT, H. E. (2478), 5 Broomfield Grove, Rotherham, York-shire. *ent.*
- ORPIN, C. G. (2996), Little Halden Place Farm, Goodshill, Tenterden, Kent. *agric. ent., C., L.*
- OSBORNE, R. J. (2437J), 29 Durnford Way, Arbury Road Estate, Cam-bridge, Cambridgeshire. *L. (Saturniidae, Sphingidae).*
- OSLAND, R. C. J. (3459J), 74 Cam Causeway, Chesterton, Cambridge, Cambridgeshire. *L.*
- PAGE, R. O. M. (2068), County of Stafford Training College, Nelson Hall, Nr Stafford, Staffordshire. *b.*
- PAGE, W. W. (3299J), 99 Queen's Road, Buckhurst Hill, Essex. *L.*
- PALLISTER, S. (2294), Royal Grammar School, Newcastle-upon-Tyne, Northumberland. *ent.*
- PALMER, A. D. (2432), 98 Carshalton Park Road, Carshalton, Surrey. *L.*
- PARKER, R. A. B. (1535), Providence House, Wellington Road, Eye, Suffolk. *fw.*
- PARMENTER, L., F.R.E.S. (895), 94 Fairlands Avenue, Thornton Heath, Surrey. *D.*
- PAYNE, K. R. (3362), "Wilton," Stowell Crescent, Wareham, Dorset-shire. *C., H., L.*
- PAYNE, R. M. (2982), 8 Hill Top, Loughton, Essex. *bot., C., D., O.*
- PEAK, J. (3439), 16 Carter Street, Newton, Hyde, Cheshire. *exot. L.*
- PEARCE, C. J. (3139), 2 Head Street, Rowhedge, Colchester, Essex. *L.*
- PEARSON, E. J. W., *Wants and Exchanges List Editor* (2193), 12 Fawley Road, Hilsea, Portsmouth, Hampshire. *L.*
- PEARSON, R. W. (3192J), 15 Tippendell Lane, St Albans, Hertfordshire.

- PENDLETON, I. (2632), 2 Carse View Drive, Bearsden, Glasg ow, Lanarkshire, Scotland. *L.*
- PENGILLY, Miss K. M. I. (3004), 5 Grosvenor Road, Weymouth, Dorsetshire. *ent.*
- PENGILLY, R. W. (3179J), 18 The Mount, Worcester Park, Surrey. *C., L., mic.*
- PENROSE, R. J. (1467), 24 Amenbury Lane, Harpenden, Hertfordshire. *L.*
- PEREIRA, Major G. C. (2927), "Ladyham," Burford, Oxfordshire.
- PETRE, R. (3396J), 18 Oliver Crescent, Birtley, Co. Durham. *L.*
- PHILIPSON, J. W. (3318), 20 Gretna Road, Newcastle-upon-Tyne, Northumberland. *ent.*
- PHILLIPS, J. R. (2737), 44 St Mary's Avenue, Alverstoke, Gosport, Hampshire. *L.*
- PHILP, E. G., F.R.E.S. (2165), "Athalia," 11 Downs Close, Penendon Heath, Maidstone, Kent. *ent., L.*
- PITMAN, R. M. (2799J), 5 Forder Green Cottages, Ashburton, Devonshire. *L.*
- PLATTS, J. H. (515), "Green Shutters," Manthorpe Road, Grantham, Lincolnshire. *L.*
- PLESTER, L. S. (2968), 15 Wassell Drive, Wribbenhall, Bewdley, Worcestershire. *L.*
- POOLE, K. H. (133), 51 Ashcombe Park Road, Weston-super-Mare, Somerset. *L.*
- PORTER, D. A. (3328), 14 Broadmead Avenue, Bridport, Dorsetshire. *C., L.*
- PORTER, J. M. (3187), Knapp Cottage, Morcombelake, Nr Bridport, Dorsetshire. *H., L.*
- POSTA CENTRALA, CDE 62/6187/A, (3451A), Cal Victoris 12, Bucuresti—Romania, A. 62.001.
- POTT, A. J. H. (3241J), Meon Place, Soberton, Nr Southampton, Hampshire. *L.*
- POTTER, A. E. (3382J), "Hillside," Baldersby, Thirsk, Yorkshire. *L.*
- POW, A. (39), 5 Dakers Place, Hawick, Roxburghshire, Scotland. *L.*
- PRATT, C. B., *Councillor* (784), 1 West Ham Lane, London, E.15. *L.*
- PRICE, L. (1478), "Springdale," Rodborough Avenue, Stroud, Gloucestershire. *C., L.*
- PULLAN, A. C. (3313J), "Rosedene," 16 Rufford Bank, Yeadon, Nr Leeds, Yorkshire. *L.*
- QUEEN MARY'S GRAMMAR SCHOOL (3285A), c/o The Librarian, Lichfield Street, Walsall, Staffordshire.
- RAE, B. C. (2356), Branting Balk, Shoppenhangers Road, Maidenhead, Berkshire. *R.*
- RAMSAY, F. J. (837), Old Manse, Kilbarchan, Renfrewshire, Scotland. *ent.*
- RANDALL, M. C. (535), 64 Mount Pleasant Road, Chigwell, Essex. *L.*
- RANGER, J. E. A. (1002), 148 Nine Mile Ride, Finchamstead, Berkshire. *L., Orth.*
- RANKIN, Miss E. J., (3066J), "Craigmillar," Hemsworth, Nr Pontefract, Yorkshire. *L.*
- RANSOM, D. P., M.A., A.M.I.MECH.E. (2135), 52 Woodway, Oxhey, Watford, Hertfordshire. *L.*
- READ, M. J. (3450J), 21 Queen's Way, Banbury, Oxfordshire. *L.*

- REDMAN, R. F. W. (2335), 67 South Avenue, Chellaston, Derbyshire. *C. (Elateridae)*.
- REED, M. D. (3438J), 15 Bygrave Road, Baldock, Hertfordshire. *L.*
- REEVES, P. (3074), 161 Tankerton Road, Tankerton, Nr Whitstable, Kent. *Hem., L., mic., O.*
- REID, J. F. (1821), 19 High Street, Leighton Buzzard, Bedfordshire. *L.*
- RELF, C. E. (2280), "Pinecroft," Cippenham Lane, Slough, Buckinghamshire. *L.*
- REXFORD-WELCH, Dr S. C., M.A., M.R.C.S., L.R.C.P. (2384), Scarletts Cottage, Plaistow Green, Headley, Newbury, Berkshire. *H., N.*
- RICE, G. G. (2661), "Rostrevor," 36 London Road, Guildford, Surrey. *L.*
- RICHARDS, C. A. (3435J), 302 Warwick Road, Banbury, Oxfordshire. *L., mic., ML.*
- RICHARDS, E. H. (3020), "The Knoll," Pebworth, Stratford-on-Avon, Warwickshire. *L.*
- RICHARDSON, A. (483), Beaudesert Park, Minchinhampton, Gloucestershire. *L.*
- RICHARDSON, N. A. (431), 11 Windsor Street, Bletchley, Buckinghamshire. *L.*
- RICKARD, R. M. (1341), Post Office, Coningsby, Lincolnshire. *Bombidae.*
- RIDLEY, Miss J. M. (3474J), 5 Wembley Avenue, Monkseaton, Whitley Bay, Northumberland. *L.*
- RILEY, H. (1819), Great Moulton, Norwich, Norfolk. *bot., ent.*
- RITSON, W. (1112), 12 West Street, Winwick Road, Warrington, Lancashire. *C., ent., Orth.*
- RIX, H. M. (2923J), "The Wood," Buxted, Uckfield, Sussex. *L.*
- ROBBINS, C. L. (2977), "Alexandra," Wicken Road, Clavering, Essex. *L.*
- ROBERTSON, T. S., *Councillor* (2417), 38 Repton Way, Croxley Green, Rickmansworth, Hertfordshire. *C., L.*
- ROBINSON, R. (3201), 12 The Crossway, Ealing, London, W.13. *genetics, L.*
- ROCHE, J. (3096J), 29 Holmesdale Road, Bexleyheath, Kent. *L.*
- ROCHE, Dr P. M.R.C.S., L.R.C.P., F.L.S., F.Z.S., F.R.E.S. (2965), 4 The Drive, H.M. Prison, Pentonville, London, N.7. *C., L., R. (African).*
- ROSE, Dr A. M. (3426), "Brookside," Bromham, Bedfordshire. *ML.*
- ROUDIER, A. J. (1294), 6 Square Georges Lesage, Paris, 12E, France. *C., L.*
- ROWBERRY, D. (3342), Loxley House, Maybury Hill, Woking, Surrey. *L.*
- ROWLAND, C. G. (2861J), 23 Chesterfield Road, King's Heath, Birmingham, 14, Warwickshire. *L., mic.*
- ROXBEE, A. R. (3436), 210 Church Leys, Tye Green, Harlow, Essex. *ent., mic.*
- RUDLAND, W. L., F.R.E.S. (249), 452 Hythe Road, Ashford, Kent. *H., L., ML.*
- RUFUS, A. M. (2625J), 55 Ingrebourne Gardens, Upminster, Essex. *L.*
- RUSSELL, P. J. (2742), Brook House, Bramber, Nr Steyning, Sussex. *L.*
- SADLER, E. A. (2966), 1 Farm Cottages, Knowle Lane, Cranleigh, Surrey. *L., ML.*
- SAUNDBY, Air Marshal Sir R., H.M.S., I.C.B.E., C.B., M.C., D.F.C., A.F.C., F.R.E.S. (1817), "Oxleas," Burghclere, Nr Newbury, Berkshire. *L.*

- SCOTT, D. W. (2783J), 200 Wheeler's Lane, King's Heath, Birmingham, 14, Warwickshire. *C., L., O., T.*
- SCOTT, W. H. (1403), 119 Teignmouth Road, Selly Oak, Birmingham, Warwickshire. *R.*
- SEACOMBE, R. J. (2692), 59 East St Helens, Abingdon, Berkshire. *L.*
- SEARS, Mrs J. (3222), 38 Chalky Bank, Gravesend, Kent. *C.*
- SEED, D. B. (2822), 22 Rufford Avenue, Yeadon, Nr Leeds, Yorkshire. *L.*
- SHANNON, R. T. (2334), Chief Post Office, Palmerston North, New Zealand. *L.*
- SHAW, J. P. (1240), Box 390, Blackfoot, Idaho, U.S.A. *ent.*
- SHEARER, V. B. (2827), 55 Perham Road, London, W.14. *R.*
- SHEEN, B. E. (2596), "Croft," Luxulyan, Bodmin, Cornwall. *L.*
- SIDE, Mrs A. G. (2322), 107 London Road, Stone, Dartford, Kent. *ent.*
- SIDE, K. C. (2140), 107 London Road, Stone, Dartford, Kent. *C., D., ent.*
- SIGGS, L. W. (243), "Sungate," Football Green, Minstead, Nr Lyndhurst, Hampshire. *L.*
- SILLS, P. (2173), 67 Heygate Avenue, Southend-on-Sea, Essex. *ent., L.*
- SILVERSIDE, A. J. (3392J), 68 Charlton Road, Gidea Park, Romford, Essex. *C., L.*
- SIMPSON, K. F. (3007), 8 St John's Road, Shanklin, Isle of Wight. *C.*
- SINCLAIR, M. (3212), 1 Market Place, North Berwick, East Lothian, Scotland. *C., D., Hem.*
- SKARRATT, R. J. M. (3144), 265 Prestbury Road, Cheltenham, Gloucestershire.
- SKINNER, B. F., *Hon. Meetings Secretary* (2470), 85 Elder Road, West Norwood, London, S.E.27. *L.*
- SKINNER, H. (3416), Avenida Alfredo Jahn, Edificio Los Angeles Apt. 2, Los Palos Grandes, Estado Miranda, Venezuela. *L.*
- SKREEN, E. B. (2441), Box 9, Bondi P.O., Sydney, Australia. *L.*
- SLATER, M. J. (3089J), 71 Parkhill Road, Bexley, Kent. *L.*
- SMALE, W. S. (3208J), 58 Woodcote Grove Road, Coulsdon, Surrey. *L.*
- SMART, M. J. (3377), 211 Pope's Lane, Ealing, London, W.5. *D.*
- SMITH, Squadron-Leader A. E. (2136), 9 Westfield Road, Barnehurst, Kent. *L.*
- SMITH, C. G. (3376), 105 Evelyn Drive, Pinner, Middlesex. *L.*
- SMITH, D. H. (2864), "Somerdale," Welton Road, Brough, Yorkshire. *C., D., ent., H., Hem.*
- SMITH, E. F. (3288), Millbrook Grammar/General Boys' School, Green Lane, Maybush, Southampton, Hampshire. *L.*
- SMITH, E. K. (178), 15 Salisbury Road, Andover, Hampshire. *L., veterinary ent.*
- SMITH, Mrs G. A. (3481), "Upper Craig," Golfa, Welshpool, Montgomeryshire, Wales. *ML.*
- SMITH, L. E. N. (3058J), 188 High Street, Harborne, Birmingham, 17, Warwickshire. *C., L., O.*
- SMITH, N. D. (3197J), 120 Leslie Road, Sherwood Rise, Nottingham, Nottinghamshire.
- SMITH, R. E. (3420), 50 Forest Glade, Highams Park, London, E.4. *R.*
- SNEATH, D. (2857J), 33 Brabazon Road, Oadby, Leicestershire. *L.*
- SNOWDON, J. H. (3070J), Wesley Manse, Micklow Lane, Loftus, Saltburn, Yorkshire. *L.*

- SOULSBY, D. M. (2984J), 29 Downs Road, Epsom, Surrey. *L.*
- SOUTHVILLE BOYS' INSECT CLUB (1567A), c/o G. E. Lovell, Southville Secondary School, Ashton Gate, Bristol, 3.
- SPEED, H. (3322), 8 Forest Grove, Stockton Lane, York, Yorkshire. *D. (and parasites).*
- SPEIGHT, M. C. D. (3044), 28 Richmond Wood Road, Bournemouth, Hampshire. *Col., Hem., L.*
- SPENCER, M. (3147), 66 Salisbury Road, Luton, Bedfordshire. *L.*
- SPENCER, S. (3460J), "Foxholes," Golf Links Road, Ferndown, Nr Wimborne Minster, Dorsetshire. *L.*
- SPILLING, C. R. (3216J), 105 Catherington Lane, Horndean, Hampshire. *L.*
- SPITTLES, C. E. (1483), 95 Tring Road, Aylesbury, Buckinghamshire. *L.*
- SPOCZYNSKA, Mrs J. O. I. (751), 89 Harlestone Road, St James', Northampton, Northamptonshire. *L.*
- STAINES, L. R. (3238J), 13 Tudor Road, Lower Edmonton, London, N.9. *L.*
- STALLWOOD, B. R., *Hon. Assistant Treasurer.* (1547), 17 Claremont Avenue, Sunbury-on-Thames, Middlesex. *L., O.*
- STEEL, J. B. (2162), Appletree Cottage, Edgerton Close, Eastcote, Pinner, Middlesex. *L.*
- STIDSON, Engr-Capt S. T., R.N., J.P., F.R.E.S., M.S.B.E. (40), "Ashe," Ashburton, Newton Abbot, Devonshire. *L.*
- STOKES, Captain G. E. (319), 74 Oakley Road, Caversham, Reading, Berkshire. *L.*
- STOKES, T. (3134J), 25 Albion Street, Chipping Norton, Oxfordshire. *L.*
- STONE, P. (2961), 615 London Road, Westcliff-on-Sea, Essex. *L.*
- STOREY, W. H. (277), "Fairstead," Long Road, Cambridge, Cambridgeshire. *L.*
- STUART, A. N. (2633), 4 Drake Road, Tavistock, Devonshire. *ent., L.*
- STUBBS, T. A. (3047), Garden Flat, 13 Worcester Terrace, Bristol, 8. *ent., L.*
- SUFFIELD, N. L. (1157), "Eureka," Seaham Road, Dalton-le-Dale, Murton, Co. Durham. *ent.*
- SUTTON COUNTY GRAMMAR SCHOOL (3476A), Manor Lane, Sutton, Surrey. *b., bot., ent., nh.*
- SUTTON, F. R. (538), 20 Lyford Road, Wandsworth, London, S.W.18. *L.*
- SUTTON, G. R. (237), 6 Kenilworth Gardens, Loughton, Essex. *C., L.*
- SWAIN, J. R. (3366), 38 Chestnut Road, Tottenham, London, N.17. *ent.*
- SWAIN, S. W. (2646), 262 Longfellow Road, Worcester Park, Surrey. *L.*
- SWAN, J. M. A. (2178), Dept of Plant Ecology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada. *ent., L.*
- SWEETLAND, J. R. (3478J), 2 Caledonia Road, Stanwell, Staines, Middlesex. *H. (Formicoidea), L.*
- SWINDELLS, R. J. (2619J), 12 Hawthorn Road, Wallington, Surrey. *L., O.*
- SWINDELLS, V. F. (2712J), 12 Hawthorn Road, Wallington, Surrey. *C., L.*
- SYMES, R. G. (3449), 58 Seymour Avenue, Bishopston, Bristol, 7. *C., ent.*
- SYMMONS, P. (3227J), "Darrsfield," Sutton, Nr Pulborough, Sussex.
- SYMONS, P. N. (3379J), 45 Lyonsdown Avenue, New Barnet, Hertfordshire. *L., mic.*

- TALBOT DE MALAHIDE, Lord (384), Malahide Castle, Dublin, Co. Dublin, Eire. *L.*
- TATHAM, C. J. (3178), 102 Chaveney Road, Quorn, Nr Loughborough, Leicestershire. *C., L.*
- TAYLER, A. G. (433), Whiteshoots Hill, Bourton-on-the-Water, Cheltenham, Gloucestershire. *ent.*
- TAYLOR, A. J. (3275), 50 Rothwell Road, Gosforth, Newcastle-upon-Tyne, 3, Northumberland. *L.*
- TAYLOR, C. J. (3239), 25 Nile Road, Perridge Vale, Port Elizabeth, South Africa. *L.*
- TAYLOR, G. B. (2016), 7 Candover Close, Harmondsworth, West Drayton, Middlesex. *L.*
- TAYLOR, H. T. (1943), 29 Mill Drove, Bourne, Lincolnshire. *L.*
- TAYLOR, L. R. (441), 5 The Manor, Rothamsted, Harpenden, Hertfordshire. *L.*
- TAYLOR, P. G., B.Sc., F.R.E.S., *Hon. Bulletin Editor* (719), International Language Club, 12 Park Hill Road, East Croydon, Surrey. *b., books, e., ent., L.*
- TEBBS, H. F. (1897), 38 Cavendish Street, Peterborough, Northamptonshire.
- TEMPLETON, R. (3395), 14 Ellisland Crescent, Spittal, Rutherglen, Nr Glasgow, Lanarkshire, Scotland. *L.*
- THACKER, R. (2978J), 3 Elm Close, Warlingham, Surrey. *L.*
- THEOBALD, J. R. (3125), 43 Strafford Gate, Potter's Bar, Middlesex. *C., Eph., L.*
- THIMANN, R. G. (2924), 53 Burlington Road, Sherwood, Nottinghamshire. *C., L.*
- THOM, C. F. (2080), 92 Startford Road, Stroud, Gloucestershire. *L.*
- THOMAS, A. N. (2687), 76 Grayswood Avenue, Coventry, Warwickshire. *L., M.L.*
- THOMPSON, F. T. (2532), 61 Park View, Kettering, Northamptonshire. *L.*
- THORN, Miss B. (3367), 16 Springfields, Broxbourne, Hertfordshire. *L.*
- THORNE, K. J. (3055J), 22 Crabtree Avenue, Hollingbury, Brighton, Sussex. *L.*
- TIDD, P. A. (3414J), "Bernfels," 8 Lime Grove, Grantham, Lincolnshire. *L.*
- TISBURY, W. J. (2717), 208 Soho Road, Handsworth, Birmingham, 21, Warwickshire. *L., p.*
- TODD, A. (1197), Wesley Villa, Thornley, Co. Durham. *ent.*
- TONGE, D. A. (2974J), 5 Market Place, Chapel-en-le-Frith, Via Stockport, Lancashire. *C., L., O.*
- TOZER, D. (36), 98 Copdale Road, Leicester, Leicestershire. *C., L.*
- TREBILCOCK, G. D., *Hon. President and Hon. Treasurer* (2976), 42 Normandy Avenue, Barnet, Hertfordshire. *L.*
- TREDWELL, N. (3332J), 39 Rowlings Road, Weeke, Winchester, Hampshire. *ent.*
- TREGLOWN, J. P (3422), The Humphry Davy Grammar School, Penzance, Cornwall. *ent., p.*
- TREGLOWN, Miss M. (3407), 104 Streetly Lane, Four Oaks, Sutton Coldfield, Warwickshire. *L.*
- TRIBBECK, R. A. (1322), Dept of Chemistry, North Staffordshire Training and Technical College, Stoke-on-Trent, Staffordshire. *C., ent.*

- TRIGG, P. H. (3271J), 10 Beechwood Crescent, Bexleyheath, Kent.  
*L., mic.*
- TROUGHT, T. (1373), Brookland, Tysoe, Warwickshire. *L.*
- TUPPEN, J. R. (2780), 4 Maclagan Road, Bishop Thorpe, Yorkshire. *L.*
- TURNBULL, J. (3429J), 71 Albert Terrace, Wolstanton, Newcastle-under-Lyme, Staffordshire. *ML.*
- TURPIN, R. St. G. (3480J), Fordbridge House, Ashford, Middlesex.  
*C., L.*
- TUTON, A. J. (2639), 4 Askham Field Cottages, Askham Bryan, Yorkshire. *L. (Saturniidae), ML.*
- TYLER, P. A. (2476), 16 Powderham Crescent, Exeter, Devonshire.  
*ent., L.*
- UFFEN, R. W. J., F.R.E.S., *Hon. General Editor* (1660), 4 Vaughan Avenue, Stamford Brook, London, W.6. *D., L., ML.*
- VARDY, C. R. (1414), "San Martino," Rushington Lane, Totton, Hampshire. *ent.*
- VENTON, D. C. (3305J), 168 Goddington Lane, Orpington, Kent. *L.*
- VIGAY, J. F. (1554), 30 Norman Road, Thornton Heath, Surrey. *ent., H., p.*
- VINCENT, J. F. V. (3027), 23 Heath Rise, Brixham, Devonshire. *C., L.*
- VINCENT, P. S. (2192), 19 Rowan Close, Mile Oak, Portslade, Sussex.  
*Saturniidae.*
- WACHER, P. B. (2006), Petham House, Petham, Nr Canterbury, Kent.
- WADDINGTON, L. G. F. (169), 9 Greenlea Avenue, Wheatley Hills, Doncaster, Yorkshire. *L.*
- WADE, D. (1104), 17 Waldegrave Avenue, Holderness Road, Hull, Yorkshire. *L.*
- WAKELY, S. H. (1860), 26 Finsen Road, Ruskin Park, London, S.E.5.  
*L., ML.*
- WAKEMAN, M. (3126), 28 Sandfields Road, Warley, Oldbury, Birmingham, Warwickshire. *ent., O., Orth.*
- WALDER, G. J. (3335J), 144 Pickford Lane, Bexleyheath, Kent. *L.*
- WALFORD-HUGGINS, A. P. (3076), 23 Pawis Square, Brighton, 1, Sussex.  
*L.*
- WALL, L. J. (3308), Bridge Park, St Andrew's Road, Par, Cornwall. *L.*
- WALLER, E. C. (2449), 81 Greenhill Main Road, Sheffield, 8, Yorkshire.  
*L.*
- WALLIS, B. M. (1832), Kennel Cottage, Madnon, Penzance, Cornwall.  
*L.*
- WALSH, T. H. (3183J), 116A Grenfell Road, Maidenhead, Berkshire. *L.*
- WALTER, P. W. R. (1493), "Clifflyn," 1 Dan Y Craig Avenue, Newton, Porthcawl, Glamorganshire, Wales. *L.*
- WALTERS, N. (3211J), "Cranston," 4 Crawley Close, Guildford, Surrey.  
*L.*
- WALZ, F. H. (2139), Reconquista 453, Buenos Aires, Argentine.
- WARDROPE, J. (2608), Curator, Museum of Natural History, Viewfield Terrace, Dunfermline, Fifeshire, Scotland. *C., L.*
- WARNE, A. C. (3301J), "Conifers," Abington, Cambridgeshire. *ent.*
- WARWICK COUNTY MUSEUM (1773A), The Curator, The Market Place, Warwick, Warwickshire.
- WASHINGTON, R. (3386), 11 Highfield Second Avenue, Stockton Brook, Stoke-on-Trent, Staffordshire. *L.*
- WATERS, A. P. (2615), "Beverley," West Bank, Dorking, Surrey. *L.*

- WATKINS, S. S. A., B.S.C., M.I.E.E. (1728), 168 Burbage Road, London, S.E.21. *D.*, *ent.*, *L.*
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 WYATT, J. H. (2985), c/o 13A Wellswood Park, Torquay, Devonshire. *Saturniidae, Sphingidae.*  
 WYNNE, E. G. (3428), 8 Henley Avenue, Connah's Quay, Chester, Cheshire. *C., Orth.*

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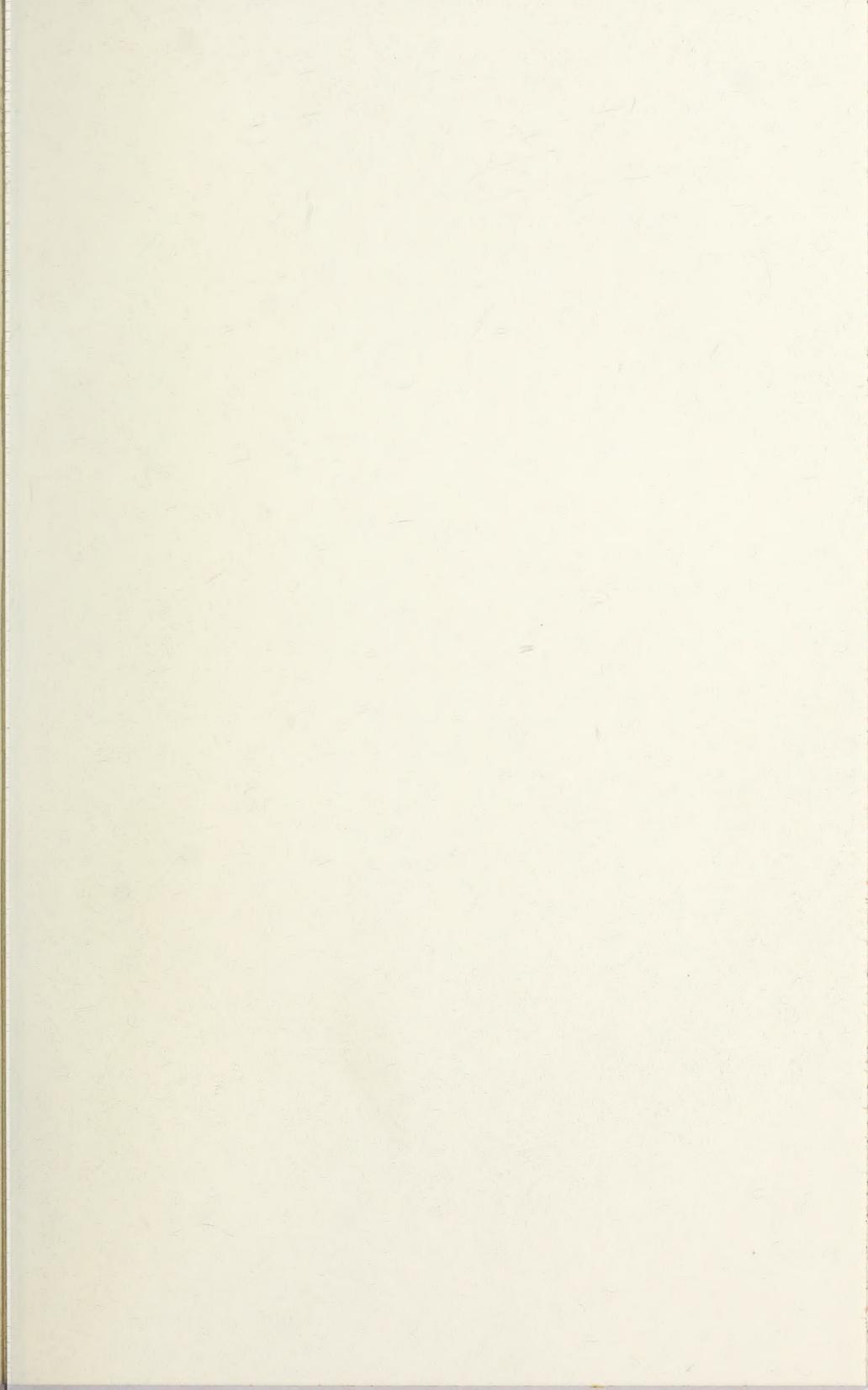
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