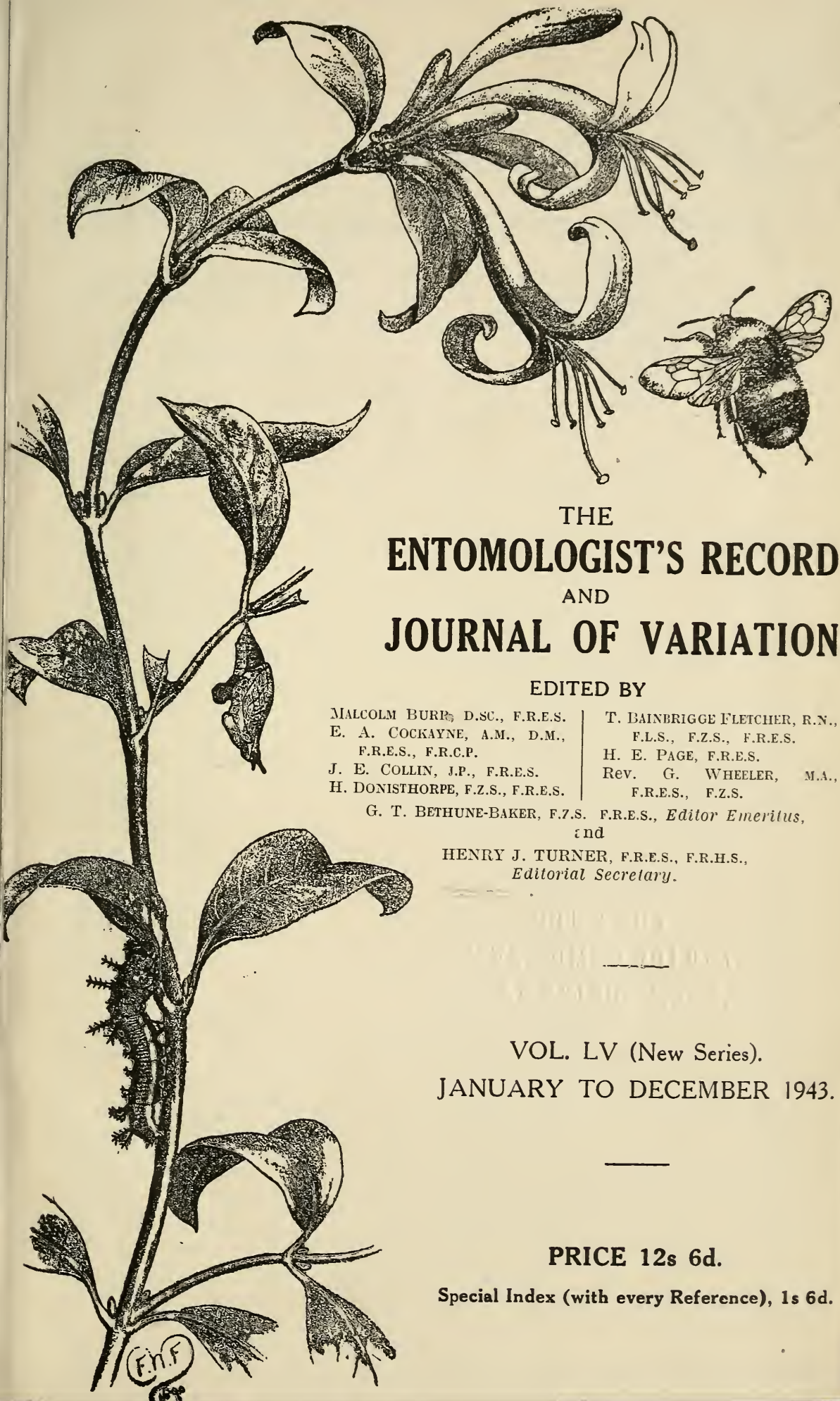


THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

EDITED BY

VOL. LV (New Series).
JANUARY TO DECEMBER 1943.

PRICE 12s 6d.

Special Index (with every Reference), 1s 6d.

SPECIAL INDEX.

By Hy. J. TURNER, F. R. E. S., F. R. H. S.

VOL. LV. (New Series), 1943.

The Entomologist's Record and Journal of Variation.

Coleoptera arranged in order of Genera. The other Orders arranged by Species. Genera, Species, etc., new to Britain are marked with an asterisk, those new to Science with two asterisks.

COLEOPTERA.

DIPTERA.

HEMIPTERA.

HYMENOPTERA.

LEPIDOPTERA.

ODONATA.

ORTHOPTERA.

MISCELLANEOUS.

CORRECTION IN INDEX.

Lees, Frank H., for 45 read 115, p. 156

Vol. LV.

No. 1

JANUARY 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This Number, Price TWO SHILLINGS (net).

The Entomologist's Record
AND
Journal of Variation.

VOL. LV. 15TH JANUARY 1943. No. 1.

SUBSTITUTE FOODPLANTS.

By P. B. M. ALLAN, M.A., F.S.A.

Mr Wiltshire's supplement to my note on this subject (*Ent. Rec.*, liv, 63) is interesting, though I fear he must have read my first three sentences somewhat cursorily. The common element in the scents secreted by congeneric plants *might* be capable of chemical analysis; but since the scents of congeneric plants may well be isomers, the task of the analyst would be a somewhat laborious one. Not only can the addition of a single carbon atom to the molecule alter a scent so radically that our own imperfect olfactory organs can readily discern the difference (e.g. camphor, cedar, musk and civet), but a different grouping of the atoms in the molecule sometimes has the same effect (e.g. bisaboline (bergamot), zingiberine (ginger), and selinine (celery)).

Possibly all biochemists may not agree with Mr Wiltshire when he says that "the texture of the leaves of a plant is the merest detail compared with something that has its roots in the common associated evolution of plant and insect." Even the differences between the upper and lower parenchymata of the same leaf are of vital importance to many larvae. Look at the structure of an average leaf, e.g. *Populus nigra*, L., in transverse section. On the upper surface there is first of all an outer single layer of cells, the epidermis. The external wall of each of these cells has become thickened and hardened and forms a cuticle, a protective covering in fact. Beneath this is a layer of palisade cells arranged like a series of bricks on end. These are closely packed together with no spaces between them. Beneath these again is the spongy tissue, a mass of irregularly shaped cells several layers thick, separated from one another by large spaces full of air and water vapour. These spaces open on the under surface of the leaf by means of valves, the stomata. In the spongy tissue are the veins which carry water and mineral salts in solution from the roots. By osmosis water passes from these veins into the spongy tissue and to the spaces between the cells.

To the emergent larva the difference between the upper palisade cells and the lower spongy tissue must be very marked. Unless it is specialized for the purpose the larva may well find it impossible to penetrate the hard upper cuticle with its jaws. In the case of those species whose larvae, in the first stadium, eat the lower parenchyma of deciduous trees and shrubs it is the maxillae which do most of the work; for the shape of the labrum prevents the mandibles from doing much more than tearing the surface of the leaf sufficiently for the maxillae to chew it. It is only in a later stadium, when the larva begins to eat the edge of the leaf, that the mandibles play the chief role in feeding, the notched labrum serving to hold the edge of the leaf in position so that the mandibles can bite across the leaf effectively, the maxillae holding the leaf

when the mandibles are open in addition to continuing with their task of chewing.

Thus the hard upper cuticle may present a formidable obstacle to the infant larva. The lower parenchyma, on the other hand, presents no such difficulty, and the spongy tissue is open soft stuff, with lots of that most vital necessity for a larva—water. Larvae of *Pheosia tremula*, Clerck, confined to the upper side of a Black Poplar leaf will die of starvation; if placed on the upper side and left to their own devices they will crawl to the underside. At least that has been my experience on several occasions.

There is another and most important point. The palisade cells contain different proteins from those found in the spongy tissue. Therefore, even if the emergent larvae of certain species are able to eat the wrong parenchyma they will, presently, die, because they secrete enzymes which are specialized for the digestion of the proteins of one particular parenchyma only.

This matter of substitute foodplants is not at all a simple matter, and very much more than an " ancestral essence " is concerned. Thorpe (1929) concluded from biological, genetic, and morphological evidence that there may be two or more biological races within a single species, each race selecting a particular foodplant. Craighead has shown that when a species has been reared for several generations on one of several alternative host plants, the progeny will tend to select the same host plant on which they were reared. Thus the much larger question of adaptation may here be sometimes involved. It is quite possible that there may be various strains of a particular species in a particular locality, some strains feeding upon one host plant, others upon others. I suspect, from various observations over several years, that this is, sometimes at least, the case with *Geometra papilionaria*, L. On the other hand, I have found larvae of *Notodonta dromedarius*, L., on adjoining bushes of alder and birch which may or may not have derived from the same moth.

It is also possible, as Chapman (1931) points out, that in any given species there may be many heterozygous strains with all the possible combinations of host plant preferences. If this is the case, there may be a selective action of the environment in eliminating all the progeny which have a tendency to choose other host plants than those upon which they hatch. This would lead to the progeny which survive choosing again the same host plant on which they were reared.

In parenthesis, I may point out here that the nutritive value of the different parts of a leaf vary greatly and, what is more, it may vary from one hour of the day to another, depending upon whether the contents of the leaf are essentially starchy or higher in proteins. Thus a " substitute foodplant " might be a congener of which the leaves have the identical nutritional value at the particular time of day when the larva feeds as have the leaves of the customary foodplant.

The ecological side of the matter, which Mr Wiltshire rightly stresses, is also highly involved; for it is the chemical constituents of its immediate surroundings no less than of its food which constitute the strongest bond between a larva and its environment. Water is of vital importance to an animal which contains it to the extent of some 80 per cent. of the total body weight, and the state of the water in any given habitat

depends upon the electrically charged particles (ions) of its molecules that give it acidity or alkalinity. The body of the larva must be attuned to the HP of its environment no less than to that of its foodplant. This may well be one of the reasons why a larva eschews in one habitat a foodplant which it devours in another.

Mr Donisthorpe's note (*Ent. Rec.*, liv, 87) is particularly interesting, since beetles preceded moths—and flowering plants—by some two hundred million years. So there can be no question here of "something that has its roots in the common associated evolution of plant and insect."

"AN ARTIST'S NOTE."

May I, with a lifetime's experience of book-production and book-illustrating, add a few words to Mr Siviter Smith's interesting article under the above heading? His descriptions of the modern processes, photo-litho and half-tone, are very good; but he omits mention, plainly on the score of expense, of the only two modern processes which are satisfactory from the *scientist's* point of view. The half-tone three or more colour process, while satisfying artistic requirements, can never hope to be a success where scientific work is concerned, because its basis, as Mr Siviter Smith so lucidly explains, is photography through a fine metal screen. This results in the colour being deposited on the paper in dots. Therefore lines must always be reproduced by a series of dots.

Perhaps the best entomological illustrations recently produced by this process are the plates in Mr Frohawk's *Complete Book of British Butterflies*. But look at any of these plates through a lens: you will see that the reproductions are composed of coloured dots and that no structural *details* appear. The antennae are represented by rows of dots. So these beautiful illustrations serve one purpose only—identification by the naked eye. To the man of science who wishes to examine the anatomical structure of an insect through a lens they are valueless.

Lithographic work *can* be very good indeed; but, as Mr Siviter Smith points out, the modern photo-litho process has none of the fineness of detail obtained by hand work. Some years ago, when I was touring the Continent, visiting every engraver of repute, I watched that great lithographer Guhl of Frankfort printing from stone in seventeen colours. The result would have been mistaken by many for an original pastel portrait. But the weakness of hand work, so far as entomology is concerned, is that the reproduction is of an artist's drawing, not of an actual insect; consequently, the accuracy of the reproduction depends entirely on the fidelity of the artist's work, that is to say, on the likeness of his drawing to the insect drawn. That is why the illustrations in Barrett's eleven volumes vary so much in quality. The same applies to aquatint, which was the process employed in Humphreys' and Westwood's books.

The two processes to which I referred at the beginning of this note are colour-gravure and coloured collotype. Up to some fifteen or so years ago (I do not know what the position is to-day) the only firm in this country possessing the (German) colour-gravure machine was the Sun Engraving Company of Watford. This firm once reproduced for

me a water-colour drawing by David Cox so accurately that it was quite difficult to distinguish the original from the reproduction, even with a lens. So far as I remember, the proofing and preliminary work on the copper, before any printing was done, cost me £64. Perhaps this was because I was very exacting. The size of the engraved surface was about 10 × 7 in. Since no screen is used, and even the finest of lines are etched on the copper, this process is as near perfection, from the scientist's standpoint, as we can come at present.

Colour-collotype, when produced by an artist who is given a free hand and no price stipulated, is also excellent. But it is exceedingly difficult, and now that Donald Macbeth is dead I do not know of anybody in this country who is capable of doing it really well. The gelatine film from which the printing is done is affected by every change of weather, and when six or more colours are used (each colour having to be printed in the same atmospheric condition as regards humidity and aridity and temperature) it can be imagined that neither time nor expense must be the essence of the contract. I once produced a crown quarto book for a member of the Royal family in which the illustrations were in seven-colour collotype, and I think the cost worked out at about 2s 6d for each pull of each plate. The subjects were painted silk and fine goldsmiths' work, and the results were very good indeed.

These two processes obviously cannot be considered where cost is a matter of moment; but an entomologist of means who wishes the illustrations in his book to depict the actual insect with the greatest possible fidelity would do well to consider them. Perhaps I may add in this connection that publishers usually go the wrong way about in producing a *de luxe* book. They tie the printer and engraver down to estimates and consider how they can save a shilling here and a shilling there. The wise producer of *editions de luxe* does exactly the opposite: he spends *as much as possible* on the production; then—and not before—fixes the published price, with strict regard to his market (which he has previously been at some pains to assess and locate). When I was in business I produced several books at twenty guineas each. One of them, I remember, was over-subscribed months before publication. It cost me about three thousand pounds to make, and the profit exceeded a thousand. On another occasion I paid an artist (a Royal Academician) £600 for decorating a book, and got my money back with interest. There is "always room at the top," and a magnificent book will always *command* a market. The producer of expensive books who counts the cost first of all and keeps every expense down as low as possible is likely to burn his fingers—perhaps very badly. The rich artistic world is a discerning one.

As I greatly dislike personal publicity I trust that you will allow me to subscribe myself "An Old Book-maker."

CUCULLIA SCROPHULARIAE IN BRITAIN.

By E. A. Cockayne, D.M., F.R.C.P., F.R.E.S.

Mr A. J. Wightman in the December issue asks for evidence that *C. scrophulariae*, Capieux, is a species distinct from *C. verbasci*, L., and *C. lychnitis*, Rbr. I think he will be convinced that this is so if he

reads the excellent article by G. Durand in *Lambillionea*, 1933, **33**, 124, from which the following statements are taken. The young larvae of *scrophulariae* and *verbasci* are dusky blue, duller than those of *lychnitis*, which are yellow. The ground colour of the adult larva of *scrophulariae* is bluish or greyish-blue, that of *verbasci* bluish, and of *lychnitis* yellowish-green. In *verbasci*, apart from the main pattern there are numerous little black dots and transverse lines, which are not present in the other two species. The black dorsal transverse marks meet in the middle line in *lychnitis*, but do not meet in *scrophulariae*, so that in this species there is an uninterrupted longitudinal line of ground colour clearly visible.

Mons. Durand kindly sent me some larvae of *scrophulariae* from Bourg-sous-La Roche, and in some of them the black dorsal marks did meet, so that this character is not constant. I noticed, however, that in all of them there was a dark grey transverse line at the intersegmental junction of the abdominal somites, lying a short distance in front of the black dorsal marks. Unfortunately, it is difficult to see in the living larva, though very obvious in the blown one. It is a very valuable means of differentiating between the larvae of these two species.

Durand discusses the biology of the three species. In Vendée the larvae of *verbasci* and *scrophulariae* are full grown in June, or even in May, though late ones may be found up to the end of July, whereas those of *lychnitis* are much later and are found full grown in August and September. He believes that the food-plant of *scrophulariae* is invariably *Scrophularia aquatica* or *S. nodosa*. Berce records *Verbascum blattaria*, but Durand has never been able to find a larva on any species of *Verbascum*. The larva of *lychnitis* prefers *Verbascum nigrum*, but will eat other species, and is not infrequently found on *Scrophularia nodosa*; that of *verbasci* eats various species of *Verbascum* and *Scrophularia aquatica*, and sometimes feeds on *S. nodosa*.

He says that imagines of *scrophulariae* have a brownish colour, more like that of *verbasci* than *lychnitis*, which is grey, and that Culot has rendered it admirably in his Noctuelles. All three species are recognisable, but only when they are in perfect condition and recently bred. Boursin, who has studied the genus very carefully, also says that he can distinguish the imago of *scrophulariae* from that of either of the other two. In general appearance it is more like *lychnitis* than *verbasci*. The genitalia are too much alike to be of great assistance. It may be true that dealers have often sent continental larvae and imagines of *verbasci* and *lychnitis* as *scrophulariae*, but this is no proof that the latter does not exist. Many years ago Staudinger and Bang-Haas sent me a blown larva of *scrophulariae*, which I put aside as *lychnitis*, but on examining it again after I had received living larvae from Mons. Durand I found the characteristic grey intersegmental line of *scrophulariae*. As in my case, mistakes may have been made by the recipients and not by the dealers.

I will now consider the status of *scrophulariae* as a British species. There seems to me to be no doubt that the four larvae figured by Buckler (vol. vi, pl. xcvii, and described on page 68) are genuine *scrophulariae*. They are the right colour and the continuous dorsal longitudinal line of ground colour between the black marks is very distinct, and in

one it is very wide. The faint blackish transverse lines are probably due to the method of reproduction and represent folds of skin and not pigment. They were found on *Scrophularia nodosa* with a number of others and were full grown in early July 1867. Doubleday sent them to Buckler and presumably the series in his collection, all unlabelled, was bred from the larvae he kept. Tutt had a series of reputed *scrophulariae*, bred from larvae taken by him at Cuxton on *S. nodosa*. As he had Buckler's figures to guide him, it is probable that they were correctly identified. The imagines are rather larger than the average *lychnitis*. The old records from the Breck sand may be correct, but proof is lacking.

Mr A. J. Wightman says "we have not an iota of proof that *C. scrophulariae* is a good species." I hope this will convince him and other sceptics that we have ample proof that it exists and has occurred in Britain.

NOTE ON MR WIGHTMAN'S ARTICLE ON CUCULLIA SCROPHULARIAE.

By T. Bainbrigge Fletcher, F.Z.S., F.L.S., F.R.E.S.

It seems to be one thing to affirm or deny the occurrence of *Cucullia scrophulariae* in Britain, regarding which I state no opinion, and quite another to deny, as Mr Wightman apparently does, the existence of a definite species known as *Cucullia scrophulariae*. In this Mr Wightman is in opposition to the whole body of students of Lepidoptera outside the insular boundaries of the "British List."

In 1775 Schiffermüller (*Schmett. Wien*, p. 312, footnote) referred to a "*Noctua scrophulariae*" but gave no description beyond saying that its larva was distinguishable by its mode of life and "some dorsal markings [durch . . . einige Rükkenzeichen]," so that his name cannot be accepted as valid. It seems doubtful whether Schiffermüller had bred or seen the moth of his caterpillar; anyway, Fabricius made no mention of it in redescribing the *Wien. Verz.* species for his *Mantissa* (1787). In 1801 (*Wien Verz.*, ed. ii, I, 219) Illiger merely repeated Schiffermüller's remarks and apparently did not know any more about any stage of the insect.

The first valid description of *Noctua scrophulariae* was apparently that by Johann Stephan Capieux in *Naturförscher*, xxiv, p. 91, No. 1, t. 3, ff. 1-4 (1789). Capieux lived at Leipzig. (*Vide* Hagen).

In 1826 (*Schmett. Eur.*, V, iii, 130-133, No. 19) Treitschke distinguished *Cucullia scrophulariae* from *verbasci* and stated that Capieux, of Leipzig, was the first to describe the larva more exactly and to figure it in the *Naturförscher*. Treitschke also quoted Esper's figure, Noct. 101, f. 4 [Vol. iv, tab. 180 (1793): in my copy this figure is boldly but crudely coloured and hardly determinable except as some species of this group of closely-allied species] and Hübner's figure, *Samml. Eur. Schmett.*, Noct., t. 55, f. 267, ♂.

Staudinger (*Cat. Pal. Lep.*, i, 214, No. 2222: 1901) quoted Capieux, Esper, Hübner, Treitschke, as well as Rambur, Duponchel, Freyer, Guenée, and added Tutt and Barrett.

Tutt (*Brit. Noct.*, iii, 114: vi, 1892) gave what (by the use of inverted commas) purports to be a translation of Treitschke's remarks, but which is nothing more than a condensed extract—and not too correct at that. Tutt says, for example, that Capieux found the larva "in shady places on *Scrophularia nodosa*": what Treitschke actually said was that Capieux "found it in mid-July in shady places on *Scrophularia aquatica*. At the same season [mid-July] and on the same plant [*S. aquatica*], but also on *Scrophularia nodosa* and on *Verbascum*, it is to be found around Vienna, always rather later than that of *C. verbasci*." Is Treitschke (at second-hand from Tutt?) the source of Mr Wightman's statement that "the original account of *scrophulariae* says it occurs near Vienna on *Verbascum* (Del. *Scharst.*, Vol. vi, pp. 131, 133)"? Possibly "Del. *Scharst.*, Vol. vi, pp. 131, 133," may be some *lapsus* for Treitschke's "Die Schmett [erlinge von Europa], Vol. v, Part iii, pp. 130-133; otherwise I cannot imagine what may be the reference intended, nor can I guess why the name *scrophulariae* should have been given in "the original account" to a species then known only "on *Verbascum*."

Barrett's description (*Lep. Brit. Isds.*, vi, 66-70, t. 238, ff. 2 ♂, 2a ♀, 2b *l.*: "1900") contains a deal of verbiage but little definite information and his very rough figures do not agree in size or general appearance with my Continental examples of *scrophulariae*, Capieux, and I should feel inclined to refer his figures 2 and 2a to *lychnitis*, Rambur.

Not having seen any English examples determined as "*scrophulariae*," I can express no opinion regarding their correct identification or as to the occurrence in England of the true *scrophulariae*, Capieux 1789, but of the latter I have Continental examples which agree well with the descriptions of Continental authors and which appear to represent a good species.

As for "an iota of proof as to *scrophulariae* being a good species," perhaps Mr Wightman would do well to refer to Culot's remarks on the differentiating characters of *verbasci* and *scrophulariae* (*Noct. Eur.*, ii, 109, t. 60, ff. 1 *verbasci* ♂, 2 *scrophulariae* ♂). Culot's remarks seem fully borne out on comparing my examples of *scrophulariae* (Continental) and of *verbasci* (English and Continental): the different colouration of the hindwing of the male, for example, is a character which at once strikes a distinctive note. Hering (*Tierwelt Mitteleuropas, Ergänzungsband I, Schmett.*, p. 462: 1932) differentiates *verbasci* as having "Fw. costa pure brown [rein braun]" whilst *scrophulariae* falls into the group having "Fw. costa brown but sprinkled with blue-grey or iron-grey": there is more sprinkling in *scrophulariae*, but the character "pure brown" for *verbasci* should not be taken too exactly *au pied de la lettre*. Spuler (*Schmett. Eur.*, i, 268: 16.iii.1907), distinguishing the two species, said that *verbasci* is more broadwinged and coloured more intensively yellow and has cilia more strongly indented than *scrophulariae*; in the former the Fw. costal shading hardly greyer in tone than that on dorsum, in the latter the costal stripe distinctly greyer than on the dorsal area.

In France also entomologists recognize the two species as distinct: see Lhomme's *Cat. Lép. France . . . Belgique*, i, 204, No. 518, *scrophulariae* [wrongly ascribed to Schiffermüller 1775], and p. 205, No. 519, *verbasci*, Linn. 1758, both species being stated to occur throughout France and almost everywhere in Belgium.

NOTES ON BRITISH NOCTUAE.

By A. J. Wightman.

Atethmia (*Cirrhoedia*) *xerampelina*.

1. It has been a dreadful season with me. I bred a few f. *unicolor*, Stdgr. (Gn.) of *xerampelina*, not in the least like South's figure, plt. 4, fig. 9, but more extreme than Barrett's fig., plt. 229, 3e. It was intense unicolorous red, the only pale markings being two fine ochreous white lines bordering the median area. Also I bred one nearly unicolorous deep yellow-red. I think that ab. *pallida*, Stdgr., is no more than a pale race of *xerampelina* and I hope to breed British examples.

2. Your var. *rufescens*, *Brit. Noct. Supp.*, vol. iii, p. 53, said to be a local race, occurs as a very local form in Sussex. It is the "Fr." of my list of British forms and quite distinct from *unicolor*, Stdgr., by reason of the blackish marking of which *unicolor* has only a trace.

Have the genitalia of *pallida*, Stdgr., been examined to give Wiltshire the idea it is a good species? [Not to my knowledge.—Hy. J. T.]

Dianthoecia (*Harmodia*) *capsophila*.

1. As regards *capsophila*, it is so well differentiated as to be a good ssp., but I think it has stations in Wales and some northern English localities.

As regards *ochracea*, it cannot be a subspecies, or even a race, but simply a pale form, especially plentiful in certain areas, but nowhere becoming more than a percentage of the *lepida* occurring, often a small percentage and found in areas where dark and typical *lepida* are dominant, in small numbers. Tutt treated it as a simple ab. (form) and this is certainly all it is.

Possibly our British *lepida* has a special facies, but to cover it we should need a name and description such as Lens employs.

2. Seitz, figure iii, plt. 18, labelled *capsophila* ♀, is the best figure I have seen of *bicruris* (*capsincola*); the shape of the abdomen is perfect. No *capsophila* ever approached such a shape.

I also think his figure on the same plate labelled *suffusa* is *andalusica* (*barrettii*).

Draudt's notes (Seitz., Supp., iii) revising Warren are very necessary and justified. My opinion of Draudt, with whom I have corresponded, some time ago, is that he is the brains of the revision and not Corti.

Mamestra abjecta, ab. *oblonga*, Haw. = *Apamea gemina*, ab. *remissa*.

1. In vol. ii, *Supp.* Notes to Tutt, you say of *abjecta* that Warr.-Stz. accepts *oblonga*, Haw., as the type of this species. Draudt follows, but Meyrick did not, and further that you do not think that Haworth's description of his single example of *oblonga* = *abjecta*.

I see Barrett under *gemina* says he examined Haworth's *oblonga*, still bearing his label in the collection of Sam. Stevens, where it then was, and that it is the *remissa* form of *gemina*.

This seems to me to clinch the matter and prove that both Hampson and Warren were careless as well as wrong.

ARCEDES (TINEA) PIERCELLA, BENCT., IN BRITAIN.

By S. Wakely.

This species is mentioned in *The Genitalia of the Tineina*, by F. N. Pierce and Rev. J. W. Metcalfe, where a short note to the genus *Arcedes* states: "Recently Count G. A. Bentinct has added a further species, *piercella*, which has been found feeding in Moles' and Jackdaws' nests. This species may occur in Britain. It resembles *fuscipunctella*, but has a lighter yellowish head."

Last winter, when tidying up my garden at Norwood, I decided to cut down a dead ash branch, containing an old woodpecker's nesting hole. House sparrows had been using this for a nesting site, and I kept the nesting material and debris hoping to breed out one of the more interesting species to be found in such situations. A daily watch was kept on the glass jar which I used, and in early spring I noticed specimens of *Borkhausenia pseudospretella*, Staint., *Endrosis fenestrella*, Staint., and *Monopis rusticella*, Hb. At the beginning of June another species started to emerge which appeared to be *Arcedes fuscipunctella*, but on seeing the pale yellowish head I remembered the note previously mentioned, and set them carefully—a score in all—intending to try and get them identified later. Accordingly I submitted specimens to Mr F. N. Pierce in the autumn, and after a careful examination of the genitalia he said they were undoubtedly *A. piercella*, and seemed to be a connecting link between *A. ganomella*, Tr. (*lapella*, Hb.) and *A. fuscipunctella*, Hw.

In my experience *A. fuscipunctella* is a house moth, and appears later than *A. piercella*, i.e., during the second half of June and onwards.

The paler head of *A. piercella* appears to be the most constant character to distinguish it from its congener, but it is also a decidedly paler species, which is particularly noticeable when a series of each species is placed side by side.

I should be interested to know if *A. fuscipunctella* has been bred from birds' nests, or whether this is a peculiarity of *A. piercella*.

COLLECTING NOTES.

Notes on Variation from the Worthing Museum (*Continued from Vol. liv, p. 135*).—*E. tithonus*.—The chief sources of variation in this species are the spotting and the colour and relative breadth of the bands on the underside hindwing; there is also some variation in the shade of the ground colour of the upper side. The normal spotting of both sides of the forewing consists of a bipupilled apical spot. English and French specimens generally show no spot on the hindwing, but one towards the lower margin is by no means uncommon. In a row from the North Downs only one ♀ shows this clearly and another indistinctly, while another has also a blind spot in the space above the pupilled one; a ♀ from Alton Barnes and all three from the Chilterns (two ♂s and a ♀) also show this spot as well as a ♂ from Ashurst near Worthing and another from the New Forest. In the matter of spotting, Tavistock

specimens are quite exceptional; apart from specimens of ab. *excessa*, of which there is a whole row, two ♂s and all the ♀s show this spot, though several ♂s are without it. All the ab. *excessa* except one ♀ from Alton Barnes are from this locality. The extra spots on both sides of the forewing vary from two in the spaces just below the apical spot, pupilled or unpupilled, to one small one both in ♂s and ♀s, though none of the latter are pupilled; but none of the hindwings show more than two on the upper side except one ♂ which has an extra one at the costa, which all but one show two below the apical spot on the underside. The hindwings on the underside usually show four white points, two near the costa and two near the lower margin, though the upper costal spot is not unfrequently wanting; one ♀ from Ashurst has a 5th spot above the two lower ones, which also occurs in some Tavistock ♀s, both normal and ab. *excessa*. The colour of the underside hindwings is far lighter in specimens from the N. Downs, and far darker in those from Tavistock than in others, the dark shade in the latter being also the brightest; those showing the most contrasted colouring come from Ashurst, as the light band is considerably lighter than in those from Tavistock. The ground colour of the upperside is lighter in ♀s from Alton Barnes and the Chilterns than in others.

In Switzerland, north of the Alps, this species is very local, though common in the few places where it occurs. All the ♀s in those north of the Alps, and both sexes in those south of the Alps (where it is common), as also those from Corsica and Italy, have a spot near the lower margin of the hindwing. The spotting of the hindwing on the underside is very inconspicuous in both the latter and also in those from Digne and Grésy-sur-Aix, and sometimes is quite wanting. The contrast in colour on the underside of the hindwing is much less than in English specimens, except in those from Corsica and Vernet; the light bands are narrow in Corsican and South Swiss specimens. The androconial bar is very inconspicuous, and indeed obsolescent in Italian ♂s. There is one ♀ from Digne with two tiny extra spots below the apical one. There is also an ab. *caeca* ♀ from S. Triphon, and a ♀ from La Granja with very light colouring.—(*To be continued.*)—Rev. G. Wheeler, M.A., F.R.E.S.

Form metallica of L. coridon.—I am pleased to know that my article, Vol. liv, pages 84-86, has aroused some interest. Owing to slipping into a ditch and bush in Monk's Wood, Hunts, in June 1899, both eyes were permanently injured. The left one was blind for very nearly a year. Since then I have not been able to use a microscope, hence in answer to Mr G. T. Bethune-Baker's enquiry, ante p. 104, I am unable to say whether the scaling of ab. *metallica* is abnormal. Some other forms of *coridon* were previously so examined and where essential I touched on the differentials of scalings, to a slight extent, in the *L. coridon* "Monograph," Bright and Leeds; but my work, as requested, was mainly confined to the superficial appearance as seen by the eyes. For some years only one eye in my case, and that accident followed another in the previous April which left a torn diaphragm and adjacent injury which prevents me from using a bicycle and thus limits my previous activities. The bleached specimens are microscopically very interesting, and I remember that in a patch on the upperside of *A. aglaia*

some long scales were twice arched.—H. A. Leeds, Wood Walton, Huntingdon.

Polyommatus (Lysandra) coridon and Ants.—(1) Regarding the "Correction" by Mr H. Donisthorpe, Vol. liv, p. 103, there is no doubt that *Formica rufa* cannot be a *general attendant* on the larvae of *L. coridon*. I have taken *coridon* under a short row of pine trees, where their food-plant, *Hippocrepis comosa*, was near; and also flying over heather some little distance from their food-plant, but do not know if *rufa* occurred there. I cannot now say from what source the information was obtained as all my notes, on hundreds of foolscap sheets, regarding *coridon* matters have been destroyed, and I shall be greatly obliged if someone can kindly tell me the species of ants which are *mostly attendants* of *coridon* larvae. During the last few years I have not visited any *coridon* locality.

(2) Respecting my statement in the article "so far as is known, the ants have no natural murderous inclinations against the *coridon* larvae or pupae." Although Mr Donisthorpe may have considered this "is of no value," his remark is valuable as it conveys a confirmation of my statement, and this together with his particulars of the protection afforded to the larvae of the "blues," adds to the interests of lepidopterists, who, like myself, have not the expert knowledge of ants. Most of us have a limited time for observation, and if those who have knowledge in the associations of *coridon* could investigate and work together, it might, perhaps, ultimately fathom the reason for the local extinction of *coridon*. The climax apparently ensues either at the end of the larval period or in the pupal stage, and may occur from disease, or from some other unknown source of destruction. My article was primarily written hoping that further investigation might ensue.

(3) I have received a letter which may be of interest and of warning. It is to the effect: That three female Black Hairstreak butterflies, *Strymon pruni*, were placed in a cage with blackthorn and privet, for the purpose of endeavouring to obtain ova. After a short time it was found that a quantity of ants had entered the cage, apparently attracted by the aroma of the privet flowers. Two of the *pruni* were dead, but one survived and was placed in an ant-proof receptacle, where ova were deposited, but they were infertile. The writer of the letter blames the ants for destroying the two dead ones. Proof as to what actually occurred, preceding the death, is wanting. They may have been executed, but without actually being attacked the butterflies may have been so disturbed by the ants' movements that death ensued through exhaustion or injury following frantic dashing about the cage. Breeding cages have to be well fitted to prevent spiders, etc., from entering and apparently the cage was defective in regard to this. The name of the ants, in this case, is unknown. The occurrence was at St Albans, Herts. —H. A. Leeds, Wood Walton, Huntingdon.

Late Emergence of Notodonta dromedarius.—Among a number of larvae obtained off birch on 23rd June 1941 were two *Notodonta dromedarius*. As these were practically full fed I placed them, on my return home, in separate chip-boxes so that they might spin up therein, but of course providing them with fresh leaves daily until this should hap-

pen. All went well, according to plan for the next few days, when one formed a cocoon by attaching some of the birch leaves to the side of the box; but during the previous night the other larva surprised me by escaping through a small crack in the lid which, judging from the size of the creature, I did not think possible. Notwithstanding a careful search I could not find it anywhere in the room, so reconciled myself to the fact that it was definitely lost. In due course, to be precise, on 23rd June 1942, and coincidently exactly one year after finding the larvae, a fine dark female emerged from the one that pupated in the chip-box. The escaped larva I had completely forgotten, nor was its existence recalled until 20th December 1942. That evening I was reading by the fireside when, suddenly, a shadow was cast across the pages of my book, and on looking up I perceived a stout-bodied moth flying quietly around the electric lights. I immediately imagined a hybernating *Scoliopteryx libatrix* enjoying a little exercise, but on the insect being netted I was surprised to find a Notodontid which caused some excitement in the family circle. Because of the date, we could not at first believe that it was only a *dromedarius*, but while discussing the occurrence my youngest son suddenly recollected the disappearance of the larva in June 1941. We then realized that the wanderer had returned under a new guise. Where it had pupated in the meantime remains a mystery. At any rate, the specimen is a splendid male in perfect condition, and the date of its emergence is surely quite remarkable. —J. F. Bird, Redclyffe, Walton Park, Clevedon, Som., 24th December 1942.

CURRENT NOTES.

In response to the urgent call for paper salvage one hopes that no one will destroy copies, especially old ones, of our scientific magazines, many of which contain a large amount of valuable technical information. To throw away knowledge and aught that contains it should be looked upon as a sin. Back numbers require room but some one, or some Society, would be only too glad to find space for such. Numerous libraries have been destroyed and will want such magazines and books of similar contents to restart their useful work. We have heard of much destruction already and feel we must protest against such even at any time. Some of the smaller scientific periodicals and records of Natural History Societies are most valuable assets to a locality, a county, even it may be to the country. We should be pleased to receive any back numbers of our own magazine, not for sale, but to replenish libraries such as Birmingham, Southampton, etc.

"All that mankind has done, thought, gained or been: it is lying as a magic preservation in the pages of books."—*Carlyle.*

of typical *lepida*, there is a difference in degree in the markings between the sexes as there is in size, the ♂ being the smaller. The fig., Hb. 89, *perplexa*, has markings similar but more emphasized than in the ♂ and less than in the ♀; all are luteous in ground colour. In Seitz the hindwings are almost uniformly dark grey with a luteous tinge, that of the ♀ slightly more intense for nearly the half of the hind-marginal area, but *perplexa*, Hb., has the hind margin very sensibly dark grey and has a black line running across the disc parallel with the inner boundary of the darker area. Form *ochracea*, Haw., plt. 17i, ♂ and ♀, are dark well-marked forms of the wholly luteous British race of *lepida*, the ♀ having the broad dark outer margin on the hindwing; the male has it hardly differentiated. Three other figures on plt. 17i are of the well-known f. *pallida*, Tutt, of our southern localities in varying degree of obsolescent marking. On plt. 18d are figures of ♂ and ♀ ab. *brunnea*, Tutt, which is the darkest form of ab. *ochracea*, Haw.

Warr.-Stz., *l.c.*, plt. 18d, e, described and figured the ssp. or sp. *capsophila*, Bdv. The names *nisus*, H.-S. (nec Germ.), *repanda*, H.-S., and *capsophoba*, Ramb., they considered to be synonyms. The very dark, almost black forms of this from Ireland and the Isle of Man were named *suffusa*, Tutt. On plt. 18d ♂ and ♀ *capsophila*, Bdv., were figured, and on plt. 18e ♂ and ♀ of the form *suffusa* were figured. I fail to see the difference in the figures; in fact the *suffusa* figured seems lighter than *capsophila* on account of the white emphasis of the latter's marking. They considered *capsophila* a good species.

Culot, *N. et G.*, I (1), 119, plt. 20, f. 18: 21, f. 1: 21, f. 2 (1911), gave three excellent figures: *carpophaga*, *capsophila*, and *ochracea*. The two last he considered as local forms = subspecies.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 102 (1931), on the sole (?) basis of the genitalia dealt with the two, *carpophaga* (*lepida*) and *capsophila*, to be a single species. They further said of the latter, "Ground colour is a deeper sepia-brown, stigmata and transverse lines interfilled with purer white, or have white edges." "The type(ical) form [*capsophila*] occurs in all possible sorts of transitions to *lepida*, in Germany, Switzerland, France, Spain, Italy, and in a somewhat sleeker varying form in Sardinia and eastwards to the Ili territory and Thian-shan" [sic]. They also refer to a "better" illustration of *capsophila*, *l.c.*, plt. 13b, from an Abruzzi (Central Italy) specimen (this figure is not on the plate as stated in the text), and described and figured a new form from Sicily, f. *sicula*.

The one factor of genitalia is practically identical in the two species, while all other factors for specific determination are in opposition. The habitats are different. No specimen of *lepida* (*carpophaga*) ever has white streaks and dots such as one always finds in *capsophila*. The brown of *capsophila* is a black-brown and never has the luteous coloration always present in *lepida* (*carpophaga*). The darkest *lepida* (*carpophaga*) always is luteous and never can be confused with *capsophila*. Therefore one must consider them either as being quite distinct species or that *capsophila* is a subspecies of *lepida* (*carpophaga*) so far removed as to be practically a true species. Examples from the areas whence comes *capsophila*, Isle of Man, N. Ireland, etc., never by any chance send out an example which can for a moment be taken for *lepida* (*carpophaga*). Nor, among thousands of *lepida* (*carpophaga*) bred by Mr Wightman

from many localities has there been a single example one could take for a moment to be *capsophila*.

It is impossible to give a definite independent judgment on this question of species, without material from all areas of their distribution, and without support of ample other characters. To base identity on the genitalic evidence alone without such support does not yet seem justified. That is, so far as the British Isles are concerned, we may consider there are two separate species, separable in every way but by genitalia.

Of the Variation Barrett said:

One phase of not infrequent variation consists in the obliteration of the usual markings, and in the South and East of England this is met with in varying degrees, until a form is reached in which the forewings are of a smooth, uniform pale ochreous, totally devoid of markings, or in which there is only a faint row of brown dots along the subterminal line; but every possible intermediate seems to exist, in some specimens the edges of the stigmata, in others portions of the lines and central bar, faintly showing themselves, and the extreme—devoid of all markings—being rather rare. In some of these the submarginal cloud of the hindwings becomes quite a dark band. All these seek to be included in a form known on the Continent as var. *ochracea*.

Another development, apparently confined to the chalk districts and coast, Kent and Sussex, has the ground colour white, or creamy white, usually with only the central markings, the hind margin being absolutely immaculate, even to the cilia; but more rarely with the chalky-white ground colour, all the markings are present, faintly grey-brown, and the hind-marginal region clouded with the same, all the usual warm yellow-brown tones of colour being absent.

In the South of Scotland a form is found having a tone of colour different from all those hitherto mentioned, the ground colour very pale dull brown with all the darker markings and cloudings deep umbreous, and the cloudings more extended; sometimes, indeed, the markings and centre of the band are almost blackened, and the costa often dotted with black-brown.

From this district northward, along the west coast more especially, various intermediate forms are found, having the ground colour sometimes ochreous, or yellow-brown, or pale brown, with all possible variations of shade of markings, which, however, are always more or less present, and usually very definite.

He reports specimens reared from Pembrokeshire coast, " specimens darker in every degree until the warm colouring of the ground colour is lost in a dull pale umbreous or whitish-brown, but the central dark band and the other cloudings and markings are deep rich brown, black-brown, and in one or two individuals nearly black, and so completely pervade the forewings that the paler ground is limited in some specimens to the upper stigmata, the subterminal line and the pale patch before the anal angle."

Another: " the pale patch of the anal angle is continued up and bent inward, so that it unites with the pale stigmata."

From the coasts of Ireland and the Isle of Man " as a supposed distinct species under the name *capsophila*." " The difference in tone of colour and in sharpness and darkness of markings is so great as to give

an impression of a different shape of the wings which, however, does not exist."

He describes var. *capsophila*: "In this last range of forms, the ground colour, when visible, is usually white or greyish white, more rarely pale greyish-umbreous or brownish-white; the upper stigmata are greyish-white; their margins, with the remainder of the central band, black-brown, dark grey or black, often deep black; the clouds on each side of the subterminal line and in the basal area spread, and become dark brown, or black, or cloudy-black, or grey; the pale patch above the anal angle is usually still conspicuous, but often divided by a black line, and the cilia are black or dark grey, prettily looped with pale grey. The thorax, as in all other varieties, follows suit, of course, and the yellow tone and golden gloss of the hindwings have disappeared, being replaced by dark or pale smoky-grey or even smoky-white, with or without the darker hind-marginal band."

Mr A. J. Wightman, in the *Ent. Record and Journ. of Variation* for 1940, p. 126 et seq., reviewed the lines of variation met with during 20 years breeding with Sussex material only. He has never found the deep ochreous-brown forms normal in some parts of Britain, but still the variation is great and "can only be dealt with in a general way," p. 126. He divided his results into five groups, from "a dark ochreous mottled with darker to an extreme form with scarcely a trace of marking," and of the latter group he had selected no less than seven distinctive subforms. He gave an analysis of Newman's figures, *Brit. Moths*, 385; of South's figs., *M.B.I.*, I, plt. 124, and of Seitz's figures, *Pal. Noct.*, III, plt. 17.

The Names and Forms to be considered:

anceps, Schiff. (1775), *Verz.*, 82 (no description).
contigua, Schiff. (1775), *l.c.* (no description).
perplexa, Schiff. (1775), *Verz. Nachtrage*, 313, N. 21, 22 (no description).
lepida, Esp. (1790), *Abbild. Noct.*, IV (2), 72, plt. 152, 2.
ssp. f. *carpophaga*, Bork. (1792), *Naturg.*, IV, 422.
perplexa, Hb. (1802), *Samml. Noct.*, 89.
ab. *ochracea*, Haw. (1809), *Lep. Brit.*, 199.
repanda, Frr. (1838), *Neu. Beitr.*, I, 63, plt. 34 (3), 2.
ssp. *capsophila*, Bdv. (1840), *Ind. Meth.*, 125.
f. *nisus*, H.-S. (1850), *Sys. Bearb.*, II, 249, f. 461.
ab. *capsophoba*, Ramb. (1866), pt. ii, plts., *Cat. And.*, plt. 9, 2 (no description).
ab. *pallida*, Tutt (1892), *Brit. Noct.*, III, 30.
ab. *brunnea*, Tutt, *l.c.*, 30.
ab. *ochrea-pallida*, Tutt, *l.c.*, 30.
ab. *fusca-pallida*, Tutt, *l.c.*, 30.
ab. *virgata-ochrocea*, Tutt, *l.c.*, 30.
ab. *virgata-brunnea*, Tutt, *l.c.*, 30.
ab. *suffusa*, Tutt, *Brit. Noct.*, III, 32.
ab. *virgata-pallida*, Whtmn., *Ent. Rec.*, XL, 22 (1928).
ssp. *sicula*, Drdt. (1931), *Pal. Noct. Supp.*, III, 102, plt. 13b.
ssp. *syriaca*, Osthr. (1933), *Mitt. Münch.*, XXIII, 47.

Tutt dealt with (1) ab. *pallida*, white, markings nearly obsolete; (2) ab. *ochrea-pallida*, white, with ochreous mottling; (3) ab. *fusca-pallida*.

white, with fuscous mottling; (4) ab. *ochracea*, pale yellowish-ochreous, markings nearly obsolete; (5) ab. *virgata-ochracea*, ditto, central band darker; (6) ab. *lepida*, ditto, mottled with darker ochreous; (7) ab. *brunnea*, dark ochreous (almost brown), markings nearly obsolete; (8) ab. *virgata-brunnea*, dark ochreous, with central band darker; (9) ab. *carpophaga*, dark ochreous, mottled with darker; (10) ssp. *capsophila*, darker tint, clear transverse lines, much more white than yellow; (11) ab. *capsophoba*, white sub-costal nervure, edging of all lines and stigmata whitish; (12) ab. *suffusa* (only an ab. of *capsophila*), always darker and almost black, with lines very white, and finer.

perplexa, Hb., *Samml. Noct.* (no text) (1802).
Fig.—*l.c.*, 89.

Descrip.—Size of average *carpophaga* (British). Ground colour a dark rich brown with lighter brown-ochreous marking, not the black-brown with white transverse lines as in *capsophila* (Irish). The two stigmata have a thin white line around them. The transverse lines are lighter brown lined strongly with black, the submarginal and discal lines on the inner side, the inner transverse line on the outside, the basal line on the upper half black on the inner side, the lower half on the outside. There is a light whitish smudge on the inner margin between the ends of the submarginal and discal lines. (From the figure, Hy. J. T.)

repanda, Frr., *Neu. Beitr.*, I, 63 (1833).
Fig.—*l.c.*, plt. 34, 2 (nec 3).
Orig. Descrip.—" In size and shape *repanda* comes close to *lucipara*. Thorax and forewings are reddish-brown. The markings are very distinctly impressed. The first transverse line is half developed, the second before the orbicular is very distinct and sharply defined on the outer side. The orbicular and reniform stigmata are very well defined by their pale reddish colour, and their white centres. The claviform is placed well under the orbicular and is well developed. After the reniform comes the very distinct third transverse line, then a wide paler area in the middle darker coloured, which is margined by the fourth transverse line. This line is toothed and has in the middle two fine black wedges. The fringes are very wide and toothed. The abdomen and the hindwings are brown-grey. The fringes pale whitish yellow. Below all the wings are brown-grey, the costa dark wax-red suffused. The hindwings have a darker diffused line towards the outer margin with a dark discoidal." Russia.

nisus, H.-S., *Bearb.*, II, 249 (1850).
Fig.—*l.c.*, 461.
Orig. Descrip.—" Fusca fulvo-alboque mixta, area 3 pone lineam undulatam albo mixta, ciliis fulvis."
" Distinctly larger than *carpophaga*, with longer, more produced apex of forewing and longer, more oblique margin. Markings the same, colour darker, only in a few places golden-yellow appearance, strongest outer end of the claviform, in the middle of the reniform, and in all five beyond the outer transverse line. The fringes are golden-yellow with browner divisions, the basal half of the forewing darker, the terminal half of the hindwings whitish. The white appearance is brighter and

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. Turner, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—Eds.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr Hy. J. Turner, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris*, and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Japanese Lepidoptera (some rare), some Japanese Coleoptera, Lep. from S. America, S. Africa, etc., all good data. English setting. British *albimacula*, melanic *bidentata**; *Trans. and Proc. Roy. Ent. Soc.*, 1911-1930. Full lists of all sent, including Lepidoptera. *Desiderata*—For the above, various books chiefly, or some Continental Lepidoptera; List of both requirements sent.—*P. Sivtier Smith, "Squirrels," Little Aston Park, Streetly, Staffs.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Cluneveg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Barrett, *Lep. Brit. Isles*, Vol. iii; Culot, *Noctuae and Geometrae.—A. J. Wightman, "Aurago," Pulborough, Sx.*

Wanted—H. phlaeas (with data) from Palaearctic regions, particularly N. America, extreme North (Norway, etc.), China, Algeria, Ethiopia, N. Africa, Madeira, Balkans; also from other regions and British Isles. Also other Chrysophanids from similar areas. Also Continental (only) *P. fulminea* (*leucophaea*), *lichenea*. *Duplicates*—Lepidoptera (some rare) mostly from Japan, but also from S. Africa, S. America, India, East Indies, etc.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. Saturdays, January 23, Annual Meeting; February 13; 2 for 2.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Communications Promised:—H. A. Leeds, E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, Dr Kettlewell (plates), P. M. B. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, etc.

All Communications should be addressed to the Acting Editor, HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

Printed by T. Buncle & Co., Ltd., Arbroath.

'ol. LV.

No. 2

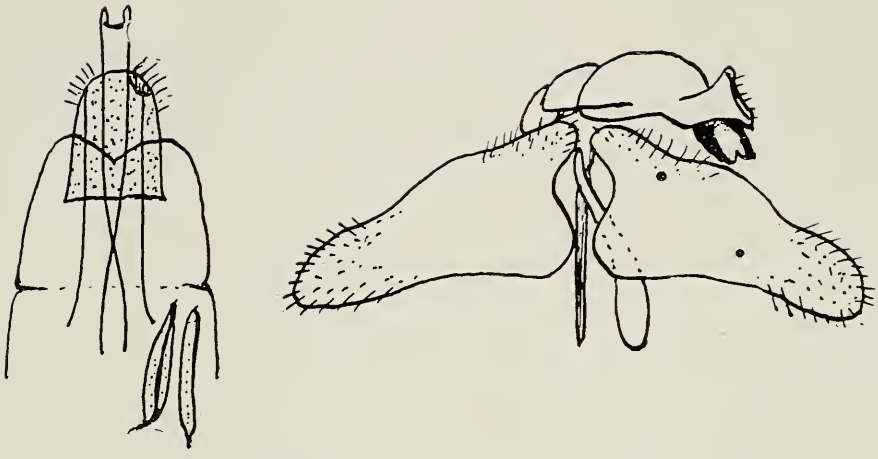
FEBRUARY 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).



ACEDES (TINEA) PIERCELLA, BENCT.

Since writing my notes about the occurrence of this species in this country which appeared on page 9 of the January issue, Mr F. N. Pierce has been good enough to forward an excellent drawing of the genitalia. Accordingly it is reproduced in this issue, and shows the chief characters of both female and male structures. The delineation is by Rev. Desmond Murray.—S. Wakely, 17 Warminster Road, South Norwood, S.E.25.

COLLECTING NOTES.

PLUTELLA INCARNATELLA, STEUD., IN BRITAIN.—Mr P. Harwood, of Aviemore, Inverness-shire, recently sent me a number of "Micros" which he had collected locally during November and December of last year by beating Scots pine, bracken and juniper. Amongst his captures was a species of *Plutella* which agreed very well with the description of *Plutella incarnatella*, Steud., as given by Meyrick in his *Revised Handbook*, 1928. I, however, sent two specimens to Mr Bainbrigge Fletcher for a second opinion. He kindly examined them and confirmed my identification.

This species seems to be fairly common in the Aviemore district, as Mr Harwood has taken quite a number of the moth, even as late as the end of December. It is to be hoped that he will be able to obtain females in the spring.

The only previous record for Britain seems to be the one by Meyrick in *The Entomologist*, lviii, p. 259, one specimen taken by Dr Jenkinson at Elgin in September 1913.

Mr Harwood is to be congratulated upon placing this species firmly on the British list.—G. E. S. BROWN, Bournemouth, 19.1.43.

POLYOMMATUS (LYSANDRA) CORIDON AND ANTS.—Mr H. A. Leeds in his further interesting notes on this subject (ante p. 11) remarks:—"... and I shall be greatly obliged if someone can kindly tell me the species of ants which are mostly attendants of *coridon* larvae." I should say undoubtedly that the ant *Acanthomyops* (*Chtonolasius*) *flavus*, F., is the chief attendant.

Rayward [*Entom.*, **39**, 197 (1906)] records that on 18th June 1906 he discovered a number of nearly full-grown larvae of the "Chalk-hill Blue" which were feeding on plants of *Hippocrepis comosa* on the hill-sides at Reigate. Nearly all of them had examples of this ant among them, and two of these caterpillars, which were feeding on a plant growing on the crown of an ant hill, were literally covered with ants—twenty being counted on one larva alone. He then gives some interesting observations and experiments he made on the "milking" of the caterpillar by the ants. He also sent me two larvae to experiment with in my observation nests of ants.

Prideaux also [*Ent. Record*, **22**, 199-200 (1910)] found larvae of *coridon* among its food-plant on the chalk-hills near Oxford on 14th June 1910. He writes:—"In the majority of cases, yellow ants were found, if not in attendance on, in close proximity to, the larvae so obtained, and in one instance, where eight were found at the roots of one plant, an ant's nest had been formed below, and the fine powdery earth thrown up had completely enveloped the *A. coridon* larvae, in no way to their discomfiture, apparently." This observation shows that the ants had built around these caterpillars one of those earthen "cattle-sheds" in which they often keep their aphids and coccids, etc.

No doubt many similar observations have been made.

Other ants, such as *A.* (*D.*) *niger*, L., several of the commoner Myrmicas and possibly *Formica fusca*, especially the first-named species, may also attend these larvae; but *A.* (*C.*) *flavus* is the most likely to be

present where the caterpillars of *coridon* occur.—Horace Donisthorpe, Entomological Department, British Museum (Nat. Hist.), 24.1.43.

Note on the Correspondence concerning Cucullia scrophulariae. —Not being a Lepidopterist, I hesitate to intervene in a discussion on whether *Cucullia verbasci*, *scrophulariae* and *lychnitis* are distinct species, but I have been interested in the papers by Wightman, Cockayne and Bainbrigge Fletcher on this subject.

I know a *Cucullia* whose caterpillars I used to take in southern and eastern England, mostly on *Verbascum thapsus* but also on *Scrophularia nodosa*. My interest in this caterpillar was because it happens to have a red nervous system and was, therefore, useful for class-work. I may have been taking caterpillars of the so-called *scrophulariae* as well as those of *verbasci*, but I know that I could interchange the foodplants and grow small larvae to full size.

But my object in butting in is because neither Cockayne nor Bainbrigge Fletcher has mentioned a single character which excludes the possibility that these so-called species are biological races of one species. Cockayne maintains the species merely upon differences in colour of the caterpillars, while Bainbrigge Fletcher refers to different colouring in the imagines and different habits and supports his view on the ground that they are regarded as distinct by the whole body of students of Lepidoptera outside the insular boundaries of the " British List." Then why not give us the real specific characters?—Frank Balfour-Browne, M.A., F.R.S.E., F.R.E.S., 23.1.43.

CURRENT NOTES.

The sixty-seventh *Annual Report of the Ontario Agricultural College and Experimental Farm*, 1941, has recently been received. There are nearly twenty Departments, all with a staff of officials. Each of the Departments furnishes a short summary of the work they have done during the year in this Report. One of the Departments is that of Entomology. This Department deals with (1) The Insects of Stored Grain. The fumigant necessitates a mask when it is applied. (2) Testing of Spray Mixtures. (3) Means for the Control of the Corn-Borer. (4) Baiting for the European Earwig, a somewhat recent pest. (5) An Infestation of the Japanese beetle near the Niagara Falls as yet not very widespread. (6) Rabbit Control in Orchards came under this Department.

Correction.—On p. 9, for *Arcedes* read *Acedes* in each case.—T.B.F.

Correction.—Substitute Foodplants: The penultimate paragraph of my article under this heading last month contains the most delightful *lapsus calami* which I think I have ever committed. It must have amused many of your readers. I refer, of course, to my statement that the body of a larva must be attuned to the *horse-power* (HP) of its environment. I give the environment full marks for the influence which it exerts, but I can assure your readers that what I had in mind was the *p*H, not the HP.—P. B. M. Allan.

RECORDS AND FULL DESCRIPTIONS OF VARIETIES AND ABERRATIONS.

Exhibited at the Annual Exhibition of the South London Entomological and Natural History Society (October 1942).

Compiled by S. G. Castle Russell and Hy. J. Turner for publication in the *Entomologist's Record* and in the *Proceedings* of the Society.

Mr B. W. Adkin exhibited:—1. *Argynnis paphia*, L., gynandromorph; C. Gulliver, New Forest, 1918. 2. *Argynnis paphia*, L., cream-coloured ♂; A. Ford, New Forest, 1919. 3. *Argynnis paphia*, L., ab. *melaina*, D'Aldin, ♂♂ and ♀♀; bred, L. W. Newman, New Forest, 1908.

1. *Argynnis cydippe*, L., banded ♂; C. Gulliver, New Forest, 1929. 2. *Argynnis cydippe*, L., lightly-marked ♂ with rayed hindwings; T. E. Hubbard, New Forest, 1926. 3. *Argynnis cydippe*, L., ab. *bronzeus*, Frohawk, ♀; B. W. Adkin, Windsor Forest, 1928. 4. *Argynnis cydippe*, L., strongly-marked ♀; B. W. Adkin, Sussex, 1942.

1. *Argynnis aglaia*, L., a melanic ♀; H. G. Heath, Swanage, 1920. 2. *Argynnis aglaia*, L., heavily-marked ♂; E. P. Sharpe, Eastbourne, 1913. 3. *Argynnis aglaia*, L., yellow ♀; J. H. Longhurst, Swanage, 1922. 4. *Argynnis aglaia*, L., large ♀; B. W. Adkin, N. Kent, 1942.

Mr H. W. Andrews exhibited the following Diptera:—(a) An exhibit showing wing marking venation in *Urophora stylata*, Fb. (*Trypetidae*). (b) An exhibit showing varieties of *Merodon equestris*, Fb., the "Narcissus-fly."

Mr S. R. Ashby.—Four drawers of British Coleoptera containing the families:—*Lucanidae*, *Scarabaeidae*, *Buprestidae*, *Elateridae*, and part of *Chrysomelidae*. The Scarabaeidae included the genera *Copris*, *Onthophagus*, *Aphodius*, *Heptaulacus*, *Saprosites*, *Oxyomus*, *Psammobius*, *Aegialia*, *Odontaeus*, *Geotrupes*, *Trox*, *Hoplia*, *Homalaplia*, *Serica*, *Amphimallus*, *Melolontha*, *Phyllopertha*, *Anomala*, *Cetonia*, *Potosia*, *Gnorimus* and *Trichius*. The Buprestidae included the genera *Melanophila*, *Anthaxia*, *Aphanisticus*, *Trachys*, the five species of *Agrilus*. The Elateridae, the genera *Lacon*, *Cardiophorus*, *Hypnoidus*, *Crytohypnus*, *Elater*, *Ischnodes*, *Procraerus*, *Melanotus*, *Harminius*, *Athous*, *Limonius*, *Sericus*, *Adrastus*, *Agriotes*, *Dolopius*, *Corymbites* and *Prosternon*. The Chrysomelidae: Genera, *Labidostomis*, *Clytra*, *Gynandrophthalma*, *Cryptocephalus*, *Lamprosoma*, *Timarcha*, *Chrysomela* and *Melasoma*.

Mr V. E. August exhibited the following:—A melanic form of *Pararge aegeria*, L.; two aberrations of *Argynnis* (*Brenthis*) *euphrosyne*, L.; *Limenitis camilla*, L., ab. *nigrina*, Weym.; *Apatura iris*, L.; *Acronicta* (*Apatele*) *alni*, L.; *Erynnis tages*, L., all from N.W. Sussex. *Lycaena arion*, L., from N. Cornwall, and a series of *Euchloris smaragdaria*, Fb., bred from ova found during a Field Meeting at Benfleet.

Mr T. L. Barnett exhibited:—*Argynnis paphia*, L., a gynandromorph, left side ♀, right side ♂, Sussex 1942. *Coenonympha pamphilus*, L.: Several with small apical spot, one ♂ with very dark

underside, brownish black, one from Kemsing, Kent, with four very small spots on upperside hindwings. A series of *Ematurga atomaria*, L., with pale yellow ground colour and many dark specimens. A series of *Sterrha* (*Hyria*) *muricata*, Hufn., from Wicken and Witherslack.

Captain E. S. A. Baynes exhibited a few species taken or bred in 1942, including a ♀ *Hyloicus pinastri*, L., bred from Dorset; *Pyrrhia umbra*, Hufn., bred from Surrey larvae; *Boarmia ribeata*, Clrck. (*abietaria*, Schiff.), a dark form from larvae taken on yew on the Hog's Back; *C. jacobaeae*, L., with the upper marginal spot joining the costal stripe, from W. Surrey; a specimen of the *nigrosparsata*, Rayn., form of *Abraxas grossulariata*, L., bred from a pupa taken wild in Herefordshire. Also a selection of Lepidoptera taken on the Hog's Back, near Guildford, including *Hamearis lucina*, L., *Cupido minimus*, Fussli., *Polyommatus* (*L.*) *coridon*, Poda, ab. *i-nigrum*, Tutt, and ab. *arenata*, Wheel., *P.* (*L.*) *bellargus*, Rott., *Drymonia trimacula*, Esp., *Stauropus fagi*, L., *Lithosia* (*Eilema*) *complana*, L., *L. deplana*, Esp., *Palimpsestis octogesima*, Hb. (*ocularis*, Gn.), *Mamestra* (*Apamea*) *sordida*, Bork. (*anceps*, Hb.), *Agrotis cinerea*, Hb., *Harmodia nana*, Rott. (*conspersa*, Esp.), *Meristis trigrammica*, Hufn., ab. *obscura*, *Laphygma exigua*, Hb., *Orthosia* (*Taeniocampa*) *gracilis*, Fb., *O.* (*T.*) *munda*, Esp., ab. *immaculata*, Stdgr., *Calymnia pyralina*, View., *C. diffinis*, L., *Plastenis subtusa*, Fb., *Cirrhia citrago*, L., *Xanthia aurago*, Fb., *Xylina semibrunnea*, Haw., *X. socia*, Rott., *Eustrotia uncula*, Clrck., *Plusia festucae*, L., *Aventia flexula*, Schiff., *Hemistola chrysoprasaria*, Esp. (*vernaria*, Hb.), *Cosymbia annulata*, Schltz., *Thera juniperata*, L., *Eupithecia pimpinellata*, Hb. (*denotata*, Gn.), *E. haworthiata*, Dbldy., *Plagodis dolabraria*, L., *Erannis defoliaria*, Clrck., ab. *obscurata*, Stdgr., *Boarmia ribeata*, Clrck. (*abietaria*, Schiff.), *B. roboraria*, Schiff., *Synanthedon andrenaeformis*, Lasp., *S. flaviventris*, Stdgr., etc.

Mr L. Birch.—An example of *Argynnis paphia*, L., ab. *confluens*, ♀, Splr., and ab. *melaina*, ♀, both from Wyre Forest, 1942. *Argynnis cydippe*, L., a ♂ with the two forewings greatly extended in large hooks, with the centre of each extension filled with a long black bar. The hindwings are black with a series of buff lunules at the bases. Wyre Forest, 1942.

Mr A. A. W. Buckstone exhibited:—*Argynnis cydippe*, L.—A buff-coloured ♂; two ♂♂ with pronounced black markings; a ♂ underside having the brown of the lunules of hindwings replaced by blue green, and the brown spots between veins 3, 4, and 5 of right wing wanting. All Ashtead, 1942. *Gonepteryx rhamni*, L.—A ♂ with red scales situated between base of right forewing and central spot. Fetcham, Surrey, September 1942. *Aglais urticae*, L.—Specimens captured or bred from wild Surrey larvae, including several ab. *polaris*, Stdgr. (*pseudoconnexa*, Cabeau), two ♂♂ approaching ab. *leodiensis*, Cabeau, two ♂♂ with the typical reddish orange colour replaced by pink and several specimens of very dark colour. *Callimorpha* (*Hypocrita*) *jacobaeae*, L.—A dark smoky specimen. Dorking, 1942. Three underside forms, one with band of hindwings very pale, almost white, and with a yellow spot in black area. Two with yellow line running through black area. *Arctia*

villica, L.—Living larvae, pupae and imago of second broods. Dated records are:—June 5—About 150 eggs deposited; June 18 to 25—130 larvae emerged; July 17—Many underwent first moult; September—Larvae commenced spinning up; October 10—About half the larvae had now spun up, the remainder being in either their fourth or fifth (last) instar. The hair is black until after the last moult, when it rapidly turns brown.

Mr A. Bliss.—From West Sussex *Apatura iris*, L., *Hemaris fuciformis*, L., *H. tityus*, L., *Psilura* (*Lymantria*) *monacha*, L., *Procris* (*Ino*) *statices*, L., and confluent *Zygaena trifolii*, Esp., *Gastropacha quercifolia*, L., from Bookham; *Polyploca ridens*, Fb., from Ashtead; and *Cucullia verbasci*, L., from Purley.

Mr J. H. Bell and Mr P. J. Bell exhibited:—(1) An aberration of *Plusia gamma*, L., in which the "silver Y" is much extended into an irregular blotch. Dr Cockayne pointed out the remarkable similarity to the figure of *P. pulchrina*, Haw., in the "Entomologist," 1920, vol. 53, pp. 1-2, text figure of a specimen taken in Gloucestershire in 1919, now in the Rothschild Collection, Tring. (This specimen was sent up for comparison and exhibition.) (2) A dark banded form of *Selidosema plumaria*, Schiff., from the New Forest, August 1936. (3) Three *Nymphalis* (*Vanessa*) *io*, L., one ab. *belisarius*, Frwk., from Lee, Devon; two others with almost complete absence of purple on the ocelli. (4) A series of *Heodes phlaeas*, L., showing rayed spotting, mainly from Berkhampsted, with ab. *alba*, ab. *intermedia*, and rayed forms. (5) A *Satyrus* (*Melanargia*) *galathea*, L., with markings of the hindwings almost absent; Swanage, 1931. (6) A series of very small *Xanthorrhoë fluctuata*, L., with considerable deficiency of marking. (7) Extreme abs. of *Epirrhoë alternata*, Müll. (*sociata*, Bork.), one with only a dot in the centre of the forewings and some shading on the margins. (8) *Argynnis* (*Brenthis*) *euphrosyne*, L., showing more or less increase of dark marking, one being extreme.

Dr G. V. Bull exhibited *Acherontia* (*Manduca*) *atropos*, L., from Kent, 1941; two banded *Diaphora* (*Spilosoma*) *lutea*, Hufn. (*lubricipeda*, Esp.), bred by S. Wakely; *Arctia villica*, L., with smoky hindwings, N.E. Sussex; *Pieris rapae*, L., with spots united by black scaling, Sandhurst, Kent; *Parasemia plantaginis*, L., bred in September, August and October from ova laid on 10th June 1942 and some bred in October 1933 from ova laid 10th June 1933. Also a centipede and its prey, *Noctua xanthographa*, L., taken at sugar. The abdomen of the moth was almost completely eviscerated.

Col. V. R. Burkhardt.—A ♂ *Argynnis cydippe*, L., of pale lemon colouring on all wings, New Forest, 1942. *Argynnis paphia*, L.—An extreme ♀ form of ab. *melaina*, D'Aldin, almost entirely black, another very similar, and a male form of ab. *confluens*, Spul. *Limenitis camilla*, L.—An unusual form of ab. *semi-nigrina*, Frwk., all New Forest. *Argynnis* (*Brenthis*) *selene*, L.—A melanic form of ♀ with a series of bars on the outer margins of forewings, the central areas being black and spotless; hindwings deep black; New Forest, 1942.

Mr S. A. Charires exhibited aberrations of *Polyommatus* (*Lysandra*) *coridon*, Poda, *P. bellargus*, Rott., and *Melitaea athalia*, Rott., taken by exhibitor in East Sussex, 1942, including the following:—*Lysandra coridon*, Poda.—A ♂ with right wings, *obsoleta*, Tutt, ground colour slate grey, and smaller than left wings, which are normal. A ♂ upperside, all wings suffused with black, ab. *atrescens-suffusa*. A ♀ ab. *glomerata*, Tutt, heavily marked. A ♀ very heavily marked. A ♀, the orange spots on left hindwing extended into dashes on both upper and underside; on the left forewing is a blue-white blotch. A ♂, the left hindwing of which is about a third larger than the right, and square shaped. It has the markings of three separate wings, i.e., three discoidal spots (full size). The outer margin has three times the normal number of spots and the other spots on wing are doubled; the other wings are normal. *Lysandra bellargus*, Rott.—An ab. *radiata*, Tutt, three wings heavily radiated, the fourth being ab. *digitata*, Courv. An example with the hindwings only radiated. *Melitaea athalia*, Rott.—A ♀ with the dark bands and spots on all wings missing.

Mr F. D. Coote exhibited a heavily-marked *Argynnis cydippe*, L., from Ashtead, and *Limenitis camilla*, L., ab. *semi-nigrina*, Fwk., from Sanderstead, 30.7.42.

Mr B. H. Crabtree exhibited, on behalf of Mr A. E. Tonge, aberrations of *Arctia caja*, L., and, on his own behalf, two *Acronicta leporina*, L., both very dark; they were two years in pupa; another specimen, also dark, was three years in pupa. The larvae came from the neighbourhood of Manchester. Also two *Notodonta dromedarius*, L., very dark, from Alderley Edge larvae.

Mr A. W. Dennis exhibited specimens of *Metachrostis* (*Bryophila*) *perla*, Fb., and of *Spilosoma lubricipeda*, L. (*menthastri*, Esp.), from a garden in Dalston, showing considerable variation.

Mr J. Deal exhibited a variable series of *Lycia hirtaria*, Clrck., from a ♀ taken at West Wickham; they emerged in April 1942. *Strymon w-album*, Knoch., an underside aberration, a number of which were bred from larvae taken at Shoreham last Spring. *Lysandra coridon*, Poda, a series taken at Swanage, 1937/8, including ab. *alba*, Tutt, ab. *striata*, Tutt, ab. *caeca* and *post-caeca*, and ab. *fowleri*, South. *Argynnis cydippe*, L., an upperside aberration similar to one in Frohawk's "British Butterflies," taken at Ashtead Field Meeting, July 1942.

Mr T. R. Eagles exhibited a small collection of British moths collected about the year 1860, including a specimen of *Deilephila gallii*, Rott.

Mr W. J. Finnigan exhibited a number of his Lantern Slides of Natural History Subjects, including *Pygaera curtula*, L., *Theretra porcellus*, L., with larva, *Phalera bucephala*, L., *Limenitis camilla*, L., *Abraxas sylvata*, Scop., with larva, *Ectropis bistortata*, Göze., and *Lomaspilis marginata*, L. The plants Butterwort, *Pinguicula vulgaris*, L.; Chickweed Wintergreen, *Trientalis conopsea*, L.; Small Teasel, *Dipsacus pilosus*, L.; Clustered Bellflower, *Campanula glomerata*, L.;

and Bog Pimpernel, *Anagallis tenella*, L. The Fungi *Lepiota racodas*, Vitt., *L. procera*, Scop., and *Geoglossum glutinosum*, Pers. The Canal at Weybridge.

Mr L. T. Ford exhibited the following Microlepidoptera:—*Cnephasia bellana*, Curt., Warton Crag, 29.6.41; *Argyroploce rufina*, Scop., Witherslack, 13.7.41; *Scythris fallacella*, Schläg., Witherslack, 26.5.40; *Lampronia pubicornis*, Haw., Arnside, 17.6.41; *Crambus falsellus*, Schiff., Grange, July 1940; *Blastobasis lignea*, Wilm., Arnside, August 1941.

Mr F. W. Frohawk exhibited:—*Pieris brassicae*, ab. *nigronota*, Fwk., five specimens, four with black marginal streaks on upper part of outer margins of hindwings—a new form of aberration; all bred from Sussex ova, August 1941. *Erebia aethiops*, Esp., with median band missing on underside of hindwings; Galloway, August 1941. *Coenonympha pamphilus*, L., one with ocellus entirely missing on one wing, the other largely developed on corresponding wing, also a particularly large ♀ with black margins to hindwings; Galloway, August 1941. *Aglais urticae*, L. Three abs. *nigra*, Tutt, and *semi-nigra*, Fwk., captured by Captain E. B. Purefoy, East Farleigh, Kent, 1936, 1939, 1942.

Mr A. L. Goodson exhibited a variety of *Hemistola chrysoprasaria*, Esp. (*vernaria*, Hb.), in which the ante- and post-median transverse lines of the forewings were widened and fused into a whitish patch, leaving a triangular mark on the costa; also other species recently taken.

Mr F. T. Grant exhibited series of the following species of Coleoptera taken about mid-day, Greenwich time, running on the trunk of a decayed hornbeam in Cobham Park, 6.vi.42:—Series of (1) *Melandrya caraboides*, L., and *Leptura scutellata*, Fb., and also on the same trunk, 18.vi.42, a series of *Ptilinus pectinicornis*, L.

Mr H. Haynes exhibited:—*Argynnis paphia*, L.—A series of 36 specimens taken in the New Forest, mostly in 1919, including four ♂♂ and five ♀♀ ab. *confluens*, Spul. Five ♂♂ and one ♀ ab. *melaina*, D'Aldin, one being an extreme black-rayed form; also a ♂ and ♀ with markings on the forewings, ab. *glomerata*, Tutt. *Polyommatus* (*Lysandra*) *coridon*, Poda, taken in the Salisbury district during recent seasons, including ab. *pulla*, ab. *fowleri* and ♂♂ with heavily-marked borders, many underside forms, including *caeca* and other extreme forms, and several ♂♂ with striated forewings (ab. *digitata*, Courv.). Also three ab. *albescens*, Ckll., and an almost symmetrical gynandromorph. *Polyommatus* (*Lysandra*) *bellargus*, Rott., a series from the Salisbury district, showing *obsoleta* and *radiata* aberrations. *Polyommatus icarus*, Rott., a lavender-coloured ♂ and an extreme *obsoleta* ♂ with white background; both from Salisbury district. *Plebeius aegon*, Schiff., a ♂ underside ab. *caeca*, New Forest, 1942. *Panaxia* (*Callimorpha*) *dominula*, L., a series from the Salisbury district showing specimens with enlarged and confluent markings in forewings. Also a series of ab. *bimacula*, including some extreme examples bred from the Oxford strain.

Mr I. R. P. Heslop exhibited the following aberrations of British Rhopalocera:—A *Papilio machaon*, L., a ♀ with slightly striated forewings; a *Pieris rapae*, L., the exhibitor's first butterfly, taken on 20th March 1913; 2 *Colias hyale*, L., an exceptionally small ♂ and a large ♀; 2 *Argynnis cydippe*, L. (*adippe*, L.), an abnormally pale ♀ (1942) and a normal ♀; 2 *A. paphia*, L., a ♂ var. *confluens* and a ♀ (1942) var. *confluens*; a *Brenthis euphrosyne*, L., with smoky diffusion on upper forewings; a *Euphydryas aurinia*, Rott., with the forewings clouded; a *Melitaea athalia*, Rott., very lightly marked; 2 *Vanessa cardui*, L., a very pale ♀, and a very large dark richly-coloured ♀ with an additional apical white spot and blue lunules to the black spots on the hindwing; 2 *Eumenis semele*, L., a very pale pair from the western limestone; 2 *Maniola jurtina*, L. (*janira*, L.), two bleached ♂♂; *M. tithonus*, L., albino ♂; 4 *Chrysophanus dispar*, Haw., a pair of the old-English and a pair of the introduced *batavus*, Ril.; 2 *Lycaena arion*, L., a ♀ from Gloucestershire and a ♀ from Cornwall, showing the characteristic difference; a *Carterocephalus palaemon*, Pall., black markings of forewings much reduced.

Capt. R. A. Jackson, R.N., exhibited:—*Ruralis betulae*, L., ♂♂ bred from damson foodplant, one having pronounced fulvous spotting on forewings. *Coenonympha pamphilus*, L., a very pale ♂ from Troödos. *Heodes phlaeas*, L., a ♂ with asymmetrical spotting, right forewing with spots at anal angle missing. A series of *Synanthedon spheciformis*, Schiff. Pairs of *Sphecia carbroniformis*, Lewin, *S. andrenaeformis*, Lasp., *S. culiciformis*, L., *S. vespiformis*, Lasp., *S. flaviventris*, Stdgr., and *S. tipuliformis*, Clrck.; all from Bishop's Waltham. A buff form of ♂ *Euleima deplana*, Esp., with typical ♀ for comparison. *Lithosia griseola*, Hbn., typical, and var. *flava*, Haw., for comparison. A short series of *Gnophos obscura*, Schiff., from New Forest and Eastbourne. A bred series of *Boarmia ribeata*, Clrk. (*abietaria*, Schiff.), fed on yew; Bishop's Waltham. A case showing pupa-cases of *Aegeriidae*. Two *Abraxas grossulariata*, L., one with heavy black markings, the other a ♀ somatic mosaic left wings, normal; right wings, var. *dohrnii*, Koenig. (*lacticolor*, Rayn.). Some fertile ova were obtained and eight larvae are now feeding; from Dawlish, 1942. This was perhaps the most remarkable insect in the room.

Colonel S. H. Kershaw.—Lepidoptera from the Isle of Man, 1941-2. *Euchloë cardamines*, L., several ♂♂ with the normal orange tips to forewings replaced by very pale lemon colour; a gynandromorph predominently ♀ with same pale lemon colouring on forewings. *Argynnis aglaia*, L., a large ♀ almost entirely black. *Pararge megera*, L., a ♂ with very heavy black bands on forewings, June 1942. *Polyommatus icarus*, Rott., an underside ab. *caeca*, August 1942.

Mr H. A. Leeds exhibited:—*Polygonia c-album*, L., ♂ upperside strongly central, banded with black on all wings, and a ♀ upperside with weak outer markings on hindwings and consisting of thin, brown arches extending inwardly from the border. *Polyommatus icarus*, Rott., ♂ underside, ab. *antidiscoelongata*; ♀ uppersides, abs. *postradiosa-atrescens*, containing five heavily scaled bluish veins; and *syn-*

grapha-ultraalbocrenata. *Adopoea lineola*, Ochs., ♀ upperside, ab. *pallidula* (golden). All 1942 captured. He also exhibited, and presented them to the South London Natural History Society, 222 *Maniola jurtina*, L., 101 *Maniola tithonus*, L., and 216 *Coenonympha pamphilus*, L., consisting of typical and aberrational forms, numbered and named, or termed, in accordance with *manuscript*, for them and other known British forms of these three species, which is being written, and will be handed over to the S.L. Society when completed by him

The Rev. J. N. Marcon exhibited:—*Limenitis camilla*, L. (*sibilla*, L.), four examples with partial obscuring of the white bands. A ♂ *Argynnis cydippe*, L. (*adippe*, L.), with tendency to become confluent. *A. paphia*, L.—(1) a ♀ with costal markings of forewings banded together; (2) three ♀ ab. *confluens*, Splr., one very extreme; (3) two ♀ ab. *melaina*, D'Aldin; (4) a ♂ extreme ab. *confluens*, Splr.; (5) a mixed gynandrous example, hindwings ♂ has left forewing ♂ with small streak, right forewing 3/5 ab. *valezina*, Esp., colouring extending from the base in an irregular patch to the outer margin, entirely displacing the ♂ androconial markings. *Brenthis* (*A.*) *euphrosyne*, L., a banded form, and a ♀ largely black. *Aglais* (*V.*) *urticae*, L., ab. *nigrocana*, Frwk., caught in a cemetery. *Polyommatus* (*L.*) *bellargus*, Rott.—(1) ♂ ab. *digitalis*, Courv., forewings; (2) ♂ ditto fore and hindwings; (3) ♂ ditto with reduction on hindwings; (4) ♀ with left forewing strongly radiated. *P.* (*L.*) *coridon*, Poda.—(1) ♂ ab. *infra-lavendula*; (2) 2 ♂ ab. *fowleri*, Sth.; (3) 3 ♂ ab. *pulla*; (4) a gynandromorph predominently ♀.

Messrs W. E. Minnion and B. S. Goodban exhibited a selection of Lepidoptera taken or bred during the season of 1942. A varied series of *Euphydryas aurinia*, Rott., a series of *Diacrisia sannio*, L., a series of *Argynnis* (*Brenthis*) *selene*, one having pale blotches on forewings, a series of *Satyrus galathea*, ♀♀ with very yellow undersides. *Macrothylaria rubi*, L., a number of assembled ♂♂. All the above from Rowden, Devon. *Cossus cossus*, L., taken at light, Rowden. All above were collected by Mr Minnion during " off " periods from active service. Series of the following species were also shown:—*Phragmatobia fuliginosa*, L., bred from a Rowden ♀; *Xanthorhoë spadicearia*, Schiff.; *X. quadrifasiata*, Clrck., Wendover; *Coremia unidentaria*, Haw., from Bucks ova; *Horisme vitalbata*, Schiff., bred from a pair taken at Horsley Field Meeting; *Zygaena filipendulae*, L., three confluent forms, Wendover, Bucks; *Plusia pulchrina*, Haw., and a ♂ *Herse convolvuli*, L., both taken at St Giles, Bucks; *Strymon w-album*, L., Chalfont Field Meeting; *Bena bicolorana*, Fuess., bred from larvae taken at Ruislip; *Synanthedon* (*Sesia*) *flaviventris*, from larvae taken at Effingham Field Meeting; and *Pseudopanthera macularia*, L., one having pale ground colour.

Mr H. Moore exhibited two species of grass Mantids from India and the U.S.A., examples of " Slimming " carried to excess.

Mr B. M. Morley exhibited:—*P.* (*L.*) *bellargus*, Rott., from Folkstone—(1) 2 ♂♂ pale (excelsia); (2) 2 ♀♀ blue (semi-ceronus). *P.* (*L.*)

coridon, Poda.—23 aberrations, including 2 dark ♂♂ (pulla-suffusa), 1 ♂ underside (albescens-obsoleta), 8 ♀ undersides (nubila, to ultranubila-fulvescens), a ♀ underside (post-caeca). *Aglais urticae*, L., ♂ with right hindwing grey. *Boarmia rhomboidaria*, Schiff., 3 black ab. *rebeli*, Aign. A long series of bred *Abraxas grossulariata*, L., showing many aberrations.

Mr and Mrs P. Nagle exhibited an aberration of *Argynnis cydippe*, L., New Forest, 1942. The forewings are much suffused with black, especially in the central and outer areas. The hindwings are practically normal but slightly suffused in basal areas. On the underside the forewings show much darker markings than usual. *Maniola jurtina*, L., a ♂ ab. with large irregular shaped patches of very light grey on both forewings, the patches being symmetrical on each wing. Hindwings nearly normal, but showing signs of pale colouring in areas between veins.

Mr Hugh L. Newman exhibited a large number of *Arctia caja*, L., bred in successive broods in the dark on cabbage up to the third generation and the fourth as living larvae in glass-top metal boxes. Also a ♀ *Pieris napi*, L., ab. *citronea*, Frwk., the most extreme and remarkable dark ♀ he had ever bred.

Mr G. B. Oliver and Mr G. H. Oliver exhibited:—*Pieris rapae*, L., ♀, a wild taken specimen of chrome buff coloration; Bedfordshire. *P. napi*, L., ♀ spring brood without the usual black scaling on apex; Bucks. *Brenthis* (*A.*) *euphrosyne*, L., ♀ upper and undersides purplish tinted; other aberrant forms. *Maniola jurtina*, L., ♀ (badly worn) with light blotched forewings and hindwings of a uniform greyish white; Beds. *Polyommatus coridon*, Poda, ab. *striata* and ab. *obsoleta* forms from Beds, Bucks and Herts. *Colias croceus*, Frcry., a short series bred during January and February under normal indoor conditions from a typical ♀ taken in mid-September. The majority of the females reared were f. *helice*, Hb.

Mr D. Odd exhibited minor varieties of *Polyommatus* (*L.*) *coridon*, Poda, *Argynnis paphia*, L., *M. jurtina*, L., *Z. trifolii*, Esp., and *Sphinx ligustri*, L.

Mr R. M. Payne exhibited the uncommon dragonfly *Aeshna mixta*, Latr., a pair taken this season at Richmond, Surrey.

Mr Austin Richardson exhibited the following Lepidoptera taken or bred during the season 1942:—

Rhopalocera.—A bred series of 6 *Apatura iris*, L., with larvae ard pupae cases; Wilts. A series of 16 *Argynnis paphia*, L., all heavily marked or with confluent spots on forewings. A specimen of *Aglais urticae*, L., with almost black hindwings and white areas on apices of forewings. Two *Maniola jurtina*, L., with bleached area on forewings. A ♀ form of *Argynnis* (*Brenthis*) *euphrosyne*, L., with very light outer markings to forewings. An example of *Argynnis* (*Brenthis*) *selène*, L., heavily spotted towards bases of all four wings. All above from Forest of Dean. A varying series of *Euphydryas* (*Melitaea*) *aurinia*, Rott., and

a series of *Polyommatus* (*Lysandra*) *coridon*, Poda, showing variation, both from Glos. A cream-coloured form of *Coenonympha pamphilus*, L., and one with suffused hindwings; Forest of Dean. A series of *Coenonympha tullia*, Hb. (*tiphon*, Rott.), including ♀♀ showing white hind margins; Aviemore. A specimen of *Heodes phlaeas*, L., with the left wing partly ab. *schmidtii*, Clrck.; Glos. A series of 10 *Satyrus galathea*, L., some being heavily marked; Glos.

HETEROCERA.—A series of *Monima* (*Taeniocampa*) *gracilis*, Fb., reddish form from New Forest and pink form from Forest of Dean. A series of *M.* (*T.*) *munda*, Esp., spotless and banded forms from Forest of Dean. A series of *Palimpsestis octogesima*, Hb., from Forest of Dean. A series of *Mamestra furva*, Hb., from Aviemore. Two pairs of *Brachionycha sphinx*, Hufn., beaten in November 1941; Glos. A series of 75 *Xantholeuca* (*Oporina*) *croceago*, Fb., with two preserved larvae from Forest of Dean. Three specimens of *Cucullia chamomillae*, Schiff., with two preserved larvae; Wilts. A bred specimen of *Calocampa vetusta*, Hb., with two preserved larvae of the scarce reddish striped and spotted form; Forest of Dean. A bred series of *Harmodia* (*Dianthoecia*) *carpophaga*, Bork., including a specimen of the rare unicolorous bright yellow form; Glos. A series of the so-called brown *H.* (*D.*) *capsophila*, Dup., with a series of normal *capsophila* from Cork and Kerry, bred in 1937 and 1938 for comparison. A series of four of the very rare *Sarrothripus revayana*, Tr., ab. *stoninus*, Curt., one inclining towards ab. *atrata*. A series of 7 *Miana* (*Oligia*) *fasciuncula*, Haw., six of the brown and one of the bright red form; Aviemore. A series of 10 *Anchoscelis helvola*, L., the small dark form from Rannoch. A very pale specimen of *Xanthia fulvago*, L., ab. *flavescens*, Esp.; Rannoch. A very dark specimen of *Amathes* (*Noctua*) *glareosa*, Hb.; Rannoch. Two very dark specimens of *Leucania conigera*, Fb.; Aviemore. A specimen of *Hepialus hecta*, L., with considerable white areas above the median band on the forewings; Aviemore. A series of *Aporophyla nigra*, Haw.; Rannoch. A bred series of eight *Agrochola* (*Cucullia*) *lychnitis*, Hb., with three preserved larvae; Oxon and Wilts. A series of 50 *Eumichtis protea*, Bork., very varied with a number showing prominent pale stigmata on a dark background; Rannoch. A series of 57 *Ortholitha chenopodiata*, L. (*limitata*, Scop.), including 19 melanic and 19 semi-melanic forms; Aviemore. A series of 34 *Coenocalpe* (*Phibalapteryx*) *lapidata*, Hb.; Rannoch. A bred series of 10 *Thera juniperata*, L.; Aviemore. A series of 15 *Thera firmata*, Hb., 11 taken at Aviemore with 4 bred from the New Forest. A series of six *Thera cognata*, Thnbg.; Aviemore. A series of 9 *Pachygastria trifolii*, Esp., dark brown form taken and bred from Somerset. A series of *Catocala sponsa*, L.; New Forest. A bred series of 6 *Boarmia roboraria*, Schiff., with two blown larvae; New Forest. Two specimens of *B. punctinalis*, Scop. (*consortaria*, Hb.), bred from the New Forest. A series of *Gnophos myrtillata*, Thnbg.; Aviemore. A series of three *Eupithecia pulchellata*, Steph., including two dark specimens bred Witherslack. A series of 13 *Bapta bimaculata*, Fb.; Glos. A series of 6 *Ortholitha mucronata*, Scop., with dark bands; Aviemore. A series of 7 *E. irriguata*, Hb.; New Forest. A series of 10 *E. plumbeolata*, Haw.; Forest of Dean. A bred series of 12 *E. valerianata*, Hb.; Windermere. A series of 5 *Synanthedon tipuli-*

formis, Clnk.; Glos. A series of 3 *Synanthedon spheciformis*, Schiff., bred from Hants and one taken in Forest of Dean. A series of 7 *Synanthedon vespiformis*, Esp., bred Wilts. A series of 7 *Synanthedon formicaeformis*, Esp.; Glos. A series of 4 *Chamaesphecia ichneumoniformis*; Glos. A series of 20 *Aegeria culiciformis*, L., including one with a yellow and one with an orange band, bred Wilts. A specimen of *Deilephila galii*, Rott., bred Somerset.

Mr C. Rippon exhibited a large number of his photographs of Lepidoptera. They were contained in three volumes of the loose-leaf pattern. The first volume contained the Butterflies, the second the Hawks and Bombyces, and the third the Noctuae and Geometrae.

Mr Archibald G. B. Russell exhibited a selection of moths taken in Scotland with his son, Lieut. Anthony Russell, Gordon Highlanders (since killed in action in Malaya), as follows:—*Apamea assimilis*, L., 8 taken in the Rannoch district (1939). *Amathes alpicola*, Zett. (*hyperborea*, Zett.), 26 of a beautifully tinted form showing a wide range of variation including a remarkable ♀ with black forewings touched with blue, from pupae found in Co. Inverness, 1942. *Brachionycha nubeculosa*, Zett., a very pale grey form from Aviemore. *Aporophyla lutulenta*, Gn., examples of var. *sedi*, Bork., and var. *luneburgensis*, Frr., both from the Rannoch district. *Apatele leporina*, L., a white specimen from Aviemore. *Triphaena comes*, Hbn., var. *curtisii*, Newm., from Co. Moray. *Conistra vaccinii*, L., var. *suffusa*, Tutt, from Co. Kirkcudbright. *Achlya flavicornis*, L., a specimen heavily banded with black from Struan. *Plusia bractea*, Fb., eight from Perth. *Ortholitha scotica*, Ckne., a series from Co. Inverness, with a series of *Ortholitha mucronata*, Scop., from the same county for comparison. *Entephria flavicinctata*, Hb., twelve from the Rannoch area. *Dysstroma citrata*, L., some striking forms from Kirkcudbright and Perth. *Lampropteryx suffumata*, Schiff., an example with a pale bronze coloured band, and one of var. *porrittii* Robs., both from Aviemore. *Cleora jubata*, Thnbrg., five from Co. Kirkcudbright. *Electrophaes corylata*, L., var. *albo-crenata*, L., from Co. Moray. *Xanthorhoë spadicearia*, Schiff., a specimen with yellow forewings and dark purple band from Aviemore. *Epirrhoë alternata*, Mull., an example with very narrow central band from Co. Kirkcudbright. *Selenia lunaria*, Schiff., var. *suffusa*, from Co. Banff. *Crocallis elinguaria*, L., two lacking the central band, from Aviemore. *Erannis defoliaria*, Clrck., a remarkable black banded specimen from Co. Kirkcudbright.

Mr S. G. Castle Russell exhibited a ♂ *Argynnis euphrosyne*, L., the forewings heavily suffused with black, and hindwings also black, with rows of small fulvous spots, New Forest, June 1942. *Argynnis paphia*, L., a ♂ underside which has a large area of silver on both hindwings, and a var. *valezina*, Esp., underside of a chocolate colour. Both bred from New Forest ♀. A var. *valezina* underside, the black markings being extended into stripes.

Also the following remarkable collection of aberrations taken in the New Forest in July 1942 by Mr E. E. Johnson:—*Argynnis euphrosyne*, L., an exceptionally pure white form of male. *Argynnis selene*, Schiff., two white ♂♂ and four very pale straw ♀♀. *Argynnis selene*, Schiff.,

a melanic ♀ with forewings of obsolescent character, with broad wedges or bars on margins; hindwings, black with small fulvous spots on bases. *Argynnis paphia*, L., a beautiful and symmetrical example of a ♀ ab. *melaina-ocellata*, D'Aldin (very heavily suffused and rayed). *Argynnis paphia*, L., a truly halved gynandromorph, the sides and end of the body showing very clearly the division of the sexes. *Polygonia c-album*, L., a ♂ with the costal spots on forewings banded and the hindwings entirely black. *Maniola jurtina*, L., a most remarkable and unique melanic ♀, the entire area of all the wings, both upper and underside, being deep coal black except for a very small fulvous area around the spots in the forewings. The black on the hindwings is slightly shiny.

Mr J. A. Stephens exhibited the following species of Coleoptera:— *Stilicus fragilis*, Gr. (*sulcicollis*, Eur. Cat.), taken 12.xii.40, out of a straw heap at Chatham. *Pogonochaerus dentatus*, (Fourc.), L., taken in October 1940 by beating Ivy; rare. *Xylophilus* (*Hylophilus*) *populneus*, Pz., not to be found in the London area, taken at the same place as *S. fragilis*. From the same heap of straw, *Acidota crenata*, Fb., on 4.xii.40. All the above were taken in the Chatham district.

Mr G. R. Syms exhibited living examples of the "Cluster Fly," *Pollenia rudis*, Fb., parasitic on some species of earthworm.

Mr R. W. Sparrow exhibited British Microlepidoptera he had taken during the season, including *Cerostoma sequella*, Clrck.; at Chalfont.

Mr M. Talbot exhibited hybernating larvae of *Limenitis camilla*, L. (*sibilla*, L.), and pupae of *Macroglossum stellatarum*, L.

Mr F. H. Tompkins exhibited *Antitype* (*Polia*) *chi*, L., ♂ and ♀, bred from ova from a N.W. Sussex specimen; *Hyloicus pinastri*, L., from Bournemouth; and *Leucania l-album*, Esp., bred from S. Devon.

Mr Hy. J. Turner exhibited a number of life-histories of Microlepidoptera of the genus *Coleophora* = *Eupista*, including several non-British species. He also showed the "British Butterfly" number of the paper *Young England*, published about 1860 by the late Edward Newman, and called attention to the List of "Reputed Species" numbering 76 which it contained.

Mr H. Turner (of Bournemouth).—*Hamearis lucina*, L. A truly halved gynandromorph of this species. Bred from New Forest ova.

Mr S. Wakely exhibited a number of species of Lepidoptera captured and bred during the current season. These included a small series of *Acedes piercella*, Benct., a species not hitherto recorded in Britain, but mentioned in F. N. Pierce's *Genitalia of the Tineina*: "This species may occur in Britain." The moths were bred from a bird's nest taken from an old hollow tree branch at Norwood. It is likely this species has been mistaken for *Acedes fuscipunctella*, Haw., which it closely resembles, but it has a light head and is a paler species. Other species shown were: *Pylarge fumata*, Steph., *Phthorimaea viscariella*, Staint., *Elachista perplexella*, Staint., *E. megerlella*, Staint., and *E. scirpii*, Staint.—these five species had been sent from Lancashire in larval form by Mr L. T.

Ford; *Acronycta leporina*, Linn. (Norwood), *Hadena contigua*, Vill. (Ashtead), *Eupithecia fraxinata*, Crewe (*innotata*, Hufn.) (Norwood), *Aegeria flaviventris*, Staud. (Effingham), *Eucosma foenella*, Linn. (bred from larvae in rootstocks of *Artemisia abrotanum* from a Norwood garden), *Polychrosis fuligana*, Haw. (Ashtead), *Recurvaria leucatella*, Clerck (Norwood), *Gelechia rhombella*, Schiff. (Norwood), *Phthorimaea obsoletella*, Fisch. v. Rösl. (Selhurst), *P. atriplicella*, Fisch. v. Rösl. (Norwood), *Chrysoclista rhamniella*, Zell. (Mickleham), *Coleophora lixella*, Zell. (Ranmore), *Coleophora onosmella*, Brahm (Mickleham), and various other more or less common species.

Lt. W. A. Watkins, R.N.V.R., exhibited a long series of variations of *Euphydryas* (*Melitaea*) *aurinia*, Rott., taken in W. Devon.

Mr H. O. Wells exhibited butterflies caught in 1941 and 1942 within the 3-mile radius of Epsom, Surrey, including many varieties of *P.* (*L.*) *coridon*, Poda, with a series of ab. *fowleri*, Sth.; varieties of *H. phlaeas*, L., *M. jurtina*, L., and a *B.* (*A.*) *euphrosyne*, L., with upperside yellow. The best capture was an *Aglais urticae*, L., almost black, 16.vii.42.

Mr A. S. Wheeler exhibited an *Aglais urticae*, L., in which the marking was typical but the usual ground colour was nearly all missing.

Dr Harold B. Williams exhibited:—1. Examples of homoeosis in British Lepidoptera—(a) *Pieris napi*, ab. *hibernica*, Schmidt (*citronea*, Frohawk), bred by H. W. Head, July 1931, Donegal origin, with forewing markings at tornus and near outer margin of right hindwing. (b) *Aglais urticae*, L., bred by L. W. Newman, July 1924, from North Kent larva, with large areas of hindwing marking on underside of left forewing. (c) *Papilio machaon*, L., bred by the exhibitor, 23rd June 1942, from Norfolk pupa, with considerable areas of forewing marking on the upperside of both hindwings, the tail on the right hindwing obsolescent. (d) *Dilina tiliae*, L., bred by L. W. Newman, May 1941, from North Kent pupa, with areas of hindwing marking on the upperside of right forewing, on the outer margin. (e) *Smerinthus*, hyb. *hybridus*, St., bred by the exhibitor, 16th August 1940, with a stripe of hindwing marking on the left forewing upperside. This example formed part of the same brood as the larva described and figured by Dr E. A. Cockayne, "Prothetely in a larva of *Smerinthus*, hyb. *hybridus*, Steph.," *Trans. R. Ent. Soc. Lond.*, 1941.

2. Series of *Dilina tiliae*, L., ab. *centripuncta*, Clark, bred May and June 1940, being part of a second generation from a similar aberration taken by Dr G. H. T. Stovin at Southend in 1938. The form is recessive to the type, but one example, not so extreme as those exhibited, appeared in the first generation. This irregularity has been recorded previously, by Standfuss (*Insekten-Börse*, xix, 163), who obtained three examples and three intermediates in five large broods resulting from crossings of ab. *centripuncta* and typical *tiliae*, but misunderstood his results.

Baron C. G. M. de Worms exhibited British Lepidoptera taken and bred during 1942.—A. Series of Butterflies:—*Pieris rapae*, L., from wild larvae collected near Salisbury; Spring brood showing variation in

sexes. *Argynnis paphia*, L., *valezina*, Esp., taken New Forest. *Limenitis camilla*, L., bred from New Forest larvae. *Ruralis* (*Zephyrus*) *betulae*, L., bred from Hampshire larvae. *Argynnis cydippe*, L., taken near Salisbury.

B. Series of Moths:—*Polyploca* (*Achlya*) *flavicornis*, L., Aviemore. *Diacrisia sannio*, L., Hampshire and New Forest. *Hylophila* (*Bena*) *bicolorana*, Fuess., bred from Surrey. *Agrotis ripae*, Hb., bred from Somerset. *A. praecox*, L., bred from Formby larvae. *Mamestra glauca*, Hb., Aviemore. *Apamea ophiogramma*, Esp., bred from Salisbury larvae. *Polia* (*Antitype*) *chi*, L. taken in Galloway. *Oria musculosa*, Hb., taken near Salisbury. *Monima gracilis*, Fb. (a) bred from Galloway (pink), bred from New Forest (red), bred from Salisbury (cream). *Xantholeuca croceago*, Fb., taken in the Forest of Dean. *Cucullia chamomillae*, Schiff., from Salisbury. *Cucullia lychnitis*, Rbr., bred from Salisbury. *Catocala promissa*, L., taken in New Forest. *Plusia interrogationis*, L., bred from Aviemore. *Toxocampa pastinum*, taken near Salisbury. *Ortholitha Scotica*, Ckn., taken at Aviemore. *Scotosia* (*rhamnata*, Hufn.) *transversata*, Schiff., bred from Salisbury district. *Oporinia filigrammaria*, H.-S., taken in Galloway. *Thera obeliscata*, Hb., bred from Salisbury. *Hydriomena coerulata*, Fb. (*impluviata*, Hb.), taken at Salisbury. *Ellopia fasciata*, L. (*prosapiaria*, L.), from Struan, Perth. *Bupalus piniaria*, L., from Aviemore. *Monima incerta*, Hfn., from Aviemore. *Monima munda*, Esp., bred from Salisbury.

C. The following uncommon species, rarities, and aberrations of British Lepidoptera were taken or bred during the season of 1942 by the exhibitor:—*Pieris rapae*, L., var. *immaculata*, ♂♂ bred, Salisbury, May. *Pieris napi*, L., a heavily marked ♀, Salisbury, August. *Argynnis paphia*, L., var. *valezina*, Esp., ab. *confluens*, Spuler; *Maniola jurtina*, L., a male with apical eye-spots absent and a dwarf specimen, Salisbury, 1942. *Polyommatus* (*Lysandra*) *coridon*, Poda, a series of ♂♂ and ♀♀ showing absence of normal spotting. *Polyommatus icarus*, Rott., a ♀ with very bright markings, Formby, May 1942. *Polyommatus* (*Lysandra*) *bellargus*, Rott., blue forms of ♀♀ and one ab. *metallica* *Odontosia carmelita*, Esp., a specimen from Aviemore, 25th May. *Pachnobia hyperborea*, Zett., a series bred from larvae and pupae, Aviemore, showing variation in markings. *Dysstroma citrata*, L. (*immanata*, Haw.), heavily marked specimen from Aviemore (bred). *Monima incerta*, Hfn., a cream coloured specimen taken at Aviemore. *Monima opima*, Hb., a dark form, Salisbury. *Gonodontis bidentata*, Clrck., a pale form from Aviemore. *Heliothis dipsacea*, L., a pale form, Salisbury. *Mamestra nana*, Hufn. (*dentina*, Esp.), a dark form, Salisbury. *Brachionycha nubeculosa*, Esp., a dark form from Aviemore.

Mr N. G. Wykes exhibited (1) 10 *Pieris rapae*, L., ♀, showing variation in size of lower median spot, all taken in one locality in the Chilterns, August 1942. (2) 11 *Brenthis* (*A.*) *selene*, L., including 2 bleached ♂s, 1 very brightly scaled ♀ and 2 heavily marked ♀s, Surrey, June 1942. (3) *B.* (*A.*) *euphrosyne*, L., ♀, second brood, New Forest, 31.vii.42. (4) *C. pamphilus* ♂, underside with black suffusion on forewing, Chilterns, June 1942. (5) *M. jurtina*, L., selected forms including 1 ♀ with all the ground colour pale buff, Hants, 3.viii.42. (6) *H.* (*L.*) *phlaeas*, L., 2 ♂s with suffused forewings; 1 ab. *caeruleo-puncta*, Stdgr., with 4

clearly marked blue spots. (7) 16 *P.* (*L.*) *coridon*, including 6 ♂ ab. *metallica*, ♀ ab. *floweri*, and ♂ and ♀ obsolete forms. (8) 15 *P.* (*L.*) *bellargus*, Rott., blue ♀♀ in both broods, Chilterns, June and September 1942. (9) 6 *P. icarus*, Rott., including 1 ♂ left forewing ab. *radiata*, Tutt, and hindwing limbo-juncta; 1 ♂ ab. *caeca*, Gillm., Chilterns, August 1942. (10) 96 *Plebeius aegon*, Schiff. (*argus*, Hw.), 32 ♂ and 64 ♀, including 1 ♂ pale upperside, 7 bleached forms of ♀ upperside; ♂ undersides, 1 costajuncta-digitata, 1 post-radiata; ♀ undersides, *costa-juncta*, Tutt, basi-juncta, costi-basi-juncta, glomerata, discreta (very extreme with all hindwings white ground, Hants and Surrey, July 1942.

more as in *carpophaga*, especially in the two stigmata, in cell 1a-1b of the third area and between the elbowed line and the margin, especially at the apex of the W. at the wing apex. Hindwing underside and abdomen yellowish." Sicily.

ab. *virgata-pallida*, Whtmn., *Ent. Rec.*, XL, 22 (1928).

Orig. Descrip.—" A white form in which nearly all the markings are obsolete in the inner and outer areas, and the centre area deep red-brown on which deep background the stigmata show up clearly in paler brown. My two insects have pure white ground colour and are the banded form of *pallida*, Tutt. I have never seen the extreme white and red-brown banded form before among the many thousands I have bred."

ab. *sicula*, Drdt.-Stz., *Pal. Noct. Supp.*, III, 102 (1931).

Fig.—*l.c.*, 13b.

Orig. Descrip.—" A somewhat smaller, pure grey form with prominent dark central area." Sicily and Capri.

ssp. *syriaca*, Osth., *Mitt. Münch.*, XXIII, 47 (1933).

Orig. Descrip.—" Similar to the ochre-yellowish *ochracea*, Haw., and its brownish darkened subform *brunnea*, Tutt, both of which are described as local forms from England. In colour being somewhat between the two, the majority of the specimens are pale reddish-brown with stronger marking: odd examples are paler ochre-yellowish with stronger marking, others darker red-brown like the former, but even in the darkest specimens the reddish-brown tone is distinctly in evidence. In a few examples in the lower portion of the marginal area inside the outer transverse line there is a striking whitish appearance." N. Syria.

Dianthoecia, Bdv. (1840), most authors. [*Polia*, Ochs. & Treit. (1816-25), Hamps.: *Harmodia*, Hb. (1819), Warr.-Stz., Meyr., Meyr.] *capsincola*, Hb. (1790) (Schiff. (1775)) = *bicruris*, Hufn. (1766).

Tutt did not use the prior name nor even the earliest author of the name he used. Hufn. at that time was not recognized, as the correct date was mistaken. [Although Zeller had pointed out the correct date in *Iris*, XXXVII, 17 (1844).—T. B. F.]

Hufn., *Berl. Mag.*, III (3), 302 (1766), described this species under the name *bicruris*.

Orig. Descrip.—" Upper wing has a dark brown ground colour, which in many specimens is sprinkled with pale brown spots. Not far from the costa there stand a longish orbicular spot and a reniform spot, both of which are pale brown in the middle and margined by white. These two spots are united by a large indefinite white blotch, which goes to the inner margin and has brown streaks and spots in it. This large blotch with the two stigmata together make the whitish-grey angular figure depicted in Herr Hufnagel's name." From *Rott. Naturf.*, LX, 121 (1776).

This form with the diffuse white blotch was certainly not the type of Hb., which really should be taken as a non-typical form under the name *capsincola*, Hb.

Tutt, *Brit. Noct.*, III, 32 (1892): Meyr., *Handb.*, 79 (1895): Barr., *Lep. Br. Is.*, IV, 242, plt. 163, 2 (1897): Stdgr., *Cat.*, IIIed., 163 (1901): Hamps., *Lep. Phal.*, V (1905): Splr., *Schm. Eur.*, I, 179, plt. 37, f. 26 (1905): South, *M.B.I.*, I, 250, plt. 124, f. 5-4 (1907): Warr.-Stz., *Pal. Noct.*, III, 75, plt. 17 h (1909): Culot, *N. et G.*, I (1), 118, plt. 20, f. 16 (1911): Meyr., *Revis. Handb.*, 149 (1928).

Esper, *Abbild. Noct.*, IV (II, 1), p. 653, plt. 173, 5 (1792-?), gave a figure he called *capsincola*, not good, but with much suggestion of the fig. Hb. 57. Esper's figure 3 on plt. 152 *impressa* is undoubtedly a *capsincola* in which the transverse lines are very dark, but it has the black markings very much reduced. Werneberg calls it *capsincola* = *bicruris*, Rott.

Ernst & Engram., *Pap. d'Eur.*, VII, 76, f. 460 a, b (1790), gave two recognizable figures of a *Dianthoecia*, both of which 460 a, b depict *capsincola*, 460 a showing considerable scattered whitish markings. Wrnbg., *Beitr.*, II, 118 (1864), determined these figures as *bicruris*, Hufn.

Brahm, *Scriba's Beitr.*, II, 119, plt. 9, f. 5 (1791), gave a long description of *capsincola* and a good coloured figure. The area below the two stigmata was white, the extention of this area to the inner margin turned gradually to a brownish-white on the inner portion. The ground colour is ashy-grey. The stigmata grey with whitish lines around. The claviform is dark brown. The white area gives the figure quite a distinctive character.

Schiff., *Verz.*, 84, P. 6 (1775), was the first to use the name *capsincola* for a larva feeding in the seed capsules of *Lychnis dioica*. "Lichnissameneule."

Hb., *Beitr.*, I (4), 19, plt. 3, P. 1-3 (1789), gave a good figure of *capsincola*.

Hb., *Samml. Noct.*, 57 (1800-3), gave a very fair figure as *capsincola*, but in his *Text Noct.*, p. 173, gave Schiff., *Verz.*, as the priority author (1805?); f. 57 has much less black marking than in the figure in the *Beitr.*, and is certainly a distinctive form.

Bork., *Naturg. Noct.*, IV, 367 (1792), said it was the *bicruris*, Hufn.

Illiger., *N. Ausg. Verz.*, I, 285, P. 6 (1801), said that probably the *filigrana*, Esp., IV, 130, 4, was this species. Bork. with a ? placed it to *cucubali* (*rivularis* ?).

Dup., *Hist. Nat.*, VI, 334, plt. 93, 6 (1826), gave a good figure. He said it was the *bicruris* of Rott.

Freyer, *Beitr.*, II, 122, plt. 87 (1829), gave a very good figure, but did not depict the usual central lighter blotch below the stigmata.

Guen., *Hist. Nat.*, VI, 21 (1852), said it was the *bicruris*, Rott., of *Naturf.*, IX, 53, and the *impressa*, Esp., plt. 152, f. 3? He referred to Engr. 460 b.

Barrett, *l.c.*, plt. 163, gave three figures: 2 b, with very much lighter markings.

Hamps., *Lep. Phal.*, V, 195 (1905), accepted the name *bicruris*, Hufn., and attributed the name *capsincola* to Schiff., *Verz.*, and treated *impressa*, Esp., as a synonym.

Splr., *Schm. Eur.*, I, 179, plt. 37, 26 (1905), gave one figure and dealt with v. *capsincoloides*, Stndfs.

South, *M.B.I.*, II, 250, plt. 124, 3-4 (1907), gave two very good figures of our average British form, ♂ and ♀. In the ♀ the whitish blotch shown in some early figures is quite apparent.

Culot, *N. et G.*, I (1), 118, plt. 20, f. 16 (1911), gave a good figure of the normal form. He said that this species has marking almost exactly like *cucubali*, but is of a brownish-yellow, while *cucubali* is strongly violaceous, which the former never is.

Warr.-Stz., *Pal. Noct.*, III, 75 (1909), gave two figures of *bicruris*, Hufn., ♂ and ♀, and two of a new form, *fuligata*, Warr., ♂ and ♀, plt. 17 h. The colour of this plate does not give the delicate tint of this species and others. There is a too great dominance of brown. The synonyms of *bicruris*, Hufn., were given as *capsincola*, Esp., and *impressa*, Esp. They gave only two forms, the dark suffused *fuligata*, Warr., and *capsincoloides*, Stndf., from Corsica.

The Names and Forms to be considered:—
bicruris, Hufn. (1766), *Berlin Mag.*, III, 302.
f. *capsincola*, Schiff. (1775), *Verz.*, 84.
impressa, Esp. (1788-?), *Abbild.*, IV (1), plt. 152, 3 (a synonym).
ab. **bondii**, nov. [Newman, *Brit. Moths*, p. 387 (1869)].
ssp. *capsincoloides*, Stndfs. (1893), *Berl. Ent. Zeits.*, XXXVIII, 360.
ab. *fuligata*, Warr.-Stz. (1909), *Pal. Noct.*, III, 75, plt. 17 h.

Tutt dealt with (1) *capsincola*, Hb., *Beitr.*, I, which he took as the type, and said he had never noticed a variety.

Barrett remarked on the variation:—
Usually not variable, or only slightly so in the intensity of the dark clouding and markings.

He reported a specimen "having the pale colouring below the stigmata increased into a sort of dusky-white central bar." [This is possibly the typical form *bicruris*, Hufn.—Hy. J. T.]

Another, "in which the margins of the stigmata and the subterminal line is broadened into yellow-white clouds, occupying a considerable portion of the fore-wing."

Another "had a considerable broadening of the subterminal line, but the wavy lines at the extreme margin suppressed."

ab. **bondii**, nov. Newman, *Brit. Moths*, 387 (1869).

Description.—The following is a description of a curious figure of *capsincola*, figured by Newman from the Bond collection.

"White line from the base, running below the stigmata, is more conspicuously white and divides the wing area into two quite distinct areas. The upper much lighter because the ground is of a lighter shade and the light markings all somewhat larger and more in evidence, even the upper half of the usually dark submarginal band is white with the black sagittate spots very plainly depicted. The lower half below the dividing line is predominately dark in contrast. The black patch below the line is extended in full width to the inner margin. The submarginal band is here dark and complete as in the typical form. The white markings at base and area between the dark half-bands are irregular scrawls. The submarginal white line of the wing is perfect as in the typical form, but the space beyond the fringes are practically dark without marking."
—Hy. J. T.

If it be necessary to name it we may call it ab. **bondii**, nov.

ssp. *capsincoloides*, Stndf., *Berl. Ent. Zts.*, XXXVIII, 360 (1893).

Orig. Descrip.—" Size and wing-shape just as in *capsincola*, a common and well-spread species. The essential differences lie in the forewing marking of the new insect; on the outer side of the reniform the colour is deep black-brown and similarly the deep black-brown colour lies between the two stigmata as well as between the two transverse lines to the inner margin. The last character causes the usually extraordinarily distinct claviform to be almost obsolete on account of the deep ground colour obscuring it. More conspicuous and distinct than in *capsincola* are the waved line which lies almost parallel to the outer margin, as well as the shape of the reniform and especially of the orbicular. These two latter markings are notably larger than in *capsincola* (when it is not an individual characteristic)—I have, up to now, never seen them so large. On the upperside the hindwing of this Corsican insect is marked by a pale band from the light spot in the anal angle up to the apical angle, lying somewhat parallel to the hind margin. The head, thorax and abdomen are all darker than in *capsincola*."

ab. *fuligata*, Warr.-Stz., *Pal. Noct.*, III, 76 (1909).

Fig.—*l.c.*, plt. 17 h.

Orig. Descrip.—" Examples from Uralsk are all decidedly smaller and much blacker than the ordinary form."

Dianthoecia, Bdv. (1840). Most authors. [*Polia*, Och. & Treit. (1816-25), Hamps.: *Harmodia*, Hb. (1819), Warr.-Stz., Meyr., Meyr.] *cucubali*, Schiff. (1775, last author in that year) = *rivularis*, Fb. (1775).

Tutt here too did not work out the prior name, but took the *cucubali*, Fuessli (1784), *Neu. Mag.*, II (2), 218, for the type description, a much more informative account than any of those which preceded it.

rivularis, Fab., *Sys. Ent.* (1775), p. 613.

Orig. Descrip.—" Cristata alis deflexis fuscis; fascia grisea apice bifida flavo marginata." "Alae fuscae basi strigis aliquot undatis fuscis, in medio fascia latigrisea, ad marginem crassicrem bifida: laciniis flavo marginatis. Margo ipsi nigro cinerisque variegatus. Pone fasciam striga undata flavicans." In *Ent. Sys.*, III (2), 107 (1794), he added " vix differt " from *capsincola* of *Verz.*, 84, 4, and that it was the *cucubali* of the *Verz.*, 84, 5. Also it was the *triangularis* of Thunberg, *Dissert*, P. 3 (1784). Saxonia.

Tutt, *Brit. Noct.*, III, 33 (1892): Meyr., *Hand.*, 79 (1895): Barr., *Lep. Brit. Is.*, IV, 238, plt. 183, 1 (1897): Stdgr., *Cat.*, IIIed., 163 (1901): Splr., *Schm. Eur.*, I, 179, plt. 37, 27 (1905): Hamp., *Lep. Phal.*, V, 194, fig. 26 (1905): South, *M.B.I.*, I, 251, plt. 124, 5-6 (1907): Warr.-Stz., *Pal. Noct.*, III, 75, plt. 17 g, h (1909): Culot, *N. et G.*, I (1), 119, plt. 20, f. 17 (1911): Meyr., *Rev. Hand.*, 149 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 102 (1934).

Schiff., *Verz.*, 84, P. 5 (last publication in 1775), was the first to use the name *cucubali* for the larva which fed on *Lychnis dioica*. The

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—EDS.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris*, and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Barrett, *Lep. Brit. Isles*, Vol. iii; Culot, *Noctuae and Geometrae.*—*A. J. Wightman, "Aurago," Pulborough, Sx.*

Wanted—H. phlaeas (with data) from Palaearctic regions, particularly N. America, extreme North (Norway, etc.), China, Algeria, Ethiopia, N. Africa, Madeira, Balkans; also from other regions and British Isles. Also other Chrysophanids from similar areas. Also Continental (only) *P. fulminea* (*leucophaea*), *lichenea*. *Duplicates*—Lepidoptera (some rare) mostly from Japan, but also from S. Africa, S. America, India, East Indies, etc.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. Saturdays, February 13; March 13; 2 for 2.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Communications Promised:—H. A. Leeds, E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, Dr Kettlewell (plates), P. M. B. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, Rev. Desmond Murray (plate), H. Donisthorpe, Prof. J. W. Harrison, etc.

All Communications should be addressed to the Acting Editor, HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

Printed by T. Buncle & Co., Ltd., Arbroath.

ol. LV.

No. 3

MARCH 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

BUTTERFLY COLLECTING IN WOOD WALTON, HUNTS, AREA DURING 1942.

By H. A. Leeds.

A few hibernated *urticae* and *rhamni* appeared prior to 11th April, when I saw a male *rapae*, and another on 14th; then two or three daily when fine until the 29th, when six or seven were flying in the garden. On 3rd May the first female appeared, and ten males, when a *brassicae* and two *cardamines*, all males, also were first seen. The emergence increased gradually and quite fresh *cardamines* were observed on 25th June. A sharp frost ensued the next morning. The *Pieris* pests had not then appeared in sufficient numbers to do any appreciable harm, and in August and September the whites were so numerous that it was impossible to cope with their larvae and all the Autumn green vegetables were destroyed. The second brood of *napi* was also abundant.

When *pruni* larvae were approaching full growth a severe frost occurred one night in May and on going to Monks' Wood two evenings afterwards I found a dead larva and three others affected by the frost, which darkens the posterior half from which shrivelling and death mostly ensue. One, however, managed to pupate and a female emerged with somewhat rounded but fair-sized forewings and the hindwings rather less than ordinary length but only 3 to 4 mm. broad. These narrow wings each contained two of the fulvous markings on the upper surface, and the fringes on the inner margin are complete, but elsewhere the wings are ragged. Three other larvae obtained at the same time appeared healthy and two perfect males emerged; the other larva attained full growth and then for eight days wandered about a glass-topped metal box. It was provided with old and young leaves of both narrow and broad-leaved blackthorn, fresh at intervals, but would not eat or pupate, although I provided two stems for choice of a resting place, and it died. In the wild state I saw five male *pruni* in Monks' Wood on 21st June, and afterwards for a few fine days the males became fairly plentiful, but females were scarce, and the bountiful supply which might possibly have ensued from the 1941 fine and sunny flight in the early part of July was doubtless minimized by the frost. This season during the first four days of emergence only one was seen feeding and this was on flowers of dog-wood, *Cornus sanguinea*. On 25th June they frequented the privet flowers and one day I noticed that a creamy-green spider had seized a male *pruni*, halfway along the body. Placing both in a cyanide bottle the butterfly was quiescent in a few seconds, but the spider only released its grip after about four minutes, walked dizzily away and collapsed. This occurred in full sunshine, and no doubt *pruni* was gripped when feeding. Possibly a similar occurrence had been overlooked in previous years, as during the next evening three more living males were seen to be held in an exactly similar way. I have no book here to identify the species, but this spider is rather common; it is of sturdy build with round body and rather thick legs, pale and greenish, and evidently hunts its prey. A very different wainscot-coloured and more slender spider frequents the long grasses, and with the aid of a bicycle lamp I have seen them catch *coridon* when asleep on Royston Heath. Many *pruni* are caught in spiders' webs.

This season no living *lucina* were seen, but a dead male was noticed in a web.

Of the Hairstreaks, *rubi* was fairly plentiful, as also was *w-album*; *quercus* very scarce; and one only of each sex of *betulae* were noticed, as imagines.

A remnant of our beautiful flowery grass fields remained uncut in July, no other like it is left, and more than half of that field was cropped with wheat, to reach which portion farming implements had made a rather wide pathway for about 100 yards through the grass, and along which I could wander up and down. Thinking it might give a last chance of watching in its limited area the beauty now almost reduced to a memory, I visited it regularly after 4th July, but apart from some worn *w-album*, *c-album*, *sylvestris*, a few *jurtina* and "whites," the quantities were disappointing until 14th July, when shortly after an early tea I arrived on the pathway and saw freshly-hatched *galathea* climbing up the stems of grass; *jurtina* was also hatching, and as I patrolled the path in the still air and brilliant sunshine their quantities were continually increasing. As the evening advanced both species began to feed at the various flowers, of which the black knapweed, *Centaurea nigra*, was most abundant, but clumps of thistles and the prominent ragwort, *Senecio jacobaea*, provided choice; many *pamphilus*, *lineola* and *tithonus*, with an occasional *phlaeas*, nearly all fresh, joined in the feeding, sunning or gambolling. Rarely netting, I was looking and hoping for a pronounced variety, but only one was seen and this a female *jurtina* with both frontwings grey speckled on a pale ground. It was settled with expanded wings; the hindwings were much darker and grey. It was near me and just before my net reached it a large fly struck it in the middle; the startled butterfly flew off and, passing over a wire fencing, went down among the wheat. Three days later I saw and captured it in the grass field; the forewings remained perfect but the hindwings were very torn. The pathway reached the end of an elm wood where a few *c-album* frequently settled; in its hedge two or three *aegeria*, several worn *w-album* and lots of *tithonus* and *jurtina* were feeding on the blackberry flowers. Altogether hundreds of fresh butterflies had hatched that evening and were flying up to the time when the western sun was obscured by a black cloud before setting. This cloud advanced and produced a volume of rain at nightfall, and the next day nearly every butterfly appeared washed out. Afterwards emergences were meagre. Although that evening I returned home with only one specimen, a female *jurtina* with two additional pronounced spots on the underside forewings, it was a pleasure to see such a large number of mixed species; a few *urticae*, *rapae* and *aglaia* were included. It is impossible for such a concentrated emergence to occur elsewhere in this district, as the last two rough grass fields on the hilly range have been torn up by a gyrotiller. This destroyed two public pathways, one crossing the first field centrally towards Abbots' Ripton and the other leading almost from corner to corner towards Alconbury Hill in the second field. It occasioned considerable grumbling and inconvenience to the rural inhabitants as the highway is circuitous and in parts has a very rough surface for pedestrians. I have seen a plan embracing these fields and both footpaths are delineated thereon, hence they should be made passable again after

the war. Several of the old grassfields have had a first crop of flax, which is not materially affected by wireworms, and it has produced a fair result. Following a crop of flax some allotments were allocated for this hamlet, but despite numerous traps of pieces of potatoes and carrots inserted into the earth on sticks, and considerable hunting, the wireworms seriously depleted the onion, potato and other vegetable crops. Some idea of their abundance can be estimated from the fact that my brother destroyed 836 wireworms in one day on ten rods of allotment, and large numbers were killed on other days. About six acres of Monks' Wood is being cleared for planting potatoes. More hedges have been cut and drains cleared out than in peace time, whilst new drains have been added in the fens. Cultivation is of major importance.

Most of my time is spent on the grass verges of the roads or on the railway banks. Only one *argiolus* was seen, in the spring, and then one *cardui*, and in the summer another of the latter; *atalanta* was scarce; *urticae* and *io* in fair numbers; colonies of *icarus* getting more numerous; very few *agestis* (*medon*); *phlaeas* less than last year in second brood and two nice female upperside ab. *auroradiata* taken; at the end of September and early October six of a third brood seen. No *Colias* appeared, nor *semele*, for which special search was made, as a collector visiting the district wanted them; up to a few years ago they were fairly common.

In Monks' Wood during April *c-album* was seen sporting with *io*, and elsewhere *euphrosyne*, *cydippe* and *paphia* about in usual quantity, also *venata* (*sylvanus*); *tages*, *malvae*, *hyperantus* and *rhamni* were somewhat scarce. Three *camilla*, each at different woods, were seen.

The second brood of *megera* was most abundant in August, and almost every day I spent two or three hours examining them; the variation was poor. A special note was made of this, for inclusion, before seeing Mr F. H. Day's remarks, page 121, of the October *Entomologist's Record* regarding its abundance in the Carlisle district. Like Mr Day, I had never seen *megera* so plentiful previously.

The season here was generally poor in variation and only one outstanding aberration was taken when my first netted fresh *c-album* had all wings centrally black banded and was heavily marked elsewhere, on a pale ground. It was captured on 25th June, and is a male. On 3rd July some hibernated *c-album* were flying with fresh ones, and one of the latter settled on my black net, which presented a flat surface as I was holding it taut. If I had raised the net quickly and released my grip of the bag it could have been easily caught, but it was typical; soon it made a long flight along the riding, and, returning, settled on the surface of the net again. This it shortly repeated, but returning from the next flight it settled on elm but quickly came to me and alighted on my cap, which I quietly removed; this action apparently startled it, for it hurriedly departed over the wood. Only five *c-album* were seen during the second brood, but the weather seldom favoured their flight.

SOME MIDDLESEX COLEOPTERA.

By Horace Donisthorpe, F.Z.S., F.R.E.S., etc.

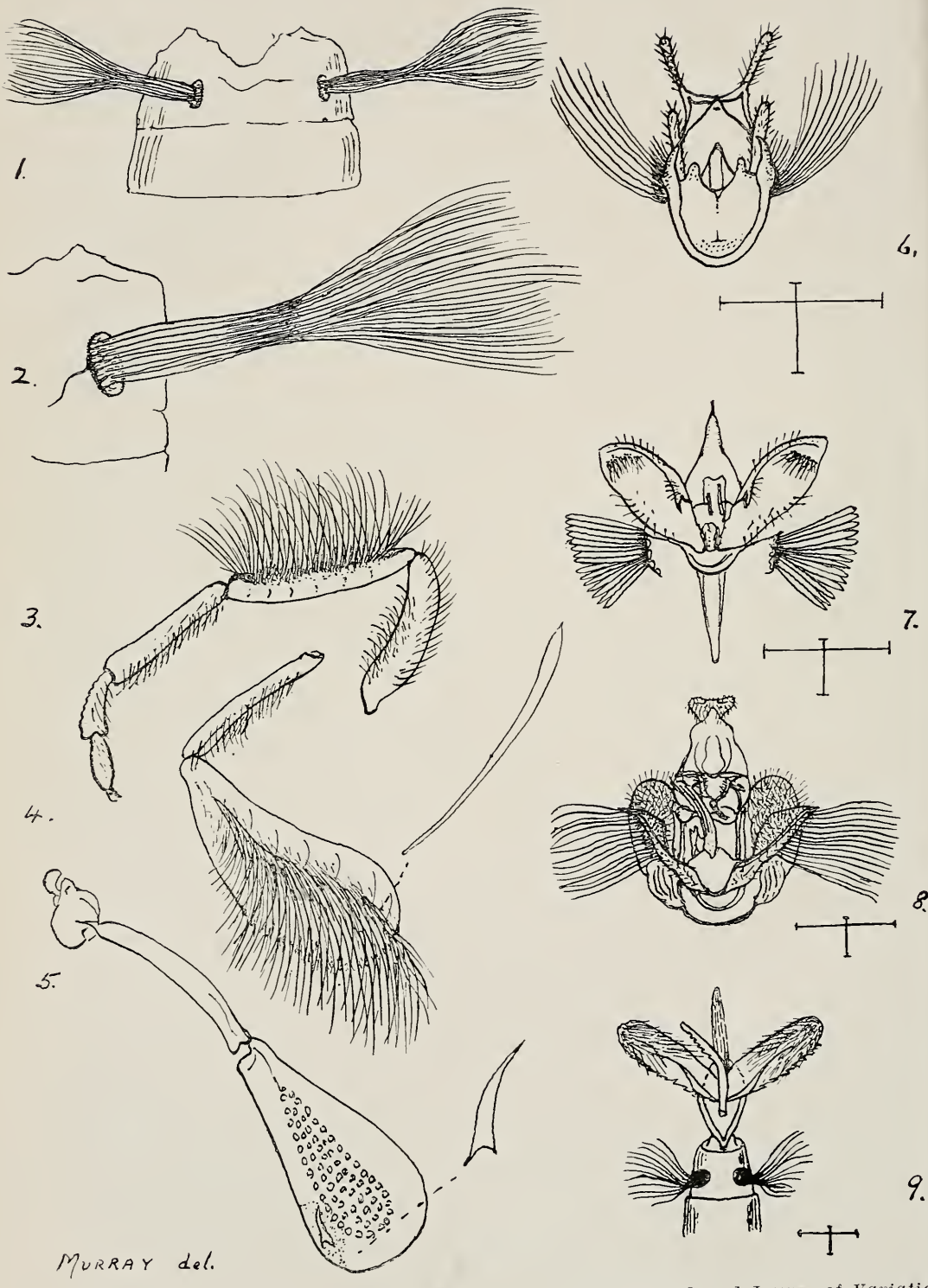
As far as I am aware, no attempt at a complete list of the beetles of Middlesex has been published, nor has the Victoria History of that county appeared yet. The following record consists of beetles I have taken in a few localities in Middlesex in recent years, and it is intended for the benefit of any Coleopterist who may be compiling such a list. Of course, there are a number of other species to be found, in my Entomological Journals, from this county, all of which I should be pleased to place at the disposal of anyone who is preparing a list of the Coleoptera of Middlesex. My other records include all those beetles I used to take in a granary in Holborn years ago. There are also several curious captures made in London, the chief among them being *Malachius aeneus*, L., which I caught, in my top hat, on the wing in the Haymarket on 30th May 1892!

Carabidae.—*Carabus violaceus*, L., in my garden and on footpaths, Heston; *C. monilis*, F., in gardens, Lampton; *Elaphrus riparius*, L., on mud near canal, Boston Manor; *Chlaenius nigrocornis*, F., under rejectamenta in damp spot, Boston Manor; *Acupalpus meridianus*, L., on pavement, Heston; *Ophonus puncticollis*, Pk., in cut grass in churchyard, Old Heston; *O. seladon*, Schaub., ♂, in drain, Osterley Station; *O. ruficornis*, F., on pavements, under rubbish in fields, etc., Heston; *Harpalus aeneus*, F., on pavements, Heston, and on path, Boston Manor; *Stomis pumicatus*, Pk., in drain, Osterley Station; *Pterostichus madidus*, F., in house, on pavements, and garden, Heston; *P. nigrita*, F., common in damp places, Boston Manor; *P. vernalis*, Pz., under refuse, damp spot, Boston Manor; *Amara apricaria*, Pk., in garden, Heston; *A. acuminata*, Pk., in cut grass, Old Heston churchyard; *A. familiaris*, Duft., in bathroom, Heston; *A. lucida*, Duft., on pavement, Heston; *A. trivialis*, Gyll., on pavements, Heston; *Anchomenus micans*, Nic., by sweeping *Nasturtium amphybium*, Boston Manor; *Bembidion lampros*, Hbst., on pavements, Heston; *B. littorale*, Ol., on mud near canal, Boston Manor; *Trechus minutus*, F., var. *flavohumeralis*, Donis., in cut grass in Old Heston churchyard, for several years; the typical form not present.

Dytiscidae.—*Agabus bipustulatus*, L., under rubbish in dry pond, Boston Manor.

Hydrophilidae.—*Anacaena bipustulata*, Steph., sluicing mud in damp spot, Boston Manor; *Helophorus aequalis*, Th., *H. brevipalpis*, Bed., and *Ochthebius pygmaeus*, F., on mud, Boston Manor; *Megasternum boletophagum*, Marsh., in cut grass, Old Heston churchyard.

(*To be continued.*)



Ent. Record and Journ. of Variation.

HAIR-PENCILS AND SCENT BRUSHES.

HAIR-PENCILS AND SCENT BRUSHES.

(With Plate II.)

By Rev. Desmond Murray.

The more closely our moths are studied the more evident it becomes that insects generally and Lepidoptera in particular (with allied families) are furnished with elaborate sense organs.

These are variously distributed over different parts of the insect: the wings, legs, thorax and abdomen often hold sensitive cells in great variety. " Probably all the hairs and bristles with which insects' bodies are studded are sensitive to touch and to vibrations; it may be some have senses we cannot appreciate," Malcolm Burr has told us. The late Dr Eltringham, whose death we had to recently lament and who was the recognized authority on this subject, found that a tiny Caddis fly of the genus *Hydroptila* had an elaborate apparatus at the back of the head, comprising sets of scent glands and extensible brushes, protected by folding covers, neatly arranged and packed away under a pair of hinged lids, barely 1/50th of an inch across. (*T.E.S.*, 1919, p. 420.) " One hardly knows which is more marvellous," the same writer says, " the microcosm of nature or the skill and ingenuity of the men who have found, dissected and interpreted such minuteness."

With moths these various kinds of scent organs have so far only been partially studied. Here it is contended that they are of much more frequent occurrence than is generally supposed, that they extend, in fact, to all the families of moths in our lists, from the *Sphingidae* to the *Tineina*, for they are found with all these in one or other of the parts mentioned. Though varying considerably in form, their function must be similar in every case.

A few notes are given here on the Hair-Pencils and Scent Brushes which are found on the abdomen and legs of many of our common moths. It is only the male insect which possesses these organs.

(1) First, to make clear what particular organs we refer to. The Hair-Pencils which are found especially amongst the *Noctuidae* consist of long tufts of specialized scales, on each side of the first segment of the abdomen. Generally they are concealed in a pocket or extensile pouch and therefore are seldom seen. They arise from chitinous sockets and show muscle fibres which must serve to extend the brush from its groove. When expanded they resemble two elaborate fans.

Though previous writers had noticed them, Mr F. N. Pierce drew special attention to their frequent occurrence in the Noctuids. (Cfr. *Genitalia Noct.*, 1909, p. 18.) Amongst the 300 odd species examined some 40 were found to have the Hair-Pencils, which also occur in close proximity to the genital organs, but more generally on the first abdominal segments. Although he recorded their presence in every species in which he actually observed them, his failure to notice them in other species is not to be taken as conclusive evidence of their absence. Eltringham examined and illustrated the Hair-Pencils in the case of two common moths, i.e. *P. meticulosa* and *X. monoglypha* (*polyodon*) (*T.E.S.*, 1925, p. 1), concluding that they must be for the diffusion of scent. Probably they are never expanded except in flight and perhaps only then in the presence of the female, Eltringham tells us. Two fur-

ther examples are given (Figs. 1 and 2) of *C. absynthii* and *H. lucens*. The first has, in addition, the underside of the cell of the forewing covered with a dense tuft of long setae and prominent tufts on the back of the body. These together no doubt constitute both scent container and distributing brushes. The other example was generally considered a form of *H. nictitans*, though really a distinct species. The latter does not possess the Hair-Pencils. They may then be of some specific value. Similar ones are found in *H. paludis*, *H. crinanensis* and other allied species.

(2) As well as the Hair-Pencils there are extensile sacs known as the *Coremata*. These are similar tufts of specialized scales (often also termed Hair-Pencils) which are sometimes found on the eighth segment on each side of the body, the setae often being spatulate in form. The *Coremata* show very similar structure to the Hair-Pencils proper and must be considered to function in the same way as distributors of scent. This contention is strengthened by the fact that in some tropical species a more elaborate organ is found in the same position, which Eltringham concluded was an organ of scent (*T.E.S.*, 1927, p. 431). The particular species he mentioned was from Trinidad. This and many S. African species have Hair-Pencils on the first and eighth segment as well as Scent Brushes on the legs.

The *Coremata* are distinct from the *Peniculi* on the ninth segment, which are expansions of the *tegumen*, though also in close priximity to the genital organs. Examples of *Coremata* amongst the *Geometridae*, *Pyralidae*, *Tortricidae*, and the *Tineina* are shown in Figs. 6 to 9 (after Pierce). They vary considerably in size and form.

(3) The Scent Brushes are more generally found on the legs, the male moth only being affected. Recently an example was given in which the brush is found on the foreleg (*Ent. Record*, **54**, p. 65); another where the second pair of legs holds a similar organ (Vol. **53**, p. 73). This was of *H. derasa*, which is of special interest as its presence had not been previously recorded.

The two examples given here are found on the hind legs, i.e. *Hepialus humuli* and *H. hecta*—Figs. 3, 4 and 5. In the first case the hind leg is normal, except that the tibial spurs are absent, but the femur holds a large tuft of long setae or a Scent Brush. The brush, as in most cases, is on the inner side of the leg, held close to the body. Barrett first noticed that the tibia of *hecta* was aborted into a kind of swollen sac or " a bladdery termination," as he called it, and that this organ gave forth a scent. The last leg joint and foot is absent, or at least so it appears.

The first figure shows the brush in position; the second the tibia denuded of scales, showing the bases or sockets from which the setae spring; the third what appears to be the remains of a foot. There is a small section at the end of the leg which seems to be more chitinized than the rest. What appears to be a minute rudimentary foot can possibly be made out in this area. In some mounts it appears to be more in the centre, though it generally seems to be carried away by the dense scales.

Deegener says the swollen tibia contains the glandular apparatus. (Cfr. *Zeit. Wiss. Zool.*, 1902, p. 276.)

The presence of the Scent Brush in these moths goes to disprove the theory that in the case of the *Hepialidae* the female seeks the male and not *vice versâ* (T. E. Robson, *Ent. Record*, Vol. 3, p. 55 seq., 1892). " The male *humuli*," Robson says, " flies in this conspicuous manner that the female may see him and his light colour very greatly assists this." But if the male is using his Scent Brush, while in flight, as a means of finding his partner (as must be supposed) the case is reversed or the female must have some corresponding scent to attract him. Which theory is correct?

The other three species in our fauna do not seem to have a Scent Brush, though probably all moths, as already stated, have one or more in some form or another. It is interesting to find that the flight of these three species is quite different from that of the other two. Robson supposes that in the former cases it is the female which diffuses the scent.

It is only by a closer study of these interesting organs in a variety of insects and by comparison that the problem of their true function can be solved.

EXPLANATION OF PLATE.

Hair-Pencils : Fig. 1. ♂ *Cucullia absynthii*, Linn. × 6. Fig. 2. ♂ *Hydraecia lucens*, Frey. × 12.

Scent Brushes : Fig. 3. ♂ *Hepialus humuli*, Linn. Hind leg × 12. Fig. 4. ♂ *H. hecta*, Linn. Hind leg and single seta × 12. Fig. 5. Same denuded of setae and rudimentary foot.

Genitalia showing Coremata (after Pierce) : Fig. 6. ♂ *Acidalia imitaria*, Hb. (Geometridae). Fig. 7. ♂ *Diasemia litterata*, Scop. (Pyraustidae). Fig. 8. ♂ *Pandemis heparana*, Schiff. (Tortricidae). Fig. 9. ♂ *Parectopa ononidis*, Z. (Tineina).

MORE ON " AN ARTIST'S NOTE."

By P. Siviter Smith.

At the risk of becoming tedious to readers I would like to add a word or two following the very interesting points made by " An Old Book-Maker." The correspondence I have received since the subject was opened makes me think that this discussion that has been running is not without interest to some at any rate.

We are referred now to colour-gravure and collotype. I did omit mention of them because on the whole, for colour work in particular, they are costly on small runs such as are required for scientific publications. My note was not, of course, intended to be a comprehensive review of the various processes—I am hoping sometime in the not too distant future to be able to help to produce within one cover a general outline of all available methods together with other relevant matter, but my previous note was rather sketchy.

I am familiar with the two processes in question. Our friends the Sun Engraving Company have been very successful with photo-gravure, particularly in making the process into one that could be operated commercially on a large scale with consistent results. Whilst it is true to say that gravure need not employ a screen, it is not correct to say that a screen is not used. At the present time a screen is often used;

I have just checked this with current copies of *The Illustrated London News* and *Illustrated* and they both show screen pattern. A screen is not necessary for gravure or collotype but increasing use is now made of them as they make production rather easier and quicker.

Collotype is, in its basic idea, not unlike gravure and gives good results when carefully worked. Both processes are alike in that a fairly good result is obtained nowadays without much time or money being spent; it is when a very careful match to an original is required that cost leaps up, as colour correction in the two processes is not easily carried out. In collotype and gravure, therefore, by the time that colour correction to exacting scientific standards has been applied the cost has generally risen very considerably.

I must, however, correct an impression given by " An Old Book-Maker." Referring to the dots of the screen pattern visible under a magnifying glass, he says they are as a result not of value for scientific work that involves magnification. This is true, of course. By inference, he suggests that as gravure and collotype do not use a screen therefore they can serve as a safe scientific guide even under magnification. This is a dangerous assumption. The absence of screen pattern is apt to make one think that the detail as shown by a collotype print is *scientifically* correct. Whilst it would be right to say that a closer approximation is thereby achieved, it should be clearly understood that it *is* only an approximation and should not be relied upon as scientifically exact either for colour or shape and outline.

The main advantage these processes have is that when no screen is employed the image is clearer and is a nearer approximation of the actual object. It must be borne in mind, however, that apart from this these two processes still have to undergo the same stages of breaking down for colours by filters (an imperfect process), some consequent hand correction work by retouching artists, or manipulation of the plates by etchers. There is therefore no guarantee that, apart from a cleaner outline due to lack of screen dots, the gravure or collotype sheets are any more accurate for colour or light and shade than any other process. *All* processes of reproduction attempt to portray outline, shape and colour occurring in two planes by manipulation of light and shade in one plane only, and as such are not capable of enduring critical scientific examination that requires more exactness than this.

It is therefore important not to exaggerate the use to which a printed or photographic sheet can be put, whether the sheet be by gravure, collotype or other " non-screen " process, or by one where a screen or other mechanical device is used. The compromise that all such processes have to make to reproduce objects prevents complete reliance being put on the portrayal thereby given of " anatomical structure of an insect through a lens " as mentioned.

For example, consider the shining forewings of *Lycaena phlaeas*, L., the Small Copper. Reproduce this by gravure, collotype or other non-screen process and then examine the veins of the forewings with a lens. They will not be broken up into a series of dots but they will nevertheless appear as a shining white line with a dark one beneath it. This is the " highlight " on top of the vein and the slight shadow beneath it. It is not *structurally* the vein, it is the interpretation on paper of the appearance of that vein to the camera lens.

Possessing two separated lenses (eyes) we are able automatically to recognise depth of focus and therefore to see that one part of an object is thicker or higher than another part. A camera lens can only portray the *effect* of this by highlight and shadow. No process is free from this limitation. of course, so that I hope these points will warn anyone possibly mistaking the tenor of an " Old Book-Maker's " remarks and being led into giving scientific standing to everything that is seen under magnification of a non-screen process or photographic reproduction whether in colour or black and white.

Stereoscopic photography would be even more accurate as that replaces the second plane of depth which it is impossible to obtain on a printed sheet, not with a single printed image at any rate. Stereoscopic printing can be done within limits, as probably everyone knows, but an appropriate eye-piece for viewing is required.

COLLECTING NOTES.

Notes on Variation from the Worthing Museum Collection (*Continued from. p. 10*).—*E. epiphron.*—The English series are from the Red Screes and from Honister Crag. All are of the *cassiope* form, the former rather the larger, the spotting of the ♀s in the latter being very clear on both surfaces. Scotch specimens from Rannoch (none of them too good) are rather larger and have a rather more clearly-marked band. There are Swiss series from both sides of the Simplon Pass, from the Alpe Pianascio (Tessin) and the Engadine. Most of those from the Simplon are of the *valesiaca* form with very little or no spotting, but the ♀s from the top of the Pass have clearer spots; they are slightly larger than the Scotch. Two ♂s from Pontresina are rather large, but the rest from the Engadine are small. Those from the Alpe Pianascio have very clear spots on a conspicuous band. There are two very small specimens from Anthémoz on the Dent du Midi without any spots. Of French specimens there are two from le Lauteret of most pronounced *valesiaca* form, quite spotless, while those from the Pyrennees are large and the only ones that can be regarded as of the type form.

E. aethiops.—There is a fine series from Arnside, and all but one ♀ have four spots on the upperside of the forewing, but only one ♀ has four on the underside. The three spots on the upperside of the hindwing of the ♂s are very indistinct, sometimes hardly visible, but those of the ♀, four in number, are very clear, with one exception. (There are never any on the underside of the hindwing.) The light bands of the underside hindwing vary greatly, though the colours are less pronounced than in the Scotch specimens or in those from the Rhone Valley. All the ♂s are of the *violacea* form, two ♀ tending towards *leucotaenia* with a very slight tinge of violet and one tending towards *ochracea*. In the Scotch specimens from Rannoch all have three spots on the forewing, both upper and underside in the ♂s, but the ♀s have four on the underside; the upperside hindwing has generally four spots, but they are very indistinct in the ♂s. On the underside three of the ♀s are of the *leucotaenia* form, three of the *ochracea* and one of the *violacea*.

Of the Swiss specimens the ♂s from Mürren have three spots and the ♀s four on each of the wings on the upperside, but both sexes have three on the underside of the forewing. These specimens are very large. The light bands on the underside hindwing are inconspicuous and none of them show any of the aberrational colouring. Those from Aigle are also very large; all have four spots on the forewing on the upperside, but on the underside ♂s have three, ♀s four. One of the ♀s is a very strongly marked *leucotaenia*, the base being as light as the central band; there is one ♂ *violacea*, and of the ♀s two are *violacea* and one *ochracea*. From Vallarbe there is a small ♂ and a large ♀ both of the *violacea* form, while those from Eclépens show no peculiarities. A few ♀s from Mt. Revard have three spots on the forewing of both sides and four very indistinct ones on the upperside hindwing. There is one ♂ from Vernet of very pronounced *violacea* form.

Satyrus galathea.—There is a short series from the White Horse Hill which I took in 1886, still looking quite fresh, also series from Bude, the Cotswolds, the Chilterns and a pair from Wolford. The Bude specimens are a great contrast to all the others, being very strongly marked, especially the eye-spots on the underside hindwing, while the others are mostly faint except one ♂ from the Cotswolds; those from the Chilterns tend to obsolescence. The spots on the underside hindwing are very small in the ♂s from the White Horse Hill and Wolford. There are curious anomalies in the ground colour. The hindwings underside of the Bude ♀s are very yellow, while the others show little or none. On the upperside one ♀ from the Cotswolds is very yellow, while another, taken the same day, is quite white; one ♂ from Bude is white, another rather yellow, another quite yellow.

Specimens from the Rhone Valley are large, especially the ♀s; the undersides are very like the Bude specimens, especially the ♀s, but hardly so strongly marked; there are two ♂s from Bérisal, the underside very clear, the dark bands being scarcely more than outlined. A ♂ from the Jura has a very yellow upperside. There is one ♂ from Samoussy, very white; those from Aix-les-Bains are mostly white, but one is yellow; on the underside hindwing the darker bands are little more than outlined. From the Tyrol come large examples, especially the ♀s; one ♂ is rather yellow. At Assisi the examples are rather dark, while those from the Abruzzi are of the *procida* form. This occurs exceptionally in specimens from the Rhone Valley, but south of the Alps all are of this form. Specimens from Fiesole are rather small, those from N.E. Italy larger. Those from the Mt. de Lure are also of this form. All those from Greece are of the *turcica* form—very black—so also is one from Bulgaria. Several from the Rhone Valley are almost spotless on the underside, approaching ab. *galene*, one completely so; this is very common in the Apennines, the central band being also generally obsolescent in the ♂s. There are only two examples of *leucomelas*, one from Digne, the other from Assisi. There is also a very remarkable specimen from Assisi, having the left side almost entirely black, and a good deal on the right forewig; there is also much black on the underside.

N. tages.—This is by far the most variable and consequently the most interesting of all the English "skippers." The English specimens are far the most marked of all. The central band of the forewing

varies a good deal in shade, and is sometimes continuous and sometimes broken; so also are both dark bands, but the inner one is rarely continuous. The best marked specimens are from the N. Downs. Those from Wolford are all light, one being very light; the border of white dots in these is also generally conspicuous, whereas in others it rarely shows. Swiss specimens are far less marked, though there is one exception, a ♀ from the Val Tinière. There is one from the Laquinthal as dark as the Spanish *cervantes*, and with very narrow forewings; one ♂ from la Grave is rather light. In Italy it is regularly double-brooded; the first generation is small and rather light, fairly clearly marked, but the bands are very narrow and the underside a very pale brown. The Spanish form *cervantes* is very dark and very little marked.

H. malvae.—There is very little difference in these except for more or less yellow in the brown of the underside hindwing. The English are slightly the smallest specimens, but a few of the French are hardly larger, while the Swiss are noticeably so. There is one fresh example from the Cotswolds, taken on 15th July, which is probably a case of delayed emergence, as this species is persistently single-brooded in contrast to the closely-related *H. malvoides*, which is everywhere double-brooded. It is found in July in Switzerland in mountain localities, and it is very cold at the top of the Cotswolds when this specimen is taken. All the *intermedia* came from Switzerland, but the *fasciata* form, with a band on the hindwing, is not uncommon in England. There is a very fine ab. *taras* from Pagny above Aix, and several from Switzerland, all good, but the best are from Sonzier and the Val Tinière.

U. comma.—A very constant species with regard to the upperside, but there is a good deal of variation in the amount of green tinge on the underside hindwing. There is a very good and bright ab. *catena* from the N. Downs, a form which is very common in Switzerland; there is also a good ab. *flava* from Mt. Cably, near Montreux. English specimens are rather small, but the Lapland ones are smaller; the French larger than the English but smaller than the Swiss.

A. sylvanus (now written of as *Ochlades venosa*, which very few people recognize under this name).—Another very constant species. The English specimens are from the N. Downs, the New Forest, the Lake District and Bude; the New Forest ♀s are rather the darkest; the Belgian ones are like them. Italian specimens on the whole are slightly lighter; French ones the lightest of all, especially one ♀ from Aix-les-Bains.

A. flava (*linea*).—Also a very constant species except in the matter of size. The English ones are small, especially those from the S. Downs, so also are the Swiss; the Italian specimens are all rather lighter and larger. Greek specimens are *very* large, quite as large, in fact, as the last species.

A. actaeon.—There are a few from Lulworth taken in 1891, the markings in the ♀ forewing being the least conspicuous. The French specimens here are all very dark; the Swiss ♀s are rather darker than the English, but the ♀s have lighter markings; the Italian specimens are very like the English but with more clearly-marked ♀s. A ♀ from Cyprus is nearly unicolorous; one from Palestine in no way noticeable.

T. lineola.—There is a short series from Gravesend, small, but mountain specimens from Larche and the Abruzzi are smaller, and two from

Digne no larger. Swiss specimens and those from Hockai (Belgium) are larger. Other Italian specimens are very like English ones but a shade darker.

C. palaemon.—English specimens on the average are slightly the largest; there are others from France, Belgium, and Switzerland. Variation is very slight; there is more or less dark on the upperside, and the shade of the spots on the underside hindwing also shows slight differences.—Rev. G. WHEELER, M.A., F.R.E.S.

CORRECTION.—The observations on *N. myrtale* in Vol. liii, p. 122, line 5 from the bottom, refer to *V. livia*. There are no *N. myrtale* in the Worthing Museum Collection.—G. W.

DRAGONFLIES ON THE ISLES OF NORTH UIST AND BALESHARE.—Both of these islands are in the Outer Hebrides, the smaller Baleshare lying just west of its neighbour. Both are abundantly supplied with lochs and lochans, and normally dragonflies are quite common. This season, however, was very wet and but few species were seen. Amongst these were *Enallagma cyathigerum*, Charp., and *Sympetrum danae*, Sulzer, which occurred in small numbers on Loch Mor, Baleshare. The former species was also plentiful enough on Lochs Hunder and Skealtar on North Uist, whilst *Aeshna juncea*, L., was taken on the stream flowing toward the sea between the North and South Lees, North Uist.—J. W. HESLOP HARRISON, King's College, University of Durham, Newcastle-upon-Tyne.

EUPITHECIA PULCHELLATA, STPH., IN THE OUTER HEBRIDES.—In the Outer Isles the Foxglove, the food plant of this pretty insect, favours rugged ravines down which mountain torrents rush. In two of these on Beinn Mhor, in South Uist, the plant ascends to a height of about 1000 feet, and throughout its range *Eupithecia pulchellata* larvae are plentiful in August in its flowers. Much the same holds true on the South Lee in North Uist, although the height attained is barely 900 feet. The only other Lepidoptera noted on the South Lee with the "pug," and actually attaining the same height above sea level, were *Maniola jurtina*, Linn., *Abraxas grossulariata*, L., *Camptogramma bilineata*, L., and *Cidaria immanata*, Haw.—J. W. HESLOP HARRISON, King's College, University of Durham, Newcastle-upon-Tyne.

OTHER LEPIDOPTERA NOTED IN NORTH UIST IN 1942.—The wetness of the season prevented much attention being given to the Lepidoptera of North Uist, and very few insects were really common. On the heather larvae of *Lasiocampa quercus* were plentiful enough and widespread. The "bratag" (the larva of *Macrothylacia rubi*) was far below the usual in point of numbers and was miserably small when we left. Locally, as on the moorlands above Loch Eport, larvae of *Dicranura vinula*, L., could be taken freely on *Salix aurita*, as could those of *Acalla hastiana*. The imagines seen and captured included *Polyommatus icarus*, *Aglais urticae*, *Coenonympha tullia*, *Lycophotia strigula*, *Cerapteryx graminis*, *Agrotis tritici*, *Leucania pallens*, *Hydroecia lucens*, *Xylophasia monoglypha* and *Simaethis fabriciana*.—J. W. HESLOP HARRISON, King's College, University of Durham, Newcastle-upon-Tyne.

The Range of the Greasy Fritillary (Euphydryas aurinia) in the Hebrides and Some Possible Deductions Therefrom.—In the course of our various expeditions in the Inner and Outer Hebrides we have encountered *E. aurinia* in the Isles of Gunna and Tiree (v.-c. 103) and Rhum (v.-c. 104), whilst other workers have reported it from Islay and Jura. Of the latter occurrences we have little to say. However, the imagines taken on Gunna approach so very closely indeed to the Irish race *preclara* that one feels that the two populations are genetically connected. Now, Gunna is a very small island, lying a few hundred yards from the south-west of Coll, and clearly has been separated from it quite recently. Furthermore, Coll produces such well-known Irish plants (belonging to the American element in the British flora) as the Irish "Ladies' Tresses" Orchid, the "Blue Eyed Grass," and the "Pipewort." Since these are absent from the Scottish mainland, their evidence, combined with the presence of the "Fritillary" and the "Irish Burnet" on Gunna, forces one at once to the conclusion that not only has the Tiree-Coll group been severed from Scotland prior to parting company with Ireland, but also has received some of its plants and animals from the latter country. Of much the same import are the indications of the magnificent raised beaches on the nearby Treshnish Islands. If, now, we take into consideration such pertinent facts as the occurrence of the humble bee *Bombus smithianus* and *Nyssia zonaria* in the Coll, Tiree and Gunna group, as well as in the west of Ireland and in the Outer Hebrides, we can reach only one conclusion, and that is that all three areas must have been linked together, and not with Scotland, at some fairly recent time, possibly in early Post-glacial times or in some Inter-glacial period. Similarly, attaching due weight to all the circumstances, we realize that the Rhum-Eigg group of islands must have been connected with the same area and not with Skye or the mainland. These conclusions would reverse many views on the matter held previously, but would, nevertheless, explain many anomalies in distribution exhibited by various members of the Hebridean and Irish floras and faunas.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

The First British Record of Procus (Miana) versicolor, Bkh.—In the *Entomologist's Record* for February 1940 (p. 19) my son, Captain J. Heslop Harrison, drew attention to the fact that he had captured specimens of *Procus versicolor* on the Isle of Raasay in July 1936. Further, it should be noted that I myself took the species on the same island in 1935. In addition, my son emphasized the fact that, working on preparations of the genitalia of these specimens with the aid of papers sent to us by Heydemann and Wolff, we had not only determined the species to be *Procus versicolor*, but had recorded them as such in the *Proceedings of the University of Durham Philosophical Society* in 1937 (7th April). In spite of this, although its author was already in possession of our publication, a paper entitled "A New British Noctuid: *Procus versicolor*, Bkh.," appeared in the *Entomologist* (Vol. lxxiii, March 1940)—just three years later! To correct this, Captain Heslop Harrison sent a short note to the *Record* setting out the facts; this appeared in November 1940. In view of the care we had taken to maintain the accuracy of the historical records in respect to *Procus*

versicolor, our surprise may easily be imagined when, on receiving the February 1942 number of the *Record*, we observed on page (7) of the " Records and Full Descriptions of Varieties and Aberrations " a repetition of the same old claim. Mr A. Richardson is represented as exhibiting " A series of ten *Oligia* (*Miana*) *versicolor*, including the first two British specimens, both melanic varieties; Forest of Dean." I ask how this can be correct, or maintained, when the original British specimens came from the Isle of Raasay, were in our possession, and had been properly put on record, but for different reasons, on three previous occasions.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

Stilbia anomala, Haw. on the Isles of Barra, Coll, and South Rona.—In the Inner Islands this species has only fallen to our nets on Coll and South Rona, the former to the west of Mull and the latter to the east of Skye. In South Rona, the species appears to be far from rare near Dry Harbour in the west and the cave in the east. On Coll, it seems to be rare, for we only encountered it once, and that on the rocks south of Loch-a-Mhill Aird. On Barra, in the Outer Isles, it had already been taken by Edinburgh workers in 1936 whereas our captures took place in August 1939.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

Miana expolita in an inland station in Durham.—This insect, as is well known, flies commonly on the Durham coast in hollows on the top of the cliffs. Of recent years, I have found it in great abundance on the Magnesian limestone on the roadside between Bowburn and Quarrington Hill, well inland.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

Note on the Correspondence Concerning Cucullia scrophulariae. —If Dr Balfour-Browne will read my note again he will find that I did not maintain the species merely on a difference in the colour of the caterpillars. I gave a reference to Durand's paper, where other references to the literature can be found, but in my summary I pointed out that there are differences in pattern as well as in colour between the larvae of *scrophulariae* and *lychnitis*, and that the imagines can be distinguished by an expert, if they are in a fresh condition. The genitalia of *scrophulariae* and *lychnitis* are very much alike, but Boursin claims that there are slight but constant differences. The genitalia of *verbasci* are easily distinguishable from either, and there can be no doubt that it is specifically distinct from both. There are biological and structural differences between *scrophulariae* and *lychnitis*, apart from the differences in the pattern and coloration of the larvae and in the colour of the imagines, and I think all the differences taken together are sufficient to establish their specific rank.—E. A. Cockayne, D.M., F.R.C.P., 4.3.1943.

A Note on Sphecia bembeciformis, Hüb.—At this season of the year, when the " hedgers and ditchers " are busy cutting down the tall sallows in overgrown hedges, it is always worth while finding out if this insect occurs in one's district. The Lunar Hornet Clearwing is said to be widely spread throughout the United Kingdom and

probably it is to be found wherever sallows (particularly *S. cinerea*, L.) are plentiful. During a winter walk over the Welsh hills recently I found the burrows made by the larva in a number of stems cut by the " hedgers "; there were four in one three-inch stem, each hole being large enough to admit the tip of my little finger. In other stems the emergence holes could be seen, mostly from four to eight inches above the ground. On visiting the spot a week later I noticed that the larvae had stopped up with chewed wood the burrows exposed at the cut end of the stems lying prone. I used to find the ova of this moth, in West Herts, on the underside of sallow leaves (always *S. cinerea*) and for some time I thought they were ova of *Cerura furcula*, which, viewed by the unaided eye, they resemble superficially. So I concluded that *C. furcula* laid its eggs on both upper and under surfaces of the leaf. But the larvae which hatched from these ova laid on the underside of the leaf were not at all like *furcula* and they promptly proceeded to burrow down the petiole! I do not remember rearing them to the imago state but have no doubt at all as to what they were.—P. B. M. Allan, Newtown, Mont.

Behaviour of Lasiocampa quercus, L., race callunae, Larvae.—A larva of this species found on May 12th behaved in rather an odd way. It ate hawthorn and grew slowly and steadily until the beginning of June, when it disappeared under some moss in the cage, being at that time (as I thought) a full-grown female larva. On July 12th, five weeks later, I removed the moss and found the larva curled up asleep. It had had no food all this time and had made no cocoon, but had spun a few strands of silk to hold the moss in position over it. The disturbance roused it to a sense of duty, and that evening it mounted the foodplant, which I had replaced, and began to eat. For six nights it ate, then went back under the moss, apparently to finish its sleep. There it remained until August 2nd, when it reappeared of its own accord, wandered about the cage for twelve hours, selected a suitable corner, and proceeded to spin up.—P. B. M. Allan, Newtown.

CURRENT NOTES.

The last issue (October 1942) of the San Francisco, California, magazine, *The Pan-Pacific Entomologist*, contains a long detailed account of the Mass-movements of *Vanessa cardui*, L., during the year 1941, in Utah, Arizona, Colorado, Nevada, Idaho, California, and New Mexico. It is illustrated by a useful diagram showing areas and directions of the various movements, the text giving the dates. At the beginning of this important detailed note of a dozen pages these movements are called dispersal flights. But later, the inappropriate and misleading term " Migration " is used. This term has been so long used in describing human movements that it has acquired specific associations which are impossible of application in the case of an invertebrate insect. The human brain is actively working in the migration of man, and even in vertebrate animals we have the

direct stimulation of hunger, etc., and such movements (and technically for the migration of birds) are thus direct results of the observational and mental powers of the necessitous creatures. In the case of insects and of all animals, which undergo metamorphoses, the feeding and growing stages are definitely separated by a delayed action stage which precludes the existence of stimuli such as are evident in all human activity to which the term " migration " has been and is applied. It does seem necessary in all subjects of research to use terms appropriate to the subject and not to use terms already specialized in use. The misuse of terms already with a definite specific meaning acts as does a false propaganda effort and misleads in the consideration of the subject under discussion. In the present instance the term " dispersal " is possibly the correct term to use even rather better than " mass movement."

We read in a recent number of the *Ent. News* of America of a curious feature in the investigation of the occurrence of Jungle Fever in Colombia. This disease is carried by a mosquito. The puzzle has been the complete absence of this fly at certain periods, especially during the dry season, while the disease went on. At last it was discovered that the mosquito involved is an inhabitant of tree tops and can be found there when it is not to be found when sought at ground level. This fact, of course, needed a much more difficult plan to deal with this mosquito than with most others. As one of those engaged in the work said, it was necessary " to associate with the monkeys in the high tops above the jungle." The same magazine contains (1) a description of a more recent apparatus to obtain insects at light, with figures of the mechanism used to record the results. (2) The decease of Dr Anton von Schultess-Schindler, who was the President of the 3rd International Entomological Congress at Zurich in 1925. He was a great student of the Order Hymenoptera.

One would like to have a series of records of first appearances in this early spring-like weather. It is noted that bees have been very abundant around flowering trees like the *Prunus* and *Almond.*

Mr F. N. Pierce has just distributed his new volume, *The Female Genitalia of the Noctuidae.* The list of subscribers is a remarkably small one. In fact, the Amateur Entomologists from the British Isles number about two dozen, and the remainder, less than 50 copies, include publishers' copies. It seems that all such research work must be a " labour of love."

Country-Side is being carried on for 1943 as sufficient subscribers have come forward to aid. It is a good all-round magazine of general natural history and for the lover of nature and not on the specialist's side.

Short articles and records will be very welcome as the year goes on. If our subscribers would look through their series for any abnormal forms they may have, particularly noting the areas from whence they come and comparing it with series from their own home area.

"Gliedweich-Eule." The group description refers to the fasciae converging on the inner margin of the forewings of the imago and also of the stigmata forming a minor convergence within the former.

Illiger, *N. Ausg. Verz.* (1801), I, 285, said the *cucubali* was the *rivularis* of Fab., *Ent. Sys.*, (1794) III (2), 101 (i.e. *Sys. Ent.* (1775), 613), and the *cucubali* of Brahm and of Bork.

Ernst & Engr., *Pap. d'Eur.*, VII, 80, f. 463 a-c (1790), gave three good figures, ♂, ♀ and under, and said that it was the *rivularis*, Fb. (1775), and the *cucubali* of Schiff. and of other authors.

Bork., *Naturg.*, IV, 366 (1792), agreed that *cucubali* was *rivularis*, Fb. (1775), and pointed out that Fab. had probably made his description from a faded example from which the "fascia purpurea" was lost in the grey, and differed from *capsincola* only by being smaller and by the yellow edging of the markings. He put the *triangularis*, Thunb., as a synonym, and referred to De Vill., *Ent. Linn.*, II, 259 (*rivularis*), 652 (*cucubali*), and to 275, *manicata* (purpurascentibus, strigis undulatis) as a synonym.

Esp., *Abbild.*, IV, *Noct.*, II (1), p. 656, plt. 173, 6 (1792+?), gave a figure he called *cucubali*.

Hb., *Samml. Noct.*, 56 (1800-3), gave a good figure, *l.c.*, and referred to Schiff. in his *Text*, p. 173.

Treit., *Schm. Noct.*, V (1), 312 (1825), pointed out that the citation by Bork. of *manicata*, de Vill., and of *filigrana*, Esp., to this species were errors, the former being *pteridis* and the latter *filigrama*, a good species (which the text of Esper proved).

Dup., *Hist. Nat.*, VI, 331, plt. 93, 5 (1826), gave a somewhat poor figure with too emphasized contrast between the ground colour and the main characteristic markings.

Freyer, *Beitr.*, II, 128, plt. 88 (1829), gave a very good figure in which the small lighter markings were apparent but not emphasized. In his *Neu. Beitr.*, V, 142, plt. 467, 4 (1845), he figured another somewhat curious example under the name *behenis*, which most authors consider a form of *cucubali* (*rivularis*).

Guen., *Hist. Nat.*, VI, 21 (1852). He said this was the *rivularis*, Fb., 300, and referred to Engr., 403 a, b, c.

Barrett, *l.c.*, plt. 163, gave two figures, both showing the purple of fresh examples, but neither agree with his description, which stated that the species "may be recognized by the connected stigmata."

Stdgr., *Cat.*, IIIed., 163 (1901), treated *behenis*, Frr., and *rivosa*, Stroem, as synonyms.

Splr., *Schm. Eur.*, I, 179, plt. 37, 27 (1905), gave one figure under the name *rivosa* and dealt with one form ab. *behenis*, Frr.

South, *M.B.I.*, II, 251, plt. 124, f. 5-6 (1907), gave two figures, reproductions which show the almost impossible distinction from the so closely allied species *capsincola*, when without the violet tinge present in the *cucubali*.

Warr.-Stz., *Pal. Noct.*, III, 75 (1909), gave two figures, plt. 17 g, ♂ and ♀ of the typical form but there is no "purple" sheen, and two figures, 17 h, ♂ and ♀ of *mandarina*, Leech. They gave as synonyms of *rivularis*, Fb., *cucubali*, Esp., *rivosa*, Ström. Ab. *behenis*, Frr., was the other of the two forms included.

Culot, *N. et G.*, I (1), 119, plt. 20, f. 17 (1911), gave a good figure showing its distinctive characteristic.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 102 (1934), used the name *rivularis*, Fb., for this species and reported one new form.

Barrett remarked on the Variation:—

"Usually very little variable, except in the depth of the dark marking and the liability to the rapid fading of the purple colour."

The Names and Forms to be considered:—

rivularis, Fb. (1775), *Sys. Ent.*, 613, 99.
syn. *cucubali*, Schiff. (1775), *Verz.*, 84, P. (nondescript).
syn. *rivosa*, Ström. (1783), "Norsk. Ins., IV," *Danske Vid. Selsk. Schrft.*, II, 77, fig.
syn. *triangularis*, Thnbg. (1784), *Diss. Ins. Sve.*, p. 3.
ab. *behenis*, Frr. (1845), *Neu. Beitr.*, V, 142, plt. 467, 4.
ssp. *mandarina*, Leech (1900), *Trans. Ent. Soc. Lond.*, 51.
ab. *conjuncta*, Klem. (1912), *Spraw. Kom. Krak.*, XLVI, 11.

Tutt dealt with (1) the typical form as described by Füessly (*Neu. Mag.*, II, 218 (1785) and (2) *behenis*, Frr., with slightly pale costal line.

rivosa, Ström. (Norske Ins., IV), *Danske Vid. Selsk. Schrft.*, II, 77 (1783), fig.

This author, of whom Hagen gave a notice with a summary of his entomological work in the *Stett. Ent. Zeitg.*, XXXIV, 225 et seq. (1870), seems to have been overlooked by his contemporaries and authors of the early half of last century, when so much entomological literature was turned out. He was a Norwegian pastor and his writings were contributed to Danish and Norwegian publications, but very little is known of him, even Zetterstedt in his great work, *Insect. Lappon.*, does not refer to him.

All later authors who refer to *rivosa* report it as *cucubali* (*rivularis*).

triangularis, Thunb., *Diss. Ins. Sve.*, p. 3 (1784).

Orig. Descrip.—"Alae deflexae fuscae: anticae supra pallido nigroque undulatae et reticulatae. In medio alae versus marginem exteriorem macula magna triangularis, vix ad inferiorem marginem extensa, flavo marginata. Pone hanc fascia dentata, postice flavo marginata. Ipse margo albo-nigroque dentatus. Intra marginem ordo punctorum, circiter septem, nigrorum, lunarium, antice flavo-marginatorum. Stigmata ordinaria nulla distincta." "Magnitudo, statura and fascies N. typicae."

Werneb., *Beitr.*, II, 199 (1864), determined this as *rivularis*, Fb.

race *mandarina*, Leech, *Trans. Ent. Soc.*, 51 (1900).

Orig. Descrip.—"These specimens are tinged with violet as in *Hadena cucubali* and the markings are somewhat suffused; the secondaries are also darker than in European specimens." Japan. Of this Hamp., *Cat. Lep. Ph.*, V, 194 (1905), said "Darker, browner, and without* the violaceous tinge; the annuli of stigmata and subterminal

*This is an absolute error.

line whiter."—Japan, China. Strange to say Leech gave the species name of this form as *capsincola*.

ab. *conjuncta*, Klem., *Spraw. Kom. Krak.*, XLVI, 11 (1912).

Orig. Descrip.—" Alae anteriores maculis ambabus in costa subdorsali late confluentibus." Poland.

Dianthoecia, Bdv. (1840). Most authors. [*Polia*, Ochs. & Treit. (1816-25), Hamps.: *Harmodia*, Hb. (1819), Meyr., Warr.-Stz., Meyr., Drdt.] *albimacula* (1792).

Tutt, *Brit. Noct.*, III, 33 (1892): Meyr., *Handbk.*, 77 (1895): Barr., *Lep. Br. Is.*, IV, 249, plt. 143, 3 (1897): Stdgr., *Cat.*, IIIed., 162 (1901): Hamps., *Lep. Phal.*, V, 207 (1905): Splr., *Schm. Eur.*, I, 178, plt. 37, 24 (1905): South, *M.B.I.*, I, 249, plt. 124, 1 (1907): Warr.-Stz., *Pal. Noct.*, III, 77, plt. 18 g (1909): Culot, *N. et G.*, I (1), 117, plt. 20, 10 (1911): Meyr., *Rev. Handb.*, 147 (1928): Drdt., *Pal. Noct., Supp.*, III, 105, plt. 13 k (1934).

The early authors seemed very confused over this species. Illiger, Esper, Borkhausen, Fabricius, etc., considering it came under *compta*, *conspersa*, etc.

Esp., *Abbild.*, IV, *Noct.* I, p. 274, plt 117 A, 7 (1790 + ?), gave a good figure of *albimacula* as we know it, under the name *compta*. Plt. 119 (40), f. 6, has been cited for it. Esper named it *compta* on the plate, but in the text published later named it *conspersa-minor*, of which he then considered it a small aberrant form.

Ernst & Engram., *Pap. d'Europe*, VI, 84, f. 331 a, b (1788), gave two excellent figures of a species new to them, recognized by Bork. as his *albimacula*, *Natg.*, IV, 149 (1792).

Bork., *Natg.*, IV, 150 (1792), considered *albimacula* might be an aberration of *compta*, Schiff., *Verz.*, 70, F. 5 (1775).

Wernbg., *Beitr.*, I, 414 (1864), said the *compta* of the *Verz.* was *confusa*, Hufn., and *compta*, Treit.

Hb., *Samml. Noct.*, 51 (1800-3), gave an excellent figure of a form with red-brown ground under the name *concina*,* which in his text, p. 175, he altered to *conserta*. He said *compta*, Esp., was a synonym, and that Bork. was in error in identifying it with the *albimacula* in Gerning's collection which had only a white reniform as in *persicariae*.

Steph., *Ill.*, III, 26 (1829), refers to the single example from Birchwood, Kent, and Wood, *Index Ent.*, p. 59, plt. 13, fig. 304 (1834), gave a recognizable caricature of the insect.

Treit., *Schm.*, V (1), 392 (1825), said that the references to Schiff., Fab., etc., in Esper, are in error. He cited Hb., *Samml. Noct.*, 51, *concin(n)a*; and text, p. 175, *conserta*.

Dup., *Hist. Nat.*, VI, 359, plt. 95, 3 (1826), treated this species under the name *concin(n)a*, Hb. He gave a figure not easily recognizable as *albimacula*.

*Hb. put a line over *n* and *m* to represent a doubled letter.

Freyer, *Neu. Beitr.*, VI, plt. 591 (1848), gave a good figure but rather too plainly marked. It was of the *concin(n)a*, Hb., brown form.

Guen., *Hist. Nat.*, VI, 25 (1852). He said it was the *compta*, Esp., and the *concin(n)a*, Hb., 51, and of Dup. Both Esper and Borkh. took it for the *compta*, Schiff.

Barrett, *l.c.*, plt. 163, gave two figures, 3 and 3a, which do not represent the delicate tinge of this beautiful insect.

Stdgr., *Cat.*, IIIed., 162 (1901), treated *compta*, Esp., and *concin(n)a*, Hb., as synonyms.

Splr., *Schm. Eur.*, 178, plt. 37, 24 (1905), gave a good figure, and considered the ab. *concin(n)a*, Hb.

South, *M.B.I.*, I, 249, plt. 124, 1 (1907), gave a very good figure of *albimacula*.

Warr.-Stz., *Pal. Noct.*, III, 77 (1909), gave two good figures, ♂ and ♀ (plt. 18 g). As synonyms they gave *compta*, Esp. nec Fb. and *concinna*, Hb. They gave no forms.

Culot, *N. et G.*, I (1), 117, plt. 20, f. 10 (1911), gave an excellent figure.

Barrett remarked on the Variation:—

Hardly variable except that in some examples the subterminal line is almost obliterated, though its edging of black spots and wedges remains complete; in others it is complete and extended, so as to throw white streaks to the margin where they join those in the cilia. There is also a slight difference in general colour between the specimens found on the Kentish coast and those from the Portsmouth district, the latter being of a rather lighter purple-brown."

The Names and Forms to be considered:—

albimacula, Bork. (1792), *Naturg.*, IV, 149.

compta, Esp. (nec Schiff.) (1788 + ?), *Abbild.*, IV, 274, plt. 117 A (a synonym).

f. *concin(n)a*, Hb. (1800-1), *Samml. Noct.*, 51.

ab. *ochrea*, Zweigelt (1918), *Zt. Oest. Ent.* Ver., III, 30.

Tutt dealt (1) with the typical grey-brown form, and (2) the dull red-brown ground coloured form *concin(n)a*, Hb., 51 [Hb. *Text* = *conserta*].

ab. *ochrea*, Zweigelt, *Zeit. Oest. Ent. Ver.*, III, 30 (1918).

Orig. Descrip.—" The white colour is replaced by ochreous-yellow, particularly distinct on the right wing, while on the left wing only the costal blotch is yellowish. The white marking on the base of the right forewing is yellowish. It is interesting as there is a parallel form of aberration in *D. nana*, viz., *ochrea*, Gregs." Austria.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—EDS.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris*, and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Culot, *Noctuae and Geometrae.—A. J. Wightman, "Aurago," Pulborough, Sx.*

Wanted—H. phlaeas (with data) from Palaearctic regions, particularly N. America, extreme North (Norway, etc.), China, Algeria, Ethiopia, N. Africa, Madeira, Balkans; also from other regions and British Isles. Also other Chrysophanids from similar areas. Also Continental (only) *P. fulminea* (*leucophaea*), *lichenea*. *Duplicates*—Lepidoptera (some rare) mostly from Japan, but also from S. Africa, S. America, India, East Indies, etc.—*P. Striter Smith, Little Aston Park, Streetly, near Birmingham.*

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. Saturday, April 10; 2 for 2.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

SALE BY AUCTION.

THE EXTENSIVE COLLECTION of BRITISH LEPIDOPTERA belonging to A. M. VIPAN, Esq., will be SOLD BY AUCTION at Messrs Glendining & Co., Ltd., 7 Argyll Street, W.1, on FRIDAY, 9th APRIL 1943, at 12.30 p.m. It contains more than 20 DISPAR in very good condition; a number of British ACIS, LATHONIA, and ANTIOPA; varieties of Adippe, Atalanta, Tithonus, Icarus (Two Hermaphrodites), and long series of all the Butterflies contained in a 16-Drawer Solid Mahogany BRADY CABINET. The Collection is also very strong in NOCTUAE and GEOMETRAE, with good series of most of the rarities such as CONFORMIS, VIDUARIA, COENOSA, CENTONALIS, etc., and many NORTHERN FORMS, and a number of very extreme A. CAJA aberrations; also a few drawers of Micro Lepidoptera, contained in Two 32-Drawer Solid Mahogany BRADY CABINETS and one 30-Drawer Mahogany Cabinet, all in fine condition. Another good Thirty-Drawer Light OAK CABINET with Folding Doors, empty, ready for use, will also be included.

ON VIEW at the Offices of Messrs L. W. NEWMAN, "The Butterfly Farm," Bexley, Kent (by appointment only), until TWO DAYS PRIOR TO THE SALE. Telephone: Bexleyheath 286; Station: Bexley, on the Dartford Loop Line, from Charing Cross.

SPECIAL NOTICE.—By arrangement with Messrs Glendining & Co., Ltd., I am authorised to collect MISCELLANEOUS LOTS of entomological interest for forthcoming AUCTION SALES. Items specially wanted: Extreme Varieties of British Butterflies or Moths in good condition with data, as Single Lots; Small Collections either in Cabinets or Store Boxes, Books, and Second-hand Apparatus. All communications in the first place, which will be treated in strict confidence, to be addressed to L. HUGH NEWMAN, "The Butterfly Farm," Bexley, Kent.

SELL BY AUCTION TO REALIZE THE HIGHEST PRICES.

BACK VOLUMES OF
THE ENTOMOLOGIST'S RECORD
AND
JOURNAL OF VARIATION.

(First Series, I-XXXVI. Complete Volumes Only.)

Volumes I and II at One Guinea each. Others, 12/6 per volume.

To be obtained only from Mr H. E. PAGE, 9 Vanbrugh Hill, Blackheath, London, S.E.3,
to whom cheques, etc., should be made payable.

Printed by T. Buncle & Co., Ltd., Arbroath.

Dianthoecia, Bdv. (1840). Most authors. [*Polia*, Ochs. & Treit. (1816-25), Hamps.: *Harmodia*, Hb. (1820), Meyr., Warr-Stz., Meyr., Drdt.] *conspersa*, Esp. (1788+?) = *nana*, Rott. (1776).

Hufn., *Berl. Mag.*, 1766, described a Noctua under the name *nana*. In 1776 Rottenberg, *Naturfor.*, IX, 132, amplified and corrected this description, as he had done many other descriptions of Hufn. Many authors have misunderstood the aim and work of Rott. and taken these two descriptions as quite distinct from one another. We find Tutt, *Brit. Noct.*, III, 37, and other authors applying the name *nana* to two different species—Rott. did *not* describe *new* species but was criticizing Hufnagel's list, of which *nana* was No. 71, and probably he consulted the Hufnagel collection. Hufnagel's descriptions were often imperfect and misleading and Rott.'s aim was to clarify them, but not to describe species outside the collection. He left out numerous species included in Hufn.'s list because he had no criticism to make on them.

Tutt, *Brit. Noct.*, III, 34 (1892): Meyr., *Handb.*, 77 (1895): Barr., *Lep. Br. Is.*, IV, 252, plt. 164 (1897): Stdgr., *Cat.*, IIIed., p. 162 (1901): Splr., *Schm. Eur.*, I, 178, plt. 37, 23 (1905): Hamp., *Lep. Phal.*, V, 201 (1905): South, *M.B.I.*, I, 248, plt. 123, 6-8 (1907): Warr.-Stz., *Pal. Noct.*, III, 7, plt. 18 g, h (1909): Culot, *N. et G.*, I (1), 117, plt. 20, f. 11-12 (1911): Meyr., *Rev. Hand.*, 147 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 105, plt. 13 (1934).

Schiff., *Verz.*, 71, F. 6 (1775), was the first to use the name *conspersa* for a black sprinkled with white Noctua with white stigmata (?) (spots).

Esp., *Abbild.*, IV, (1), p. 297, plt. 119, 6 (1788+?), gave a figure of *comta* which Werneb. called *confusa*. In *l.c.*, 294, plt. 119, 5 (1788+?) Esp. gave a figure called *conspersa*. Both figures are quite good.

Ernst & Engr., *Pap. d'Eur.*, VI, 86, f. 332 c, d, e, f (1788) gave four excellent figures of this species. They took the name from the *Verz.* of Schiff. and referred to the figure of Esper, plt. 119, 5, with the remark that the description of the latter had not yet been published.

Bork., *Naturg. Noct.*, IV, 151 (1792), said it was *annulata*, Fb., and the *nana*, Rott., after discussing these two synonyms at length.

Illiger, *Ausg. Verz.*, I, 197 (1801), said that Fab., *Ent. Sys.*, III (2), 483, called it *Bombyx annulata*.

Hb., *Samml. Noct.*, 52 (1800-3), gave a good figure.

Treit., *Schm.*, V (1), 387 (1825), said it was *nana*, Rott., and *annulata*, Fb.

Dup., *Hist. Nat.*, VI, 354, plt. 95, 1 (1826), gave a very dark figure and recognized the *nana*, Rott., as this species.

H.-S., *Sys. Bearb. Noct.*, II, 251 (1850), included *annulata*, Fb., and *nana*, Rott., *Naturf.*

Guen., *Hist. Nat.*, VI, 25 (1852). He said it was the Bomb. *annulata*, Fb., 238, and the *compta*, Haw., 54. He referred to Engram., 332 d, e, f, g.

Barrett, *l.c.*, plt. 164, gives eight figures: in all these figures the brown coloration is much too rich. 1, 1a, 1b are forms in which the white markings are differently disposed; 1a having an increased amount; 1d and 1g have yellow instead of white markings; 1e, 1f are dark Shetland forms.

Stdgr., *Cat.*, IIIed., 162 (1901), treated this species under the prior name *nana*, Rott., with *conspersa*, Schiff., as a syn., and accepted the *ochrea*, Gregs. He included the two forms he had previously described —*hethlandica* (multo obscurior, plerumque fere unicolor fusca) and *dealbata* (obscurior, al. ant. minus albo-pictis sine macula apicali alba).

South, *M.B.I.*, I, 245, plt. 123, f. 6-8 (1907), gave three excellent figures: 6, typical *nana* = *conspersa*; 7, *ochrea*; and 8, *hethlandica*.

Splr., *Eur.*, I, 178, plt. 37, 23 (1905), gave a good figure under the name *nana* and considered ab. *fasciata*, Tutt, ab. *suffusa*, Tutt, ab. *ochrea*, Greg., ab. *hethlandica*, Stdgr., and ab. *dealbata*, Stdgr.

Warr.-Stz., *Pal. Noct.*, III, 77 (1909), gave four good figures, plt. 18g, h, ♂ and ♀ *nana*, Rott. nec Hfn., ab. *ochrea*, Gregs., and *suffusa*, Tutt, but the fig. of *suffusa* is more ochreous than the figure of *ochrea*. In addition they treated of *dealbata*, Stdgr., *hethlandica*, Stdgr., and *fasciata*, Tutt, which last somewhat resembled *compta*. They note the synonyms, nec Hufn., *conspersa*, Schiff., and *annulata*, Fb.

Culot, *N. et G.*, I (1), 117, plt. 20, f. 11-12 (1911), gave two figures, both good; a normal form and var. *hethlandica*, Stdgr. He referred to the *fasciata* of Tutt and to the *ochrea*, Gregson, and compared the species with *compta*, Fb., which has no white near the apex like *nana* (*conspersa*).

Barrett reports on the Variation:—

Usually rather constant in colour and markings in any one locality, but subject to wide local or climatal variation. The described form as above is pretty uniformly that found in England, though occasional specimens from the South Coast have the ground colour intensified to blue-black, the markings remaining normal.

He reports a specimen which "has the pure white colour very greatly extended so that it becomes the ground colour of the forewings, with the transverse lines black and the cloudings dark olive-grey."

On the rocky coast of N. Wales it becomes darker, the white markings very much reduced in size and more or less clouded with yellow, olive-yellow, or pale orange, and an olive or orange tinge over the dark portions in varying degrees until the white markings in some individuals wholly disappear, partially suffused by the olive-brown ground colour, partly becoming dingy olive-yellow. In the Isle of Man, on the contrary, the white markings are very pure, the dark ground almost blue-black, and there is a decided increase in size. Very fine specimens are also found in Devon, and there the tinge of orange or olive-yellow is often in some degree assumed. In Scotland the size seems to be slightly reduced, the white markings are hardly so pure, or are tinged with pale yellow, and the dark ground not so intense, being in some degree tinged with olive; on the North-East coast there is sometimes a general suffusion of olive-yellow; but it is in the Shetland Isles that the most extraordinary forms are found—the white markings utterly suppressed, or the stigmata alone white, or yellow, or pale ochreous, or black-brown and only indicated by blacker margins; the subterminal line only indicated by its attendant black clouds, and sometimes the whole surface of the forewings smoky-black or olive-black, with but a faint dappling of blacker lines and crescents; on the other hand, some specimens in these Islands are of the form in which the ground colour is intensified,

but the markings, though curtailed, sharply white. This last form is also found in the West of Ireland, and a specimen now before me from Sligo is singularly rich in its deep dark colour and snowy blotches. Specimens from the Hebrides are extremely beautiful, the white markings variegated with yellow and greenish-yellow, or even orange-yellow. Those from Orkney are somewhat similar, or with the white markings small but clear. Although there are so many apparently local strains of variation, all are intimately connected by intermediates, so that, except in some degree in Shetland, it is impossible indefinitely to separate the species into varieties.

The Names and Forms to be considered:—

nana, Hufn., *Berl. Mag.*, III, No. 71 (1766).
nana, Schiff., *Verz.*, p. 71, F. (1775).
nana, Rott. (1776), *Naturf.*, IX, 132.
conspersa, Esp. (1788+?), *Abbild.*, IV, 297, plt. 119, 5. A synonym.
annulata, Fab. (1776-7), *Gen. Ins. Mantissa*, 252. A synonym.
ab. *obliterae*, Robs. (1883) (*Young Nat.*, IV, 184) ? see *obscurae* below.
ab. *ochrea*, Greg. (1885), *l.c.* (VI, 263), VIII, 178.
ab. *albimaculoidae*, Greg. (1887), *l.c.*, VIII, 178.
ab. *obscurae*, Greg. (1891), *Ent. Rec.*, II, 306.
ssp. *hethlandica*, Stdgr. (1892), *Iris*, V, 365.
ab. *dealbata*, Stdgr. (1892), *l.c.*
ab. *fasciata*, Tutt (1892), *Brit. Noct.*, III, 36.
ab. *suffusa*, Tutt (1892), *l.c.*
ab. *grisea-suffusa*, Tutt (1892), *l.c.*
ab. *intermedia*, Tutt (1892), *l.c.*

Tutt dealt with: (1) the typical *nana* = *conspersa*; (2) the unicolorous ochreous black *obliterae*, Robs.; (3) the *ochrea*, Greg., blackish mottled with ochreous; (4) *albimaculoidae*, Greg. (see appended description); (5) *suffusa*, black with very little mottling; (6) *grisea-suffusa*, the grey not black *suffusa*; (7) *fasciata* with unbroken white fascia (ab. *compta*); (8) *intermedia*, white only in the reniform area. (Tutt remarked that his *intermedia* may be the same as *albimaculoidae*, Greg.)

annulata, Fab., *Gen. Ins. Mant.*, 252 (1776-7) ?.

Orig. Descrip.—" Bombyx alis incumbentibus atris niveo maculatis, tibiis albo annulatis. Caput et thorax nigra albo variegata. Abdomen griseum. Alae anticae atrae basi mascula alba nigro punctata, tunc litura marginis tenuioris strigis duabus nigris. In medio fascia lata ad marginem tenuiorem interrupta ad crassiorem bifida alba. Versus apicem striga undata, quae ad marginem crassiorem macula ovata terminatur. Subtus fuscae margine albo punctato." Hamburg.

r. *albimaculoidae*, Greg., *Young Nat.*, VIII, 178 (1887).

Orig. Descrip.—" Ground colour cold deep brown, thorax dark grey, shoulder marks (first striga) only just indicated, many wavy black markings on the disc, and seven or eight black marks on the costa, and along the hind margin, the broad arrowheads are black, the first stigma like that of *albimacula*, is round, white, with a dark centre, the exact colour of the ground of *albimacula*, as is also the filling in between the black

wavy lines, the second stigma is lost just as in *albimacula*, and the usual white marks in typical *conspersa* are merged into brown in var. *albimaculoidae*." Langollen.

Tutt remarks on this that his var. *intermedia* may be *albimaculoidae*.

var. ? Greg., *Ent. Rec.*, II, 306 (1891). A summary of an exhibit at a Society meeting.

Orig. Descrip.—" Black and white, little, if any, ochreous yellow." Portpatrick, S. Scotland.

var. *ochrea*, Greg., *l.c.*

Orig. Descrip.—" All the usual white obscured with ochre, whole insect ochreous."

var. *obscurae*, *l.c.*

Orig. Descrip.—" All light markings obscured with brown ochre colour." Forres, Moray.

var. *obliterae*, Greg., *l.c.*

Orig. Descrip.—" Whole insect dark olivaceous-brown, usual markings faint; sometimes quite obliterated." Scotland.

Note.—I have failed to trace the original ? date of these names if they exist.

race *dealbata*, Stdgr., *Iris*, V, 365 (1892).

Orig. Description.—" The only not quite perfect ♀ sent varies considerably from the typical European examples of this species. It is darker, wholly without the large white apical spot, without the conspicuous whitish colour on the inner margin and with very obsolescent white zigzag line before the outer margin. The large white spot below the two upper stigmata, of which the first is quite filled up with white, agrees so perfectly with that of *nana*, that the ♀ must belong to it and can not be *consparcata*, Ev., which is like it. I possess a dark ♂ from the Trans-Caucasus without the apical spot."

Hamp., *Cat. Lep. Ph.*, V, 201 (1905): " Forewing with the white markings reduced, the apical patch absent." Armenia; West Turkestan; E. Siberia.

race *hethlandica*, Stdgr., *Iris*, V, p. 366 (1892).

Orig. Description.—" On the Shetland Islands occurs a far darker form of *nana* in which the white on the forewings is almost wholly wanting; the forewings are often quite olive coloured blackish-grey, so that they have the appearance of a quite different species."

Hamp., *Cat. Lep. Ph.*, 201 (1905): " Forewing much darker, often almost uniform fuscous, the cilia without white." (Possibly the *obliterae* of Gregson.) Shetland Isles.

Dianthoecia, Bdv. (1840). Most authors. [*Harmodia*, Hb. (1820), Meyr., Warr.-Stz., Meyr., Drdt.-Stz.: *Sideridis*, Hb. (1821), Hamps.] *caesia*, Bork. (1792) = *caesia*, Schiff. (1775).

Tutt did not take the strong indication by Schiff., *Verz.*, but used the description given by Bork., *Naturg.*, as the prior, and more adequate.

Schiff., *Verz.*, 81, O. (1775), was the first to use the name *caesia* for the bluish-grey, dark marked Noctuid. Illig., *N. Ausg. Verz.*, I, 273 (1801), said that the *dichroma*, Esper, *Noct.*, IV, plt. 155, 1-2, was the same. Hamps., *Lep. Phal.*, V, 443 (1905), took *caesia*, Schiff., as the type name.

Tutt, *Brit. Noct.*, III, 38 (1892): Meyr., *Handb.*, 78 (1895): Barr., *Lep. Br. Is.*, IV, 256, plt. 165, 1 (1897): Stdgr., *Cat.*, IIIed., 162 (1901): Splr., *Schm. Eur.*, I, 177, plt. 37, 18 (1905): Hamp., *Cat. Lep. Phal.*, V, 443 (1905): South, *M.B.I.*, I, 248, plt. 123, 5 (nec 4) (1907): Warr.-Stz., *Pal. Noct.*, III, 77, plt. 18h, i (1909): Culot, *N. et G.*, I (1), 114, plt. 19, f. 18; plt. 20, f. 1 (1911): Meyr., *Rev. Handb.*, 148 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 104, plt. 13h, i (1934), p. 253 (1937).

Ernst & Engram., *Pap. d'Eur.*, VI, 121, fig. 355a, b, c (1789), gave three good figures which they suggested might be *dysodea*, Schiff., but which are undoubtedly those of *caesia* as Wernb., *Beitr.*, II (1864), rightly stated.

Bork., *Naturg.*, IV, 279 (1792), recognized the *caesia*, Schiff., and pointed out that it might be the *dichroma*, Esp., IV, plt. 155

Hb., *Samml. Noct.*, 60 (1800-3), gave a good figure, but the marginal band of the hindwing is too dark. He referred to Schiff. in his Text.

Dup., *Hist. Nat.*, VI, 415, plt. 98, 6 (1826), figured a very large example, a somewhat light blue-grey with a lighter band across the disc bounded by white lines, the outer having no dark lining while the inner line was marked by a wide black line on the outer side and by a narrow shade on the inner basal side. On the mid costa of this band is a dark blotch and a larger one on the inner margin, while between these two is a portion of the central whitish area.

l.c. Supp., III, plt. 25, 1 (1836). A much darker and variegated figure with the blue-grey confined to the narrow transverse lines; but the figure is not good. There is no text reference to this figure.

Guen., *Hist. Nat.*, VI, 22 (1852). He said it was the *dichroma*, Esp., 155, 2, and referred to Engram., 355a, c.

Barrett, *l.c.*, plt. 165, gave two figures, which again show the browns too rich: 1, ♂ has but few markings, and those run together as two transverse basal lines and one submarginal; 1a, ♀ has more scattered and duller blotches.

Stdgr., *Cat.*, IIIed., 162 (1901), treated *dichroma*, Esp., as a syn. He recognized *manani*, Greg., with the *doubledayi*, Müll., as a syn.; *nigrescens*, Stdgr., and *clara*, Stdgr. *a*. al. ant. fere unicoloribus, caeruleo-griseis, paullum flavido-mixtis. *b*, multo obscurior al. ant. nigro-griseis (nigrescentibus) caeruleo-griseo-inspersis. *c*, al. ant. cinerascentibus, fascia media subalbida, paullum rosaceo-inspersa.

Hamps., *Lep. Phal.*, V, 443 (1905), placed *caesia* in the genus *Sideridis*, Hb., with *lithargyria*, *albipuncta*, *vitellina*, etc., far from its usual congeners in *Dianthoecia* (*Polia*). He recognized three abs., *manani*, *nigrescens*, and *clara*; *doubledayi* and *dichroma* he treated as synonyms.

Splr., *Schm. Eur.*, I, 177, plt. 37, 18 (1905), gave one figure and considered *manani*, Greg., and ab. *nigrescens*, Stdgr., as forms.

South, *M.B.I.*, I, 248, plt. 143, 5 (1907), gave a fairly good figure of our Isle of Man and the Irish (Tramore) obscurely marked slate-grey insect, which is called *manani*, Greg.

Warr.-Stz., *Pal. Noct.*, III, 77 (1909), gave five good figures, plt. 18h, i, ♂ and ♀ *caesia*, Schiff., ab. *manani*, Gregs. (*doubledayi*, Mill.) and ♂ and ♀ *nigrescens*, Stdgr. They gave a synonym *dichroma*, Esp., and treated also of ab. *clara*, Stdgr.

Culot, *N. et G.*, I (1), 114, plt. 19, f. 18; plt. 20, 1 (1911), gave two excellent figures, the one more or less typical, the other a form from the Italian Alps with variegated lighter marking. He referred to the Isle of Man form *manani*, Greg.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 104, plt. 13h, i (1934), gave nine new forms and figures of five of them. Four of these were described by Drdt., *l.c.*, p. 253. Two more forms already described are figured on plt. 25k.

Of the Variation Barrett said:—

"But very slightly variable here, though in some individuals there is a tendency to rather paler, more bluish-grey clouding over the base and middle area of the forewings, a broad bar of the dark colouring remaining between a roughly triangular dark spot near the middle of the costal margin; sometimes also a whitish-grey dark appears in the middle of the base. But it must be borne in mind that the form found in these islands, and which I have described, is not that which is typical of the species abroad, the latter being of a far brighter and lighter bluish-slate, mottled and clouded with darker, but having around the base and broadly in the middle area large clouds of pale bluish-grey or yellowish-grey, with a large dark spot on each margin; also the subterminal line is more distinct and broader, whitish-grey; and the cilia are very prettily dashed and scalloped with dark and pale grey. Altogether it is a far more beautiful insect than our local form, but the latter is quite reliable here. Such variation as we have is usually in that direction, especially in Ireland, where, as Mr Kane points out, there is sometimes a faint trace of the yellow colour of the central area, but nothing has been found approaching at all closely to the Continental type; and in the South-West of Ireland, the Atlantic Islands especially, the insect becomes almost blue-black."

The Names and Forms to be considered:—

caesia, Schiff. (1775), *Verz.*, 82, O.
dichroma, Esp. (1789-?), *Abbild. Noct.*, IV (1), 519, plt. 155, 2.
[*caesia*, Bork. (1792), *Naturg.*, IV, 279.]
ssp. *manani*, Greg. (1883), *Yng. Nat.*, IV, 184.
ab. *doubledayi*, Mill. (1886), *Nat. Sic.*, VI, 2.
ab. *nigricans*, Stdgr. (1901), *Cat.*, IIIed., 162.
ab. *clara*, Stdgr. (1901), *l.c.* [Drdt.-Stz., *Supp.*, *l.c.*, f. 13i].
ab. *pecirkai*, Jouhl. (1908), *Cas. Cesk. Spol. Ent.*, 96.
f. *maritima*, Trti. (1911), *Bull. Soc. Ent. It.*, XLIII, 180 [Stz., *Supp.*, III, 105 (1934)].
ab. *xanthophoba*, Schwrd. (1921), *Verh. z.-b. Ges.*, LXXI, 154.
r. *uromovi*, Drensk. (1931), *Bull. Soc. Ent. Bulg.*, VI, 57.
f. *atlantis*, Drdt. (1934), *Pal. Noct. Supp.*, III, plt. 13i; *Ent. Rund.*, LI, 100.

f. *salmonea*, Drdt. (1934), *l.c.*, plt. 13i.
ssp. *castiliana*, Reisr. (1935), *Ent. Rund.*, LIII, 60.
ab. *astrogovichi*, Diosz. (1935), *Verh. siebenburg Ver. Nat. Hermannstdt.*, 83 and 84, p. 114.
ssp. *transiens*, Drdt. (1936), *Pal. Noct. Supp.*, III, 105: *Ent. Rund.*, LIII, 471.
f. *abruzzensis*, Drdt. (1936), *l.c.*, plt. 13h.
r. *nevadensis*, Drdt. (1936), *l.c.*

Tutt dealt with typical Continental *caesia* as described by Bork. and with the dark *manani*, Greg.

ab. *doubledayi*, Mill., *Nat. Sic.*, VI, 2 (1886).
Fig.—*l.c.*, plt. 1, 3.
Orig. Descrip.—" Henry Doubleday, of Epping, some months before his death sent me several examples of *D. caesia* ♀ almost entirely of a fuliginous black on the forewings, on which one saw, only very imperfectly, the transverse lines and the two ordinary stigmata indicated in an argillaceous yellow; the lower wings are uniformly very smoky."

ab. *nigrescens*, Stdgr., *Cat. Lep.*, IIIed., 162 (1901).
" Multo obscurior; al. ant. nigro-griseis (nigrescentibus), caeruleo-griseo-inspersis."
Hamp., *Cat. Lep. Ph.*, V, 443 (1905), said: " Much darker; forewing suffused with black." Higher Pyrenees, Alps, and Scandinavian Mts.

ab. *clara*, Stdgr., *Cat. Lep.*, IIIed., 162 (1901).
" Al. ant. cinerascentibus, fascia media subalbida, paullum rosaceo-inspersa."
Hamp., *Cat. Lep. Ph.*, V, 443 (1905), said: " Forewing greyer, slightly irrorated with pinkish; the median area whitish." Armenia, Asia Minor.

ab. *pecirkai*, Joukl., *Cas. Cesk. Spol. Ent.* 96 (1908) [Drdt.-Stz., *Pal. Noct. Supp.*, III, 104].
Descrip.—Drdt. in Stz.: " Scarcely worthy of denomination. It has no transverse lines and subterminal line is pale blue-grey with trapeziform whitish central area. Hindwings with wide dark brown marginal band." Gratz.

f. *maritima*, Trti. & Ver., *Bull. Soc. Ent. It.*, XLIII, 180 (1911) [Stz., *Pal. Noct. Supp.*, III, 105 (1934)].
Descrip.—Drdt. said: " Apparently closely resembles *xanthophoba* and may even be identical: in this latter eventuality it would have right of priority. Markings are bright with blue-grey and an almost pure white central area without any admixture of yellow, the stigmata with wide white circumscriptions, also the anterior transverse line being pure white." Terme, Valdieri.

ab. *xanthophoba*, Schwrd., *Beitr. Verh. zoo.-bot. Ges.*, LXXI, 154 (1921).
Orig. Descrip.—" I obtained this species in the Balkans in which the white and blue colours were present, but there was no trace of yellow. The blue and white *caesia* have occurred before in the Balkans. Those without yellow scales are var. *xanthophoba*."

ab. *uromovi*, Drenouski, *Bull. Soc. Ent. Bulg.*, VI, 57 (1931).

Orig. Descrip.—" The examples of both sexes are smaller than the typical form and the blue colour tone of the forewings is wanting; the hindwings are paler, but the yellow basal colour is wanting; the back of the abdomen is grey, not yellowish; the markings on the forewings are more distinct and more definitely marked." Bulgaria on the Macedonian border.

f. *atlantis*, Drdt., *Ent. Rund.*, LI, 100 (1934).

Fig.—*Pal. Noct. Supp.*, plt. 13i.

Orig. Descrip.—" A wonderful new form in which the ground colour is suffused with yellow, in which the orange is bright and contrasted with the fine blue-grey." Morocco.

f. *salmonea*, Drdt., *Ent. Rund.*, LI, 100 (1934).

Fig.—*Pal. Noct. Supp.*, III, 105, plt. 13f.

Orig. Descrip.—" Especially in the ♀ sex there occurs a deep lacred form." " Salmon-rose " in Seitz. Morocco. High Atlas.

ssp. *castiliana*, Reiss., *Ent. Rund.*, LIII, 60 (1935).

Orig. Descrip.—" Is easily distinguishable from other races by its extraordinarily sharp essentially distinct marking and its bright colour. Its strong and deep colour is much stronger than, for example, in the Balkan form *xanthophoba*, Schaw., but with not such contrast in its markings, and also the proportionally clearly marked *nevadensis*, Drdt., appears in comparison with *castiliana* quite bright and similarly powdered. The yellow of *nevadensis* has always a warm tone better developed than neapolitan-yellow which is wanting in *castiliana*."

ab. *ostrogovichi*, Diosz., *Verh. siebenburg. Ver. Nat.*, 83 and 84 (1935). [I have been unable to trace this reference.] Hungary.

ssp. *transiens*, Drdt., *Ent. Rund.*, LIII, 471 (1936).

Original Descrip.—" Has an extraordinary resemblance to the recently described *H. clarescens*, so that without sure proof it could not be distinguished from it, but the genital structure shows that it is undoubtedly *caesia*; it forms a transition to f. *clara*, Stdgr., only as large as the recently described *castiliana*, Reiss., which it also resembles somewhat, only it is particularly paler and whiter, especially is the broad white discal area pure white." Sultan Daghi.

f. *abruzzensis*, Draudt-Seitz, *Pal. Noct. Supp.*, III, 105 (1936) [*Ent. Rund.*, LIII, 471].

Fig.—*l.c.*, plt. 13h.

Orig. Descrip.—" Smaller, but much paler, and predominantly whitish with very pale blue-grey and without any orange." Abruzzi, Italy.

race *nevadensis*, Drdt., *Pal. Noct. Supp.*, III, 165 (1936) [*Ent. Rund.*, LIII, 471].

Fig.—*l.c.*, 13h.

Orig. Descrip.—" Strikingly small and of compact form. Markings very distinct of very dark blue-grey and admixed with whitish and with a few orange scales."

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. Turner, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—Eds.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr Hy. J. Turner, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris*, and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Culot, *Noctuae and Geometrae.—A. J. Wightman, "Aurago," Pulborough, Sx.*

Wanted—H. phlaeas (with data) from Palaearctic regions, particularly N. America, extreme North (Norway, etc.), China, Algeria, Ethiopia, N. Africa, Madeira, Balkans; also from other regions and British Isles. Also other Chrysophanids from similar areas. Also Continental (only) *P. fulminea (leucophaea), lichenea. Duplicates*—Lepidoptera (some rare) mostly from Japan, but also from S. Africa, S. America, India, East Indies, etc.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. Thursdays, May 13; June 10; 6 for 6.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Communications Promised:—H. A. Leeds, E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, Dr Kettlewell (plates), P. M. B. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, Rev. Desmond Murray (plate), H. Donisthorpe, Prof. J. W. Harrison, etc.

All Communications should be addressed to the Acting Editor, HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

Printed by T. Buncle & Co., Ltd., Arbroath.

Vol. LV.

No. 4

APRIL 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

CUCULLIA SCROPHULARIAE: A CONFESSION.

By A. J. Wightman.

I am very gratified by the replies in last month's *Record* to my note, asking for some definite proof of the existence on the Continent of a species of *Cucullia* closely allied to *C. verbasci*, Linn., and *C. lychnitis*, Ramb., yet distinct from both, and able to be distinguished with certainty as being the *scrophulariae* of Capieux.

First let me say that the reference given by me as *Del Scharst*, Vol. vi, pp. 131-133, was taken second-hand from Tutt (*Brit. Noct. and Vars.*, Vol. iii, page 114), as Mr Bainbrigge Fletcher suggests, and I did not notice in the proof that it was wrongly printed. It should of course be *Die Schmett*, Vol. v, Part iii, pp. 130-133.

The other point he raises, saying "Nor can I guess why the name *scrophulariae* should have been given in the original account to a species then known only on *Verbascum*," is explained by reference to the article of Mr E. P. Wiltshire, to which I was replying. He said the species is known in France and Belgium and I wanted to show that it must needs also be German. I did not say, although unless this fact was known I might appear to say, it was originally found only on *Verbascum*.

Mr Bainbrigge Fletcher goes on to say that Tutt does not quote the passage accurately, and gives its true substance, which in no way alters the fact I was making, i.e., that in this account Capieux's larva is said not only to occur on *Scrophularia* but also on *Verbascum* at the same time of year near Vienna.

I also find that this reference of Tutt is not in fact the first record of this larva of Capieux, he having described it in *Naturforscher* in 1789.

I am sorry that I have had to rely for my information on second-hand accounts from British authors, but I, like so many more, do not enjoy easy access to the original accounts and could not read them if I had the chance, so I must trust other authors who write in English, or give up hope of ever knowing anything about what Continental authors have said and say in reference to species in which I am interested. I admit I am insular and chiefly interested in those species which occur in these islands, but some knowledge of the Continental forms of these is necessary to a proper understanding of both variation and nomenclature. Hence my straying into fields about which I freely admit I know little, but I am always trying to learn, and that was my object in asking on what grounds *scrophulariae* is proved to exist.

I have long been interested in this matter of *verbasci*, *lychnitis*, and *scrophulariae*, and have read and carefully pondered all the evidence that Tutt, South, Barrett, and other authors have written and have reported as having been written or said by the Continental authorities, and I have found no kind of agreement as to what this species *scrophulariae* is like.

Some say *scrophulariae* is like *verbasci*; others, that it is not like *verbasci*, but very like *lychnitis*. Guenée (according to Tutt, *Brit. Noc. and Vars.*, iii, 114) considered that *lychnitis* had been confused with other species—*scrophulariphaga*, *thapsiphaga* and *blattariae*, which would complicate the recognition of the imago of *scrophulariae* still further.

Some authors make much of the date at which *scrophulariae* occurs, but while some say it is always later than *verbasci*, others say at the same date as *verbasci*. Tutt, in *Brit. Noc. and Vars.*, iii, 112, reports Guenée as giving March and April, which is, if anything, earlier than *verbasci*. Tutt himself said always earlier in 1890, and at the same time as *verbasci* in 1908.

All agree its larva is in some way different but no single author gives a point which would distinguish this larva from an aberrantly marked larva of *verbasci* or an aberrantly coloured larva of *lychnitis*, and both these species have variable larva, especially the latter.

Nor do the figures of Continental authors, such as I have seen, show that they are very clear as to the actual differences in the imagines of *verbasci*, *lychnitis*, and *scrophulariae*. Let me quote South on this point. He had, I presume, some idea of what the Continental authors had said in their works.

South (*Brit. Moths*, Vol. ii, page 37) says: "A good deal of confusion exists in Britain and on the Continent as to the identity of the *Cucullia* figured by Capieux in 1789 and most authors since that time. I have received over 20 specimens from Austria, Germany and other parts of Europe sent me as *scrophulariae*," and he proceeds to record that six males from these were found by Mr F. N. Pierce, according to their genitalia, to be four *C. lychnitis* and two *C. verbasci*, and that Kent *scrophulariae* by the same test were *verbasci*. He concludes by saying that we shall not be greatly opposed to Continental methods if we allow April and May moths from *Scrophularia nodosa* to do duty for *C. scrophulariae*, and then figures *scrophulariae* (plt. 15, fig. 3) from Dartford Marshes, which must have been from *Scrophularia aquatica*.

South's fig. could well be *lychnitis* or *verbasci*, and F. N. Pierce, in *Genit. of the British Noctuae*, 1909, page 73, has said: "The Cucullias may easily be differentiated by the clavus, which varies in each species, except the mythical *scrophulariae*. I have failed to satisfy myself that this species really exists."

(The Continental dealers send out specimens of *verbasci* and *lychnitis* when *scrophulariae* is ordered. Sometimes in a series so sent there will be included specimens of each of these. The so-called English *scrophulariae* from Kent is identical with *verbasci*. Some years ago Mr Robson sent me "true *scrophulariae*." This I have figured for what it is worth, but until reliable material is forthcoming *scrophulariae* can have no place in our lists.)

It is 150 years ago that this *scrophulariae* is declared to have been distinguished and yet it still seems hard to find any proof of its existence up to the present time.

Some 40 years ago I bought specimens of the Kent *scrophulariae* from Davis of Dartford, and they appeared to me to be under-sized *verbasci*. I also had larvae from Davis and these I thought agreed with *verbasci*. I might not be so sure now, but they were destroyed during the last war.

I also examined large numbers of larvae from *Verbascum* around Lewes, Eastbourne, and Brighton, and from *Scrophularia* at Lewes Marshes and near Balcombe; these also I thought were all *verbasci*, and the moths bore this out, or I at least thought so at the time.

Meanwhile Tutt had accepted the Kent *scrophulariae* as correct. I got the supposed *scrophulariae* from Tutt's collector brother-in-law taken in Kent marshes and they appeared to me to be *verbasci*.

I now came to live at Pulborough, where both *lychnitis* and *verbasci* occur, and I soon found that the larva of *lynchnitis* is very variable; that it feeds on *Scrophularia* as well as *Verbascum*; that it occurs in some seasons, on the same plant, at the same time, and in the same spots as *verbasci*; that it disappears for years at a time from some spots, just as is said to be the case with *scrophulariae*; that in captivity moths from a given brood emerge in various months in various years; that even in fresh bred series there are a number of distinct colour tints, especially on the costa, and that it often has nearly clear pearly white hindwings and as often dark clouded hindwings.

I was now quite satisfied that, failing some distinction more tangible than any yet given, I did not believe in *scrophulariae* as distinct from *lychnitis*. This was not a little influenced so far as the Continental *scrophulariae* was concerned by the plate in *Seitz* (Warren) *Pal. Noct.*, iii, 27, where figs. are given of *scrophulariphila*, *scrophulariphaga*, *blattariae*, *thapsiphaga*, and *anceps*, suggesting that on the Continent the matter was more complicated than here.

Treitschke says of *scrophulariae* in comparing it with *verbasci*, " The present species (*scrophulariae*) has a yellow tinge." This mention of yellow seemed to me clearly to indicate the species later distinguished and named *lychnitis* by Rambur.

I then decided that from all I could learn from others and from what I had myself learned from experience, the *scrophulariae* of Capieux, as described by Treitschke, had the characters of *lychnitis*, and no character referred to *scrophulariae* by later authors was enough to show that they had anything other than *lychnitis* or *verbasci*.

I then wrote a note in the *Ent. Record* (15/vi/1931, page 110) saying I thought *lychnitis*, Rambur = *scrophulariae*, Capieux, and giving some reasons for the idea. No one put me right, and I concluded that was because no one had any proof to the contrary. Since then I have been smugly satisfied that nothing discovered since 1931 would be likely to establish a species in dispute since 1793. This, then, was the position when I asked for some actual proof and before I read Cockayne's reply. Now, as I have already said, I am dependent on others for the information I have of what the old Continental authors have said about these three species and the same applies to the recent literature on the matter.

I was not conversant with the accounts of Spuler 1907, Hering 1932 (quoted by Mr Bainbrigge Fletcher), nor with those of Durand and Boursin quoted by Dr Cockayne, nor have I been able to obtain a copy of Culot's work, but I have seen his figure of *scrophulariae* ♂ and I could see in it nothing which would prove it other than an aberrant *lychnitis*, and as regards the hindwing this is in *lychnitis* quite variable. I have examples with hindwings nearly clear pearly white and others with a good deal of dark clouding. But probably I looked at the figure with the eyes of a sceptic.

Even now these unanimous Continental supporters of *scrophulariae* are not too unanimous on all points of distinction.

Durand says his *scrophulariae* are more like *verbasci* than *lychnitis*.

Boursin says his *scrophulariae* are more like *lychnitis* than *verbasci*.

Durand only claims to distinguish the three species when bred and recent (in the perfect state).

Spuler says that it is *verbasci* which is more intensively yellow, almost what Treitschke said about *scrophulariae* to distinguish that species from *verbasci*.

Probably had I had the knowledge these authors impart I should not have had the temerity to say as much as I did when asking Mr Wiltshire to give me some definite proof that *scrophulariae* was distinct, but I should still have desired something more tangible, especially about the larval distinction, and desired to have some of these larvae to examine.

Now let me pass to that part of the reply of Dr E. A. Cockayne, in which he says: the article by G. Durand in *Lambillionea*, 1933, *33*, 124, should satisfy me and gives some extracts from Durand's description. From these it seems Durand relies on the colour of the larva, and the fact that the black dorsal transverse marks which meet in *lychnitis* do not meet in his *scrophulariae*.

This would not convince me as I have personally had many larvae of *lychnitis* like Buckler, plt. xcvii, 3 and 3a, in which these marks are absent, and others in which these marks do not meet, and others again in which the ground colour was much like that of normal *verbasci* as Buckler's figs., plate xcvii, 3b and 3d, but Dr Cockayne goes on to say that he has had larvae from Mons. Durand and that they did not all show this point of difference, but that on further critical examination he did find a point in all these larvae from Durand which would distinguish them from those of *lychnitis* or *verbasci*, i.e. a dark grey transverse line at the intersegmental junction of the abdominal somites, lying a short distance in front of the black dorsal marks, difficult to see in the living larvae, but distinct in a blown example.

The fact that Durand's larvae did not all show his point about the markings distinction proves they were a normal batch and not selected larvae to display this feature, and so it is obvious that he can distinguish these larvae even apart from these markings and the distinguishing marks discovered by Dr Cockayne.

Incidentally, does not the fact that Dr Cockayne obtained these larvae from Mons. Durand suggest that, not so long ago, if not a sceptic, he thought a little more light on the matter would be useful. Continuing, Dr Cockayne says that many years ago he had from Staudinger and Bang-Haas as *scrophulariae* a blown larva he put on one side as *lychnitis* (so once he was a sceptic) and that now upon re-examination he found that this old larva presented this intersegmental junction line found in all the *scrophulariae* larvae received by him from Durand.

Not only, therefore, is it proved that there are three species on the Continent in this group, but it is shown that for many years this larva of Durand has been recognized as that of *scrophulariae*.

On the facts now disclosed, the failure of Pierce and others to find a distinction in the genitalia of Continental *scrophulariae* is seen to be no point against part of the material having been correctly named, and South's failure to see any point of distinction in the Continental *scrophulariae* he had is again nothing against the material being correct. The difference is small and only seen in fresh bred insects by experts.

So I am wrong and must apologise to Mr E. P. Wiltshire, not for having denied that South distinguished *scrophulariae* in this country by date, which I still deny, but for having cast doubt in no uncertain language on his statement that *scrophulariae* was distinguished on the Continent and occurred in France and Belgium, and I do now apologise to him.

I also, of course, should not have said that no one had attempted to prove the existence, but that no one had done so, but I do not think any Continental author will feel hurt at my failure to accept his findings after all the admissions I have made as to things I did not know.

Now, as to British *scrophulariae*, Buckler, Vol. vi, pages 68, 69 (*Larvae of Brit. Butterflies and Moths*), gives four figs. of larvae said to be *scrophulariae* but does not say where they were taken, only from whom and through whom he received them, from which I should have thought they were of Continental origin. But Barrett (*Brit. Lep.*, Vol. vi, page 69), after quoting Buckler as having told him in writing that he had these larvae from Doubleday, continues to say that the only locality he knows of is Tuddenham, and this is confirmed again below where Barrett says these larvae from Doubleday were from Tuddenham.

Dr Cockayne says he accepts these figures as correct for *scrophulariae* and considers that Tutt identified his Cuxton *scrophulariae* taken prior to 1890 from these figures. This I greatly doubt, but if this is so Tutt would no doubt have been satisfied in 1908 that the Kent Marsh larvae which produced the Kent Marsh imagines of *scrophulariae* he was accepting as the true species also agreed with Buckler's figs. of *scrophulariae*. So, if this is correct, the species has occurred in this country not only in Suffolk but in Kent, and in some quantity. From its distribution abroad it is a species likely to be found in our S.E. counties. But it is not proved yet to have occurred in the British Isles.

Now, thanks to the definite test markings which Dr Cockayne has supplied, British collectors can be sure when they think they have found *scrophulariae*, either yes or no, by blowing one of the larvae.

The larvae to be probable *scrophulariae* are likely to be found on *Scrophularia*, to be the ground colour of the larva of *verbasci* (dusky blue) when young, but greyer than *verbasci* when full fed, never yellowish green as in usual *lychnitis*.

These larvae should not have the numerous little black dots and transverse lines normally present in *verbasci*, nor should the black dorsal marks meet in the middle. But none of these points alone will prove that the larvae is *scrophulariae*. A larva must be critically examined, preferably blown, and then if there can be discerned a dark grey transverse line at the intersegmental junction of the abdominal somites they are veritable *scrophulariae*.

I think the facts as now disclosed show just why I and many others, present as well as past, have been so sceptical.

Here we have two species of *Cucullia*, *verbasci*, Linn., and *lychnitis*, Rambur, which are very much alike and approach each other in the limited variation of the imagines. Their larvae are also similar and vary a good deal both in markings and colour again towards each other and both feed on *Scrophularia* among other plants.

Yet there is a third species which is really intermediate between them, both in shape, size and colour, having a larva which, except on

very critical examination, might well pass as a not very exceptional variation of either *verbasci* or *lychnitis*, and this species *scrophulariae* cannot be definitely separated from *lychnitis* by its genitalia, and is also a *Scrophularia* feeder.

Add to this the existence of other similar species on the Continent, at least in the imago state, and to the certainty that in the past the various species have been sent out on occasion wrongly described by those who only thought they could separate them, as well as by others who probably do so and sent the right material, and the fact that, not unnaturally, all larvae of the group found on *Scrophularia* were once referred to *scrophulariae*, at least in this country, and a puzzle set by nature existed and, to my mind, has only now been really solved.

In conclusion, let me thank Mr Bainbrigge Fletcher and Dr E. A. Cockayne for the enlightenment they have afforded me. I have never before been so pleased at being proved wrong on a pet theory about which I thought I really did know something.

COLLECTING NOTES.

Montgomeryshire Notes.—Contrasted with the previous year, 1942 was a poor one, entomologically, in this part of Wales. The Prominents were so scarce as to be virtually non-existent, and I looked in vain for many of the more desirable insects which I had taken or noted in 1941. *E. leucophaearia* appeared first on 28th February; *T. rupicapraria* did not appear at all, and of *P. pedaria* only a few were seen. *A. aescularia*, however, first noted on 9th March, seemed to be as common as usual, with an occasional *E. marginaria*.

At the end of March *X. areola* began to appear on farm gates and tree trunks; *N. io* and *A. urticae* were on the wing on the 24th, on which date I saw the first *B. parthenias*. This pretty moth seems to be common throughout the county, both on the hills and in the river valleys. The common *Taeniocampidae* were seen and of course *B. strataria*. On 10th April we took *Eupithecia insignata* = *venosata* and *N. carpinata*. *G. ornithopus* emerged from hibernation and a female taken so late as 5th May laid eggs from which a series was bred. *P. c-album* was seen on 14th April; this butterfly seems now to be as common in the valley of the Severn as it is in that of the Wye; later in the year I noticed four on a bramble bush at the same time. The end of April brought *H. abruptaria*, and in gathering hawthorn for my larva cages I inadvertently took four young *B. sphinx*.

On 2nd May I noticed a full-grown *C. margaritata* on sallow, as usual matching the colour of the twig to perfection, and the following day we collected some *C. gilvago* from elm. This species here takes the place of *A. circellaris*, which I have not yet recorded from this county; probably it is here and only a patch or two of sugar is required to reveal it. The same week *E. fasciaria* was found on spruce, and *E. crepuscularia* began to appear on larch trunks. On 15th May *S. lunaria* was taken, and on the 19th *C. mendica*, the first I have seen in Wales. Later in the year (7th July), near the same spot, I found eight young larvae of this species on, of all foodplants, *Onopordon acanthium*, L. These were successfully reared (though I drew the line at gathering their

native foodplant and fed them on *Plantago major*). Larva collecting was begun in earnest this month, but nothing new or of interest was found. 20th May yielded a very large *B. betularia* asleep on a patch of lichen high up on an oak. She obligingly laid a number of eggs, and the larvae were reared with a view to discovering if the melanic form occurs here. *O. designata* was found on the 24th (and again on 2nd September) and a full-grown larva of *G. aprilina* was noticed in a chink of oak so early as 22nd May. The last day of the month brought *E. venosata* (of which many larvae were later collected from *Silene cucubalus*, Wibel) and larvae of *Strymon w-album*, *Thecla quercus*, *B. sphinx*, *B. strataria* and various " Thorns."

A newcomer (so far as I am concerned) to this district on 1st June was *P. dolabraria*. Next day we noted *L. chlorosata*, *B. temerata*, *E. bistortata*, and *C. pusaria*; while larvae of *P. moneta* were removed from a choice *Aconitum napellus* under my study window. *E. glyphica* flew in plenty in hayfields, and a few *E. mi*. *T. duplaris* was found on a tree trunk and, on the same day (2nd June), a male *D. falcataria*. Larvae of *Z. retusa*, *A. lota*, *B. viminalis* (of which a few turned out to be v. *obscura*), *C. icteritia* = *fulvago* and *C. lutea* = *flavago* were collected from sallow tips and the moths bred. *E. caeruleocephala*, on hawthorn, was as abundant as usual. Another newcomer was *A. hispidaria*, of which I found a full-grown larva on oak on 13th June. Other species taken or seen this month were *C. rectangulata*, *A. rumicis*, *P. blandiata*, *H. bicruris*, *D. porcellus* (at Valerian bloom), *C. repandata*, and *Z. lonicerae*—the latter in a little and very wet bog in a wood high up in the hills where I could find no specimen of its reputed foodplants. I counted seven or eight on the wing at a time.

In July and August I did little field work, the only species recorded in my diaries (besides those which emerged in my larva cages) being *S. aversata*, *A. monoglypha* (a chocolate one), *A. secalis* (v. *leucostigma*), *A. psi*, *C. ribeata*, *S. liturata*, *D. lacertinaria* (two full-grown larvae on the top of a birch bush less than two feet high), *C. perla* (common on walls in the town), *E. pulchellata* (abundant in foxglove flowers), *L. socia* (full-grown in July), *L. prunata* (four, flying at dusk outside the front door), *P. chrysitis*, *O. chenopodiata*, *A. plagiata* (several), and *A. tragopogonis*. In September I saw or took larvae of *N. dromedarius*, *Thera obeliscata*, *G. bidentata* (larch), *E. fasciaria*, and *C. lichenaria* (lichens on larch and blackthorn). Two hours' digging at old oaks in a park yielded only six pupae, among them being the largest *G. aprilina* ♀ I have seen. The trowel hit her across the back of the head and split open the pupa-case. She pushed out a leg, waved it frantically as though in protest, and then withdrew it. Two hours later (at 4.25 p.m.) she emerged, and at 6.32 began to expand her wings, which process she continued until, at 7.30 p.m., they spanned 48 mm. *Aprilina* is tough.

On 7th September I boxed a fresh *T. citrago* from a fence among limes and on the 8th found, on birch, a full-grown *D. pudibunda* that was as black as a hat, with vermilion spots on the terga of the abdominal somites and vermilion spiracles. The same bush yielded a full-grown *L. capucina*, badly ichneumoned. On 5th October I found a full-grown *B. prasinana* on a road beneath oaks; it spun up the same evening. *Cilix glaucata* was common on both hawthorn and blackthorn, and, wonder of wonders, a larva of *B. betularia* on hawthorn so late as

13th October. It was not ichneumoned and later converted itself into a female pupa. *E. aurantiaria* was found on a tree trunk on 22nd November and *P. populi* on 11th December. *O. brumata* first appeared on the 22nd. November and December were unusually mild; a few Noctuid larvae were found hibernating under moss, and a good many eggs were collected from oak, birch, and sallow.—P. B. M. ALLAN, Newtown, Montgomeryshire.

NOTES ON A BOX OF TURKISH BUTTERFLIES SENT BY DR BURR.—I have recently received a box of butterflies from Dr Burr, taken in the neighbourhood of Constantinople, which are of considerable interest. They had not borne their journey very well, and a good many of them were not worth setting, but even the most broken ones provide a good deal of information.

Strymon ilicis.—Several specimens, all worn; they are very dark and unicolorous, exactly like those from Mt. Olympus.

Amongst the " Coppers " there are specimens of four species.

Heodes thersamon.—Two specimens, ♂, one remarkable for the depth, both in colour and width, of the dark suffusion from the inner margin of the hindwing. (This specimen is unfortunately in very bad condition.)

Heodes alciphron.—One ♀, much broken but otherwise fresh, of the *gordius* race but with brown hindwings (*intermedia*), the forewings being particularly brilliant.

Heodes dorilis.—One ♂ and one ♀; the former rather large, the latter of the *orientalis* form, very dark but with a more brilliant border of orange spots on both wings both on upper and undersides, than in specimens from the Tyrol and Hungary. (The upper side is a good deal rubbed and it has been necessary to set it for underside.)

Rumicia phlaeas.—Several specimens of very different forms. Summer specimens are all of the *eleus* form, two (a ♂ and ♀) so dark as almost to obscure any copper colour. (These two are in the Museum collection.) There is also one specimen taken in the autumn, very small and with very little dark colour. (This is also at the Museum.)

The " Blues " are a very mixed lot, six species being represented, mostly by one or two specimens only.

Lycenesthes argiolus.—One ♀ of second brood, worn, with broad black borders.

Scolitantides baton.—Two ♂s, both of the second brood; small specimens, but not so small as some others.

Polyommatus icarus.—One ♂, worn, of spring brood, taken in the middle of May; a fresh ♂, of a summer brood taken at the end of June, small, with only one basad spot (ab. *iphis*).

P. anteros.—Two ♂s; one evidently of the first brood, taken in June is rather large, but worn and dull; the other, of the second brood, taken towards the end of July, is fresh and small, but not nearly so small as those from Mt. Olympus.

Aricia medon.—Two ♂s; one which might be referred to *gallica* as suggested by Graves, but is smaller and with less brilliant orange and rather less of it than in specimens from Brittany; the other might have come from southern England.

Plebeius aegon.—One ♂, in very good condition, taken at the beginning of July. It is almost certainly single-brooded here. It is rather lighter and with rather less border than English heath specimens.

Of the Papilionids there are two specimens of *Papilio machaon*, one rather large but in rags, the other, taken at the end of September, rather small and light and in very good condition.

Of the Pierids four species are represented. *Aporia crataegi.*—Two ♀s, both utterly devoid of scales as is evident when they are held up to the light. These are evidently the form called *alepica*, of which I rather made fun years ago, but which certainly does exist in nature as well as by careless (or careful) handling.

Pontia daplidice.—Two specimens in no way remarkable.

Leptidia sinapis.—One ♂ of the summer form (*diniensis*) although taken at the end of June.

Colias croceus (*edusa*).—One ♀ of very ordinary form and one of the *helice* form, very beautiful, the hue being the palest shade of orange imaginable rather than yellow.

The large fritillaries are represented by three ♂ specimens of *Argynnis pandora*, of rather light ground colour like specimens from Greece, not quite so light as those from Spain and Italy, but much lighter than the very dark race from Corsica. There is not much silver on the underside hindwings.

Of the Melitaeas there are three species. *Melitaea didyma.*—Most of the specimens are of this species including one ♀. The ♂s, like those from Greece, have generally exceptionally large spots on the forewings but few on the hindwings. The ♀ is large and has large spots both on the fore and hindwings; the former have a touch of grey suffusion over the deep orange underlying colour, but quite unlike the ochreous-grey of those from Tokat or the deep grey of those from Broussa which nearly conceals the underlying orange.

M. cinxia.—Two ♂s, rather dark.

M. trivia.—One ♂, rather small, quite like those from Greece.

Of the Vanessids there are four:

P. atalanta.—One, very worn.

P. cardui.—One ♀, large and in good condition, rather dark, particularly on the underside.

E. polychloros.—One, worn.

P. egea.—One ♂, large and rather light in colour..

There are two specimens of *Limenitis camilla* (not meaning *sibilla*), one large and rather worn, the other small, very dark and quite fresh, evidently of the second brood, as one finds it, for instance, in Italy.

Of the Satyrids there are eight species. *Pararge megera.*—One ♂, which might have come from any where in England.

P. maera.—One ♂, rather small but otherwise like those of Central Europe.

P. aegeria.—One ♂, quite like those from Central Europe, with no approach to the southern forms; it might be an English specimen.

Satyrus circe.—One fine ♂.

Coenonympha arcania.—One, very large, with broad white band on the underside of the hindwings. As the body is wanting it is difficult to determine the sex, but it is probably (from the markings) a ♀.

C. pamphilus.—A good many specimens of both sexes; June specimens, rather large with fairly conspicuous light band on the upper half of the underside hindwing; July specimens small, with mere indications of the light band.

Maniola jurtina.—Two ♂s and 1 ♀, distinctly of the *hispulla* form, though considerably smaller than those from further south.

Melanargia galathea.—Several specimens, all ♂s; coming from Turkey they should be of the race *turcica*, but are not so dark as those from Greece and Bulgaria, and are also considerably smaller.

Of the "Skippers" there are five species. *E. alceae*.—Two specimens, rather small ♂s.

E. althaeae.—One ♂, quite like those from Central Europe.

Adopoea sylvanus.—A pair, in no way remarkable.

A. flava (linea).—One large ♂, but not rivalling those from Greece, which are quite as large as the previous species.

Thymelicus acteon.—Two specimens, rather dark but otherwise quite usual. "Skippers" as a rule don't stand papering well on account of the thickness of their bodies; these on the whole have come out remarkably well, especially *E. alcaeae*, which, when taken, seems to be usually more or less ragged. All specimens (except *A. anteros*) are remarkably of a Central Europe form.—Rev. G. Wheeler, M.A., F.R.E.S.

A Note on Scent-Brushes in the Hepialidae.—Mr Murray's statement, that "the presence of the Scent Brush . . . and not *vice versa*," seems to require some comment. Firstly, there does not seem to be any general theory that the female seeks the male in all Hepialid species. In fact, I have always considered our few English species as providing an excellent sample of the different methods of sex-attraction: by scent, female attracting male (*lupulinus*, *sylvinus* and *fusconebulosus*), male attracting female (*hectus* and perhaps *humuli*); by sight, male attracting female (*humuli*). In the case of *lupulinus*, I have often seen a newly-emerged female sitting on grass in a calling attitude and, when no male arrived, moving off to another place and, after she had gone, a male flying to the place where she had been and getting very excited, crawling and flying all around it in a vain hunt for the female, obviously attracted by some odour left behind by her. In *hectus* the scent (compared to pine-apple), emitted by the male, is well-known and the males have a pendulatory flight, often several (to a dozen or more) flying in close proximity until a female flies near (or touches) a male and drops down close by, the male pursuing her and coupling. The best way to collect the female is to watch for this to happen or to sweep around the places where the males are seen hovering, when paired couples are to be got in numbers. In *humuli* the scent emitted by the male is less evident but has been noted by several observers, e.g., Barrett, *E.M.M.*, xxviii, 217 (1892), but the female *humuli* seems to be attracted to the male mainly by sight, as is indicated by the fact that the brilliant white male form, which is so conspicuous at dusk in England, is replaced in Scotland by the female-like form, *thulensis*, Newman 1865, more and more as one goes northwards from about Lanarkshire, until in the Shetlands the silvery-white form of the male is almost replaced by the very variable *thulensis* resembling the female: as Jenner Weir noted, *Entom.*, xiii, 251 (xi, 1880), "in the Shetlands, where in Summer the

nights are so much lighter than with us, it is not so necessary that the males should be conspicuously coloured to enable the females to distinguish them." Any one who watches the white males hovering in their characteristic oscillating manner can see the female strike against her selected mate, when both drop and pair. Secondly, I do not follow Mr Murray's idea that " the male is using his Scent Brush, while in flight, as a means of finding his partner (as must be supposed)" in the case of *humuli*. It appears to me that the male merely has a second string to his bow to attract or excite the female. Anyway, it is very certain that the female *humuli* searches for and finds the male, not *vice versa*.

Outside of our species, I do not know of much on record regarding pairing habits of Hepialids. I note that some species of *Phassus* (e.g., *damor*, Moore, and *malabaricus*, Moore have very complex tibial scale-tufts on hind leg of male. Of the large *Hepialus* (or *Charagia*) *virescens*, Doubleday, from New Zealand, Hudson (*Moths Butt. New Zeal.*, p. 359, 1928) says: " The large expansible tuft of long reddish-brown hairs on the tibia of the hind leg of both sexes is probably a scent organ, but I have not been able to detect any definite perfume by stirring the tuft, even in freshly-killed specimens," so here apparently we have scale tufts in both sexes of the same species.—T. Bainbrigge Fletcher, Rodborough, 27.iii.1943.

Note on the Correspondence concerning Cucullia scrophulariae. —Dr Cockayne's reply to my note in the February number mentions that, in addition to differences in the colour of the caterpillars, he pointed out that there are differences in pattern as well and that the imagines can be distinguished by an expert if they are in a fresh condition. He adds also that there are biological and structural differences. Of course there are, but all this is equally true of biological races. As to his statement that there can be no doubt that *verbasci* is specifically distinct from *scrophulariae*, I thought the correspondence arose on that very question? We are back at the old division between " Whole-hoggers " and " Hair-splitters " and it is the latter who cause so much trouble and do so much towards building up synonymies.—Frank Balfour-Browne, 18.iii.1943.

Note on the Correspondence concerning Cucullia scrophulariae. —I think Professor Balfour-Browne has a conception of a biological race slightly different from mine, and I still prefer to regard *Cucullia verbasci*, *scrophulariae*, and *lychnitis* as species rather than biological races. With more careful study we are sometimes finding that two closely allied species have been treated as one, and with their separation two names become necessary. I do not regard such a separation as " hair-splitting," nor do I think the two names are synonyms.—E. A. Cockayne, 23.iii.1943.

OBITUARY.

ANTHONY JOHN LEE BOWES.

All who knew " Johnny " Bowes were very grieved to learn that he was reported missing following an air attack on Duisburg in which he took part on 25th July 1942. At the end of the year he was officially presumed killed in action and more recently news came through that he was known to have been brought down over Holland and buried there. Field Entomology has thus lost one of its most ardent adherents at the early age of 28.

Born in 1913, the son of Dr Armstrong Bowes, he entered Charterhouse with a scholarship in 1927, but it was when he went on to Christchurch, Oxford, in 1932, that he developed his enthusiasm for collecting Lepidoptera. From then onwards he spared no effort to get together a first-class collection. He was always keen on a scholastic career and on leaving Oxford in 1936 he joined the staff of Brighton College, subsequently returned to Charterhouse as an Assistant Master in a temporary capacity. Just before the war he went back to his old preparatory school at Ripley for a short time.

It was during the five years 1935-39 that he carried out his collecting on an intensive scale, travelling all over the country during his holidays and in addition carrying out a thorough and valuable study of the Lepidoptera of his home district, Herne Bay, and also of other parts of East Kent, chiefly Sandwich, Dungeness, and Ham Street. His accounts in this Journal of his annual travels, extending to Scotland, were written with a wealth of detail and interest. He was also a frequent contributor to the *Entomologist*. Among his notes is a very good description of a collecting trip he made in France in 1934 and also a report of his capture of the Continental form of *Coscinia cribraria* in Kent in 1937. In 1939 he recorded the dusk flight of *Nyssia lapponaria*.

Soon after the outbreak of war he volunteered for the R.A.F., in which he soon became a Pilot with the rank of Pilot Officer. At his own request and with that keenness which was so characteristic of him, he got himself transferred to Bomber Command, in serving in which he soon afterwards met so tragic but gallant an end. His delightful and cheerful personality made him popular with all who met him and the writer looks back to many happy days spent collecting in his company since 1934. He was of the type this country can ill afford to lose and his many entomological friends deeply mourn his passing.—C. G. M. DE W.

ol. LV.

No. 5

MAY 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

SOME MIDDLESEX COLEOPTERA.

By Horace Donisthorpe, F.Z.S., F.R.E.S., etc.

(*Continued from p. 18.*)

Staphylinidae.—*Aleochara nitida*, Gr., in dung, Heston, and in cut grass, Old Heston Churchyard; *Oxypoda umbrata*, Gyll., in bath, Heston; *O. longiuscula*, Gr., sweeping grass in garden, Heston; *Drusilla canaliculata*, F., in cut grass with *Myrmica laevinodis*, Nyl., Old Heston Churchyard; *Atheta angustula*, Gyll., in bath, Heston; *A. nigella*, Er.; in stem of Bulrush, Boston Manor; *A. analis*, Gr., in cut grass with *Myrmica laevinodis*, Nyl., Old Heston Churchyard; *A. trinotata*, Kr., *A. nigra*, Kr., *A. muscorum*, Bris., *A. fungi*, Gr., and *A. dubia*, Sharp, in cut grass, Old Heston Churchyard; *A. oblita*, Er., in mushroom, Osterley; *Falagria obscura*, Gr., and *Tachyporus obtusus*, L., sweeping, Boston Manor; *T. hypnorum*, F., sweeping in garden, Heston, and in cut grass, Old Heston Churchyard; *Tachinus scapularis*, Steph., on window in room, Heston; *Conosoma pubescens*, Gr., in frass of old ash tree, Boston Manor; *Quedius mesomelinus*, Marsh., in mushroom, Heston; *Q. puncticollis*, Kr., in bath, Heston; *Q. tristis*, Gr., and *Q. semiaeneus*, Steph., on pavements, Heston; *Ocypus olens*, Müll., on pavement, Heston, and path in lane, Lampton; *O. ater*, Gr., on pavement, and in bath (specimen with worn jaws), Heston, and in cut grass, Old Heston Churchyard; *O. siculus*, on pavement, Heston, and in cut grass, Old Heston Churchyard; *O. compressus*, Marsh., on path, Northwood; *Philonthus carbonarius*, Gyll., on pavement, Heston, and in cut grass, Old Heston Churchyard; *P. politus*, F., on pavement, Heston, and one ab. without punctures on thorax, under rubbish in dry pond, Boston Manor; *P. sordidus*, Gr., in cut grass, Old Heston Churchyard; *P. quisquiliaris*, Gyll., on mud, Boston Manor; *Gabrius nigritulus*, Gyll., sweeping, Boston Manor, and in cut grass, Old Heston Churchyard; *Platystethus arenarius*, Fourc., on the wing, Heston; *Oxytellus sculpturatus*, Gr., in cut grass, Old Heston Churchyard; *O. inustus*, Gr., in dung and by sweeping, Heston; *O. complanatus*, Er., under dung, Heston, and in cut grass, Old Heston Churchyard; *O. insecatus*, Gr., on pavement, Heston; *O. nitidulus*, Gr., on flowers in garden, Heston; *Medon propinquus*, Bris., in bath, Heston, and by sweeping, Boston Manor; *Stilicus affinis*, Er., and *Stenus brunnipes*, Steph., in cut grass, Old Heston Churchyard; *S. similis*, Hbst., and *S. canaliculatus*, Gyll., sweeping, Boston Manor; *S. melanarius*, Steph., under refuse in damp spot, Boston Manor.

Clambidae.—*Calyptomerus dubius*, Marsh., in cut grass, Old Heston Churchyard.

Silphidae.—*Necrophorus interruptus*, Steph., in bathroom, Heston; *Choleva fusca*, Pz., in bath, Heston.

Corylophidae.—*Sericoderus lateralis*, Gyll., in cut grass, Old Heston Churchyard.

Pselaphidae.—*Euplectus nanus*, Reich., in frass in old ash, Boston Manor.

Phalacridae.—*Olibrus aeneus*, F., in bathroom, and sweeping herbage in garden, Heston.

Coccinellidae.—*Subcoccinella 24-punctata*, L., fairly abundant sweeping herbage, Boston Manor; *Anisosticta 19-punctata*, L., sweeping

reeds, etc., Boston Manor; *Coccinella 10-punctata*, L., *C. 11-punctata*, L., *C. 7-punctata*, L., and *C. bipunctata*, L., on trees, herbage, nettles, etc., Heston, Osterley, and Boston Manor; *Hatyzia conglobata*, L., sweeping, Boston Manor, and in Convolvulus flower, Northwood; *Scymnus capitatus*, F., sweeping *Lepidium*, Boston Manor; *S. minimus*, Ross., not uncommon beating Holyhocks in garden, Heston.

ENDOMYCHIDAE.—*Mycetaea hirta*, Marsh., in frass in old walnut, Heston.

COLYDIIDAE.—*Synchita juglandis*, F., larvae (teste Blair) in frass in old walnut tree, Heston.

HISTERIDAE.—*Hister 12-striatus*, Schr., on path, Heston.

NITIDULIDAE.—*Omosita discoidea*, F., on the wing, Heston, and in cut grass, Old Heston Churchyard; *Rhizophagus parallelocollis*, Gyll., in some numbers in cut grass, Old Heston Churchyard. This is a regular churchyard beetle; it is supposed to occur in coffins.

(*To be continued.*)

THE QUESTION OF THE OCCURRENCE OF CUCULLIA SCROPHULARIAE IN BRITAIN.

By E. P. WILTSHIRE, F.R.E.S.

On p. 13 of the December 1942 *Ent. Rec.* Mr Wightman challenges me to produce proof of the existence of the species *Cucullia scrophulariae*, in spite of the fact that in my letter under reference, apparently published in the October 1942 number, I disclaimed to be an authority on this species and implied that M. Charles Boursin or Dr Cockayne would be better arbiters thereon. However, the attack is so bald-headed that I fear I must waste a little more of your space and your readers' time in replying to it.

Proof I cannot produce immediately, but reason for my assertion I can, namely, the opinion of M. Boursin, whose view on such a matter should surely be of greater weight than Mr Wightman's. M. Boursin has not only spoken and written to me of *C. scrophulariae* as a good species as recently as 1937 and 1938 but has published a key to the verbasciphagous-scrophulariphagous group of Shark-moths (viz.: "Beitrag zur Kenntnis der Noctuidae-Agrotidae," No. X, in *Mitt. Muench. Ent. Ges.*, e. V, XXIII, Jahrg. 1933, Heft 1). I challenge Mr Wightman to disprove the status of *scrophulariae* in the analytical key there given.

As for the occurrence of the species in Britain—a quite different question—M. Boursin informed me that he had not yet seen a genuine British example of *scrophulariae*. However, he gave me a European example of *scrophulariae*, ticketed and determined in his own handwriting, and I showed it to Dr Cockayne in the winter of 1938-9.

I find the arguments of Mr Wightman's article a little far-fetched; his second and third paragraphs argue that since British entomologists are probably wrong in having thought that *scrophulariae* occurs in Britain, therefore Continental entomologists are wrong in believing it exists in Europe. His fourth and fifth paragraphs show that he is entirely unacquainted with the Continental literature on the subject, of

which I have quoted the best and most recent above. And in his last paragraph he seems to have twisted my words to mean that the Continental belief in the existence of *scrophulariae* rests simply on larval differences. This I did not state, and that it is not so will appear from M. Boursin's revision referred to above; but it is true that Continental collectors find it easier to obtain the moth in the easily distinguished larval stage. The caterpillars of *verbasci* and *lychnitis* may be variable, as Mr Wightman points out, indeed, the latter is very variable; but that does not mean that a third species cannot be easily distinguished in the larval stage. Indeed, I believe that every member of the group (and there are quite a number) of which the larva is known can be easily distinguished as a caterpillar from every other member by students of the group, of whom Mr Wightman appears to consider himself one.

ORIGINAL DESCRIPTIONS OF NEW FORMS OF PANAXIA (CALLIMORPHA) DOMINULA, L., AND PANAXIA ROSSICA, KOLENATI.

By Dr H. B. D. Kettlewell, F.R.E.S., etc.

(*Plates to follow.*)

[Extracted from the paper on these species published simultaneously with this issue of the *Ent. Record* as Part I of the *Proceedings of the South London Ent. and Nat. Hist. Soc.* on May 15th.]

Panaxia rossica, K., hitherto referred to in literature as a race of *Panaxia dominula*, is a good species differing from *dominula* in appearance and genitalia. Its range is limited to Southern Russia and Persia, etc.

ORIGINAL DESCRIPTIONS OF NEW FORMS OF PANAXIA DOMINULA.

ab. **nigradonna**, nov. ab.

Orig. Descrip.—The Italian ssp. *persona*, Hb., represents those insects with a moderate increase of black on the yellow hindwings in which there may be a ray-like pattern towards the base. Ab. *italica*, Standfuss, refers to the lighter examples. This leaves unnamed those examples with all four wings nearly black, to which the name of "*donna*" is frequently but inaccurately given, and to which the name of *nigradonna* may be applied. Type in Oberthür Collection.

ab. **subitalica**, nov. ab.

Orig. Descrip.—In Piedmont in North-West Italy, where ssp. *persona* and normal *dominula* overlap, individuals occur amongst typical red hindwing *dominula*, having the hindwings a clear yellow. Rocci states (*Atti. Soc. Ligust.*, Vol. **24**, p. 189, 1913) that the forewings are normal and that the hindwings and body are yellow, unlike ssp. *persona*, in which the body is always black. Intermediates occur (ab. *intermedia*, Rocci), and are commoner than these yellow examples, which are rare. He incorrectly refers it to *rossica*.

ssp. **rhodanica**, nov. ssp.

Fig.—Plt. III, fig. 2.

Orig. Descrip.—" In Valais, Switzerland, along the valley of the Rhone there occurs a distinct race of red hindwinged *dominula* characterised by the following points:—

(a) Forewings spots have the normal white replaced by bright yellow.
(b) Diminution in size of forewing spots.
(c) The insects are rather smaller than normal *dominula*, frequently markedly so.
(d) Subapical spot small in size, often " hooked " as in ab. *basinigra*, Cockayne. Type in Oberthür Collection. (Figured.)

This race has hitherto been referred to as ssp. *bithynica*, Staudinger, from which it is entirely different both in size, facies, and distribution. Ssp. *bithynica* must be reserved for the race in Bithynia in Asia Minor.

ab. **privata**, nov. ab.

Orig. Descrip.—The terminal cell spot of the forewing (the central spot) is entirely absent or reduced to a pin-point. (Adapted from *P. rossica* ab. *privata*, Sheljuzhko, a parallel ab.)

ab. **brunnescens**, nov. ab.

Fig.—Plt. II, fig. 9.

Orig. Descrip.—" *Forewings*: Normal markings. The basal cell spot and central spot are of very deep orange. On the left side of my type the central spot is split into two by the vein.

" *Hindwings*: Normal black markings, but the whole of the ground colour with the exception of a narrow strip on the costa is an olive-brown, faintly tinged with pink. Between the discal spot and the anal angle this colour is somewhat accentuated by a smoky area, and in some examples this area alone is involved. Along the costa there is a narrow strip of wing with the normal red colour which runs distally as far as the outer angle. Abdomen bright red as in typical *dominula*, standing in contrast to the colour of the hindwings." Bred. Type in my collection. (Figured.)

ab. **diluta**, nov. ab.

Fig.—Plt. II, fig. 4.

Orig. Descrip.—" *Forewings*: All spots much reduced in size. Basal cell spot small, with tendency to splitting. Central spot present as small horizontal streak. Subapical blotch represented by a thin vertical streak, hooked internally at its costal end as in ab. *basinigra*, Cockayne. The apical group is represented by two small dots.

" *Hindwings*: Ground colour a clear pale pink, intermediate between red and yellow. Black markings normal in position, but heavy; in particular the discal spot at its lower end is hooked internally as in some cases of ab. *paucimacula*. Abdomen red." Bred. Deal. 1937. Type in my collection. (Figured.)

ab. **illustris**, nov. ab.

Fig.—Plt. II, figs. 1-2.

Orig. Descrip. — " Ground colour of forewings ink-blue. In my type (fig. 1) the basal spots are separate and of normal size, but with somewhat irregular outline. In my paratype (fig. 2) they are large, confluent and pale. The central spot in each is very large, being separated from the basal cell spot by a narrow

line of ground colour. The subapical blotch merges indistinguishably into the greatly enlarged apical group of spots to form ' fingers ' continuous with the blotch. The large spot at the inner angle merges with this area so that it, the subapical blotch, and the greatly enlarged apical spots, form a large irregular area of white, edged with yellow in its periphery, where it approximates to the ground colour. In my type the spot at the inner angle throws a tongue of white internally towards the lower basal spot.

" *Hindwings*: Ground colour a soft tomato pink. All normal black markings replaced by golden yellow with the exception of the discal spot, which in my type is black edged with yellow. In my paratype this also is all yellow with the exception of a small central black dot.

" Fringe black, with the exception of a small break opposite the yellow anal spot, where it is gold. Abdomen red." Type and paratype in my collection. (Figured.) Hampshire and Berkshire respectively. 1938.

ab. **ocellata**, nov. ab.

Fig.—Plt. II, fig. 5.

Orig. Descrip.—" *Forewings*: The normal white markings are minutely bordered with yellow scales. The anal spot is pointed internally.

" *Hindwings*: Very pale red. All black markings ringed with yellow." Bred 1940. Hants. Type in my collection. (Figured.)

ab. **conjuncta**, nov. ab.

Fig.—Plt. II, fig. 12.

Orig. Descrip.—" *Forewings*: Ground colour ink-blue. The basal spot of the discoidal cell and the central spot of the forewings are fused into one as in ab. *juncta*, Ckyne. It is a pale primrose yellow. This fusion is continued discally into a thin line running parallel with the costa, which joins the subapical blotch and which appears hooked internally where the line meets it. On the left side the subapical blotch is itself continued into the upper pair of apical spots, so that there is, in fact, continuity of pattern from the basal cell spot to the apicals.

" *Hindwings*: Pale pink. Black markings. Normal size, but dull." Hants, 1938. Bred. Type in my collection. (Figured.)

ab. **albomarginata**, nov. ab.

Fig.—Plt. II, fig. 13.

Orig. Descrip.—" *Forewings*: The apical group of spots are greatly enlarged and striated. They fuse together, particularly the lower two, to form a large white band which is edged distally by the black fringe. There may also be an extra white spot beneath this between the apical fusion and the anal spot. This is present in the type of *albomarginata*.

" *Hindwings*: Bright red, with somewhat reduced black markings with no inclination to form yellow rings." Bred Hants, 1938. Type in my collection. (Figured.)

ab. **flavomarginata**, nov. ab.

Fig.—Plt. II, fig. 14.

Orig. Descrip.—"The distribution of the apical markings of the forewings is increased as in ab. *albomarginata*, but all the normal white

markings are replaced by deep yellow as in ab. *crocea*, Schultz." Type in my collection. (Figured.) Kent. L. W. Newman. 1934.

ab. **decolorata**, nov. ab.

Fig.—Plt. II, fig. 11.

Orig. Descrip.—" *Forewings*: The normal markings can be seen as through ground glass. The ground colour is itself pale so that differentiation between it and the markings is indistinct, and where they abut orange scales add to the blurring of the pattern.

" *Hindwings*: Ground colour an extremely light crimson, quite unlike the normal red ground colour. Normal black markings replaced by creamy brown. Abdomen red as in hindwings." Bred A. Pitman, Wiltshire.

ab. **junctasuffusa**, nov. ab.

Fig.—Plt. II, fig. 10.

Orig. Descrip. — " The specimen is asymmetrical. Forewings: The basal spot of the discoidal cell and the central spot of the forewings on both wings are fused as in ab. *juncta* and ab. *conjuncta*. The other basal spot is merged in a suffusion of yellow scales, which entirely obliterate the dark ground colour surrounding it, and which extends as far distally as the anal angle spot and the lower end of the subapical blotch. On the right forewing there is a yellow streak which is continued from the ' *juncta* ' mark and runs into the subapical blotch parallel to the costa. Both subapical and apical spots, and to a lesser degree the spots at the anal angle, are, on this side, suffused with golden-yellow, particularly on the borders of these markings.

" *Hindwings*: Ground colour orange red. Right side has normal black markings. Left side has these markings practically obliterated by the superimposition of yellow scales." Wicken Fen. F. Norgate. 1896.

ORIGINAL DESCRIPTIONS OF NEW FORMS OF PANAXIA ROSSICA.

ab. **flavoteberdina**, nov ab. (*P. rossica*, Kolen. ssp. *teberdina*, Schel.

Fig.—Plt. I, fig. 8.

ab. **rubroteberdina**, nov. ab.

Fig.—Plt. I, fig. 9.

Orig. Descrip.—There are three forms of ssp. *teberdina*, Schel. Scheljuzhko stated (*Ent. Zeit. Frankfurt.*, Vol. **48**, p. 73, 1934) that there was a race of *P. rossica* in the Teberda district of North Caucasus which differs from typical *P. rossica* in size and other points in which pale red, yellow, and intermediate forms occurred, only 12% of the race had yellow hindwings. The pale red forms were rare also. The intermediates, with orange-red hindwings, were the commonest, and he expressly stated that his type of ssp. *teberdina* referred to an intermediate. He wished to refer to the yellow examples as ab. *rossica* which of course is impossible. To avoid future confusion, yellow hindwinged examples of ssp. *teberdina* should be named *flavoteberdina*, and those with red hindwings *rubroteberdina*.

Type *flavoteberdina* (Figured). Teberda, 1933. Scheljuzhko. Tring Museum.

Type *rubroteberdina* (Figured). Teberda 1933. Scheljuzhko. Tring Museum.

AN ADAPTATION.

Do you know the little village where the hills slope steeply down?
Do you know the scent of flowers and early morning dew?
Do you know the glorious stillness of the lonely wooded glade?
Where the golden wing-ed butterflies flit through.

It is there that I am going, with my cane, my net and boxes,
With a happy gentle pirate that I know,
To my beauteous little flies, to the woods the haunt of foxes,
The Red Gods call me out and I must go.

I must go, go, go away from here,
On the other side the hills I'm overdue.
And the road is clear before me, now the *old spring fret* comes o'er me,
And the Red Gods call for me, for me, FOR ME.

COLLECTING NOTES.

PYRAUSTA ALPINALIS, SCHIFF. (ULIGINOSALIS, STEPH.) IN SCOTLAND.—In August 1935 at Aviemore I was able to observe this species. I caught 4 ♂♂ and 1 ♀ on the slopes of Braeriach between 11.30 a.m. and about 3 p.m. They were caught from 2000 feet contour to 3250 feet contour. On 3rd August I caught those on Braeriach and on 5th August I took 3 ♀♀ and 1 ♂ on Cairngorm, between contours 2000 feet and 3000 and between 1.30 p.m. and 3.30 p.m. They keep together in colonies somewhat and appear to favour grassy hollows near to water for preference. They are very easily put up and after the first one has been caught are quite easy to recognize by their flight. The female is smaller than the male, and, judging by these examples I caught, emerges before the males, as the females were not in such good condition as the larger males. I have not seen this fact noted before, although I expect it is well known.—P. SIVITER SMITH, Little Aston Park, Streetly, near Birmingham.

THE "HAMPSTEAD EYE" (PRECIS VILLIDA, FABR.).—Having read the very interesting summary, given by Mr P. B. M. Allan, on the above insect, in his little book, *A Moth Hunter's Gossip,* pp. 290-293, there is absolutely no doubt whatever in my mind that Albin's Hampstead Eye was a specimen of the common Australian butterfly now known as *Precis villida,* but formerly called *Junonia velleda.* The figures of both upper and under sides, photographed from Petiver's book, are excellent representations of *P. villida* and quite accurate as regards both outline and wing markings. By no stretch of the imagination can these figures be deemed to represent either the Wall Butterfly or the Speckled Wood. In my opinion, there are no grounds for discrediting the observations of these old naturalists of over 200 years ago, supported as they are by two figures the accuracy of which are self-evident when compared with the actual insect. Probably many of the British Lepidopterists who discredit Albin's record have never seen a specimen of *Precis villida.* Stephens, an entomologist of no mean reputation,

was evidently convinced of the accuracy of the old observations when he named the Hampstead Eye *Cynthia hampstediensis* in 1827, and his action must be taken as a testimony to that effect. I know from my New Zealand experience of *P. villida* that this butterfly must have crossed the Tasman Sea in great numbers during the summer of 1886-1887, and stray examples have occurred in New Zealand since that time. It is described as " very common and swarming " throughout the whole Australian continent, and is clearly a migratory species on much the same footing as *Vanessa cardui*. If this butterfly can cross the Tasman Sea in a few days there is no reason why its world distribution should not have been quite different 200 years ago from what it is at the present time. Great changes in the abundance and distribution of many butterflies are actually known to have taken place within living memory. In my opinion it is highly unscientific to discredit well-attested observations just because they were made many years ago, especially when the identity of the insect in question is absolutely assured by an excellent figure, made at the time of its observation. If such methods were applied to astronomical research we should discredit all the ancient records of the appearances of Halley's Comet, for example, and be quite content to assume that this famous comet is not a permanent member of the Solar system.—G. V. Hudson, " Hillview," 80 Messines Road, Karori, W.3, Wellington, New Zealand, 24th December 1942.

[Can anyone suggest the means by which this insect reached Hampstead Heath? It must have come from a garden in the neighbourhood via an importation of foreign material from, say, a Dutch source. What known gardens existed at that time in that area? What connection was there between Dutch and British gardeners at that period?—Hy. J. T.]

The following note arises indirectly out of the controversy over *C. scrophulariae*. It is based on a letter read before the Soc. Ent. France in 1858.

Dr Boisduval communicated a note sent to him by Mon. Paris of Epernay and written at Avernay, in which M. Paris stated that on 14th July he found on *Scrophularia aquatica* three larvae of *C. scrophulariae*, all in different stages of growth, that he put them into a box with some of the food-plant and, on several leaves, he was astonished to see the largest larva seize and devour one of the numerous larvae (greenish-brown), very viscous and hexapod, which always occur in numbers on that plant—which he suspected to be that of *Cionus schrophulariae*, the prey being completely eaten within two minutes.

With reference to this Dr *Boisduval* remarked that he had already recorded that the larvae of *C. verbasci* sometimes devours the larvae of the *Cionus* on *Verbascum*: hence it must be admitted that *Cucullia* larvae are not solely vegetarian but also feed on insect larvae living on the same food-plant.

Mr T. Bainbrigge Fletcher points out that M. Paris was a coleopterist and whether he was competent enough to identify the larva of *C. scrophulariae* is another question.—Hy. J. T.

Note on Discoveries of Species in New Localities.—(1) *Myrmica schencki*, Emery. About the middle of August 1942, I found a small

nest of this ant between the foreshore and the golf course, at the southern end of Portmarnock beach, Co. Dublin. This nest contained workers only, with a number of larvae. Mr Stelfox later visited this nest with me. I shall visit it next Spring.

Tetramorain caespitum, L. While searching for *Acanthomyops umbratus* (*chtonolasius*), Nyl., by the Vico Road, Killiney, Co. Dublin, on the 4th September 1942, I found a nest of *T. caespitum*, L. It contained many workers, some larvae and a number of winged females. Mr Stelfox has seen specimens from here.

Leptothorax acervorum, F. I found a few small nests of this ant (no winged forms) in Glendasan, Co. Wicklow, at an elevation of 1000 ft. Some of these nests were in *Formica fusca*, L., nests (August 1942).

DESMOND P. WALLS.

NOTE ON ANTS FOUND AT HEAD OF GLENMACNASS VALLEY, CO. WICKLOW, 17TH AUGUST 1942.—At this point, the level of the valley floor is about 900 feet and the road skirts the valley head at about 1100 feet. Above the road level, except for a few *Acanthomyops flavus*, L., nests by the roadside, I found only *Formica fusca*, L., nests. These extended up the side of Redmond's Scar (2108 feet), the mountain to the east of the valley.

Furca nests by the road contained great numbers of microgynes, some nests containing workers and microgynes only. Some of these microgynes measured only about 6 mm. None of them was winged. I found a few micraners in these nests.

Below the road, right down to the valley floor, and far up the opposite side, I found vast numbers of *flavus* (q.v.), with a fair number of *Myrmica ruginodis* and *M. scabrinodis*. A noteworthy point is that I found no *fusca* below the road, until I came to the river, near the base of the Glenmacnass Waterfall. Here I found two colonies of workers (*fusca*).

This serves to illustrate how ants are confined by natural conditions, or by the encroachment of other species, to different zones. The *fusca* may have, at one time, occupied the whole side of the valley, and the *flavus* in time have encroached on them, and driven them up the mountain side. This seems to be the explanation of the solitary *fusca* colonies found on the valley floor. Natural conditions had, however, confined the *flavus* below 1100 feet (i.e., the road level at this point), which is their upper limit in Wicklow. The *fusca*, of course, could extend well above this level. Farther down the valley, I have found *fusca* at the river level, in company with *flavus* nests.

The following finds made in this area are of interest:—

(1) Two dealated *flavus* females, about 4 inches down in damp moss.
(2) A nest of *flavus* with a queen, workers, cocoons and naked pupae of different ages.
(3) Fourteen *flavus* dealated females, on the edge of a *M. scabrinodis* nest; they were unmolested, even when I disturbed the nest.
(4) A solitary *flavus* queen in a small cell, with some larvae and cocoons.
(5) A *flavus* nest with many workers, males, winged females, cocoons, larvae and eggs; and two queens.
(6) A *flavus* nest, with several small workers, eggs and larvae; and no less than 95 queens.
(7) A *flavus* nest, with workers and worker pupae, all naked.

DESMOND P. WALLS.

CURRENT NOTES.

On 11th February 1943 Messrs Glendining & Co., of 7 Argyll Street, London, W., disposed of varieties of British and Foreign butterflies from the collections of the late Phil Stiff, the late E. C. Joy, Messrs Leeds, and other properties.

From what follows it will be seen that prices ruled high. A single dusky brown ♀ *A. crataegi* fell under the hammer for £4 15/-; one ♂ upperside of a grey shade of *P. brassicae*, £2 4/-; another of the same, upperside pale yellow, £2 4/-; a specimen of *P. napi* approaching var. *bryoniae*, £3 2/6; while two Caithness examples sold for two guineas, and a heavily marked ♀ *citronea*, £1 2/-; also a banded twin-spot ♂ *citronea*, £1 16/-. A Donegal buff ♀ *P. napi*, £2 7/6. Two extreme ♀ *citronea* forms (Donegal), £2 4/-.

A pair of *P. daplidice*, ex Stevens' Sale, £2 12/-. Then an albinistic ♂ of *E. cardamines*, £4 10/-. Another with primrose-yellow tipped wings, £5; yet another catalogued as an extreme rare ♂ with orange tips faintly visible, £19; two ♂ ditto with black tips radiated in orange portion of wings, £1 10/-. One ♂ *C. croceus*, striking black border, £3 17/6, and a yellow spotted ♀, £3 10/-. Five single specimens of *A. lathonia* realised 14/-, 12/-, 12/-, 13/-, 10/-. A black rayed *A. selene* and another, £2 12/-, whilst a brick-red underside of *A. euphrosyne* sold for £2 6/-; a black ♂ *E. aurinia*, £2 17/6; a ♂ *A. aglaia* almost devoid of markings, £11; an underside of *A. cydippe*, var. *cleodoxa*, £4 2/6; an example of *A. paphia*, var. *melainia*, £14; a chocolate form of *M. athalia*, £4 5/-; a bred ♀ *P. c-album* flecked with yellow, £1 1/-; *M. cinxia*, forewings devoid of markings, £1 10/-. Five lots of single specimens of *L. dispar* parted company at £3 5/-, £2 12/6, £2 12/6, 12/-, 12/-. A ♀ albino of *M. jurtina*, £4; a ♂ underside of *A. hyperanthus*, var. *lanceolata*, £3 7/6; three dark *C. pamphilus*, £1 7/-. A series of ten ♀ *M. arion* was not expensive at £1 2/-; another series of ten realised 15/-; a ♂ *L. coridon*, var. *melainia*, £8 5/-; ditto, ab. *livida*, £6; ditto, ab. *caeca*, £2 2/-; ditto, 4 ♀♀, with khaki streaks, £1 8/-; a *P. icarus* × *L. bellargus* hybrid, £1; another ditto, ♀, £1 12/-; a ♂ *L. aegon*, ab. *sagittata*, £3 10/-; a black ♂ *L. bellargus*, £16; ditto, ab. *caeca* ♂, £2 4/-; ditto, ♀, £2 4/-; yet another ditto, £6; *L. phlaeas* (striated), £7 5/-; another, similar, £3 12/6.

Twenty-eight lots of *L. coridon* from H. A. Leed's collection were submitted, fully labelled as per the monograph, and values assigned ranged from 3/- up to £9 10/-. For example, a *postradiata-anticaeca*, £9 10/-; one *anti-radiata*, £4 15/-; ab. *cinnameus*, £6; one *syngrapha-flavescens*, £3 5/-; a nice series of *S. pruni* of 72 specimens sold for the reasonable figure of £5 10/-. A fourteen-drawer stained white wood cabinet reached £14, which leads one to think cabinets are now unprocurable.—H. E. P.

We have to congratulate Prof. P. A. Buxton, director of the Department of Entomology, London School of Hygiene and Tropical Medicine, in attaining the great scientific honour of election as a Fellow of the Royal Society. He has been described as our greatest authority on lice, one of the carriers of infectious diseases in the human race. The older entomologist of some decades past will remember the name of an early

pioneer in this work, whose name appeared so often in the early volumes of this magazine, the late A. Bacot, who subsequently lost his life in subjecting himself to personal experiments with this class of insect pests.

Parts 4 and 5, Vol. viii, of the *Trans. Soc. Brit. Entomology* has recently been issued. Mr China has contributed an account of numerous New and Little-known Species in the *Typhlocybidae* and various items on other genera of Homoptera. There are numerous diagrams, none of which illustrate the perfect insects or their outward structure. Mr G. A. Walton gives an account of the Natural Classification of the *Corixidae* (Hemipt.).

At the same time Pt. 4 of Vol. ii of the *Journal* was issued, containing ten smaller contributions dealing with items of information concerning Odonata, Hymenoptera, Plecoptera, Prosoptera, etc., with an important List of the Trichoptera of the Lake District by Mr H. D. E. Kimmins.

The *Report of the U.S. Nat. Museum* for the year ending June 30, 1942, has come to hand. As usual, it is a record of good progress and good service in all departments. The Insect additions reported are (1) 20,000 Hemiptera including many types, (2) Volumes and Papers including Panzer's *Faunae Insectorum Initia,*" a very rare item, and several other smaller collections of Lepidoptera, Coleoptera, Termites, etc.

Wicken Fen Fund.—This fund is raised annually by entomologists and other nature-lovers to assist in defraying the expenses incurred by the custodians of Wicken Fen (The National Trust) in administering the Fen, preserving the fauna and flora, and in providing a watcher. The Fen is unfortunately very inadequately endowed and its maintenance places a severe strain on the resources of the custodians, who for many years have had to contribute a considerable sum of money annually towards its upkeep. It is earnestly hoped, therefore, that every nature-lover who possibly can will contribute towards this very desirable object and will send his or her contribution as soon as possible to the Hon. Treasurer, H. M. Edelston, Bramble Hill, Balcombe, Haywards Heath, Sussex, who will be pleased to send permits for observation or collecting to subscribers on application. The amount of the fund in 1942 was £69 5s 0d.

REVIEWS.

We have received a most interesting article written by Prof. Bryan P. Beirne, M.A., M.Sc., Ph.D., F.R.E.S., F.L.S., F.Z.S., for the *Proc. Royal Irish Acad.*, Vol. xlix, entitled " The Distribution and Origin of the British Lepidoptera " (Macro.)—Such a theme is a large matter and requires a deal of detailed work to arrive at possible conclusions. The author has dealt with his matter in various sections under headings. In his " Introduction " he points out that the British Lepidoptera are eminently suitable for such an investigation because (1) the distribution of the species has been so well studied in the past; (2) few other groups of the British fauna exhibit so much and so extreme local variation;

(3) the species as a whole are extremely homogeneous in their habits and life-history, and (4) 85-90% are nocturnal in their habits. Under "Local Variation" climatic and geological influences are discussed and in a less degree temperature and the melanism occurring in urban districts. He adds a few remarks on Immigration. To discuss the "Distribution of the Lepidoptera in Great Britain" he has divided the species into various groups, and his results of closely detailed work are summarized and illustrated with a number of small regional maps. In a similar manner the "Distribution in Ireland" is discussed and reported. In his remarks on the actual "Origin of the British Lepidoptera" he starts with the facts that "All the species occurring in the British Isles were originally immigrants from the Continent, the majority when there was a land connection." The author next takes up "The Correlation with the Glacial Era." This is perhaps the most difficult portion of his work and the most uncertain in the bases of results. His final "Summary" plans the species into two main groups, viz., (1) of which the species have a local or discontinuous distribution; (2) of which the species have a wide and continuous distribution. These two sections, in his opinion, represent two waves of immigration separated by a considerable period of time. There should be a good deal of discussion on the various views of the author. It seems a pity that the details of all the summaries, which were made, could not be published for want of space.—Hy. J. T.

Some while ago we overlooked a most interesting and useful publication of the Amateur Entomological Society issued as a number of the *Amateur Entomologist*, Vol. vi, No. 39, 1942, price 5/-, edited and issued by B. A. Cooper, B.Sc., Dept. of Agriculture, The University, Leeds, 2.

Under the title the "Silkmoth Rearer's Handbook," with 72 pp., 4 plts., and numerous text figures, all the details for breeding treatment of some dozens of species are given in short and easily arranged paragraphs under suitable headings. Assembling, Hybrids (List of), Food-plants (most useful), Ova (Treatment), Larvae (treatment when young and older), Cages, Pupae (care of), Spraying, Forcing, "Electric Booster" (fitting of cages), Pairing, etc. Of course Setting and Exhibiting are dealt with. Wherever figures to illustrate details are necessary, they are supplied. In dealing with the various species in detail any special variation in the general treatment described in the earlier paragraphs is given in each case. The country of origin of each species is given and any necessary specific modification of treatment is discussed, also, in some instances, specific habits are given. Where needed, Racial forms are named and, as well as some aberrational forms, are considered. Nearly 90 items are figured. There is a small Bibliography and an adequate Index. Altogether this is an admirable working adjunct to all those interested in rearing some of our most beautiful natural objects.—Hy. J. T.

Hecatera, Gn. (1852), Barrett, South [*Polia*, Tr. (1816-25), Dup., Hamp., Warr.: *Melanchra*, Hb. (1820), Meyr., Meyr.: *Mamestra*, Hb. (1821), Stdgr., Splr., Culot: *Dianthoecia*, Bdv. (1828)] [*chrysozona*, Bork.] *dysodea*, Schiff. = *spinaciae*, View.

It is seldom that a species receives so many names which turn out to be synonyms. The two names which are advocated for the prior specific name are *dysodea* of Schiff. and *spinaciae*, View. The latter has quite a reasonable description, while the former is very strongly indicated, sufficiently for Hampson to use it, while the authors, Warren and Draudt in Seitz advocated the latter name.

Dysodea, Schiff., *Verz.*, 72, H. (1775). The wild lettuce Noctua [*Lactuca virosa*]. Schiff was the first author to use this name. Illiger, *Neu. Ausg. Verz.*, I, 208 (1801), said that Bork. and Esp. both described the same species, the latter giving a figure, *Abbild. Noct.*, IV, plt. 153, 6-7 (1788+?).

Tutt, *Brit. Noct.*, III, 40 (1892): Meyr., *Handb.*, 81 (1895): Barr., *Lep. Br. Is.*, IV, 218, plt. 161, 1 (1897): Stdgr., *Cat.*, IIIed., 160 (1901): Splr., *Schm. Eur.*, I, 175, plt. 37, 13 (1905): Hamp., *Lep. Phal.*, V, 169 (1905): South, *M.B.I.*, I, 253, plt. 125, f. 2 (1907): Warr.-Stz., *Pal. Noct.*, III, 75, plt. 17f, g (1909): Culot, *Noct. et Geom.*, I (1), 114, plt. 19, 3-4 (1911): Meyr., *Rev. Hand.*, 152 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 101, plt. 14h (1934): *l.c.*, 253 (1937).

Ernst & Eng., *Pap. d'Eur.*, VI, 114, fig. 350a, f. (1788), gave two good figures, an upper and an underside of an insect which is undoubtedly *dysodea*.

Esp., *Abbild. Noct.*, IV (1), 513, plt. 153, 6-7 (1788+?), gave two very fairly recognizable figures he named *flavicincta-minor*, and which most authors have considered to be *dysodea*, Schiff. (*flavicinta* on the plate but Wernb. puts *flavicincta*).

Hb., *Samml. Noct.*, 47 (1800-3), gave a good figure of *dysodea*. In his text, p. 171, he said that *chrysozona*, Bork., was a syn.

Haworth, *Lep. Brit.*, 183 (1809), described this species under the name *ranunculina*, and added to his notes that it was the *ornata*, de Vill., and the *dysodea*, Hb., *Noct.* 47.

Dup., *Hist. Nat.*, VI, 404, plt. 98, 2, gave a well executed figure which does not recall *dysodea* at all. There is not the slightest trace of grey-blue, and the colour seems to be placed in irregular lumps and not in the variegated plan of *dysodea*.

H.-S., *Bearb.*, IV, plt. 484 (1850), gave a figure named *caduca*, which he stated was very near *dysodea* in the genus *Polia*.

Guen., *Hist. Nat.*, VI, 28 (1852), used the name *dysodea*, Schiff. H. 5, and said it was *flavo-cincta minor*, Esp., plt. 153, 6-7, *chrysozona*, Bork., *ranunculina*, Haw. and *spinaciae*, View. He referred to Engr., 350a, i (*flavo-* should be *flavi-*).

Werneb., *Beitr.*, II, 222 (1864), gave *ornata*, de V., as the *dysodea*, Schiff., but de V. gave a reference to Rösel, *Belust.*, I, plt. 53, with a ?. This figure is certainly not *dysodea*, but as Werneb., *l.c.*, 161, said is *instabilis*. Thus the reference and description must be considered doubtful.

Barrett, *l.c.*, plt. 161, gave three figures, all good except that the ground colour is somewhat too yellow. Fig. 1a, ♀, has uniformly black-brown hindwings which is unusual.

Stdgr., *Cat.*, IIIed., 160 (1901), treated *dysodea*, Hb.; *flavicincta-minor*, Esp.; *koechlini*, Th.-Mg.; and *turbida*, Höfn., as synonyms, and dealt with ab. *caduca*, H.-S., and var. *innocens*, Stdgr., as forms. al. ant. albido-cinereis, haud flavo inspersis. al. ant. albido-cinereis, paullum flavo-inspersis, fascia med. lata obscura.

Splr., *Schm. Eur.*, I, 178, plt. 37, 13 (1905), gave a very fair figure of *dysodea*, and considered ab. *koechlini*, Th.-Mg., ab. *caduca*, H.-S., and ab. *innocens*, Stdgr.

Hamps., *Cat. Phal.*, V, 169 (1905), considered that the *Verz.* of Schiff. gave a sufficient description to be the prior name *dysodea*.

South, *M.B.I.*, I, 253, plt. 125, 2 (1907), gave a good figure of the more grey form.

Culot, *N. et G.*, I (1), 110, plt. 19, f. 3-4 (1911), gave two very good figures. He dealt with two forms, *caduca*, H.-S., and *innocens*, Stdgr.

Meyr., in both editions of his *Handb.*, used the genus *Melanchra*, Hb. (1820).

Warr.-Stz., *Pal. Noct.*, III, 75 (1909), treated of this species under the name *spinaciae*, View., and considered *dysodea*, Schiff., *flavicincta-minor*, Esp., *chrysozona*, Bork., *ornata*, de Vill., and *ranunculina*, Haw., as synonyms. They gave three forms, *caduca*, H.-S., fig. 17g, *innocens*, Stdgr., fig. 17g, and *koechlini*, Th.-Mg. (=*turbida*, Höfn.) and 17f as a figure of the typical form.

Drdt.-Stz., *Pal. Noct.*, III, 101 (1934), said that *africana*, Obthr., was the *faroulti*, Roths., and gave a figure, plt. 14h. Subsequently, *l.c.*, 253 (1937), he added f. *plumbea*, Obras., from Kief, with darker median area, whiter outer margin and no yellowish dusting.

Barrett reported on the Variation as follows:

Not very variable, but the ground colour ranges from a decided grey to nearly white, and in the darker specimens the white borders of the transverse lines are more conspicuous; in some individuals, whether light or dark, the orange yellow markings are extremely faint or even absent.

He reported a specimen "of a pale smoky grey, the central band darker, but the usually sharp markings all obscured."

The Names and Forms to be considered:

dysodea, Schiff. (1775), *Verz.*, 72, H. descrip. deficient and wanting?
spinaciae, View. (1789), *Tab. Verz.*, II, 70.
ornata, de Vill. (1789), *Linn. S.N.*, II, 280, syn.
flavicincta-minor, Esp. (1788+), *Abbild. Noct.*, IV (1), 513, plt. 153, 6-7, syn.
chrysozona, Bork. (1792), *Naturg.*, IV, 264, syn.
ranunculina, Haw. (1809), *Lep. Brit.*, 183, syn.
f. *caduca*, H.-S. (1845), *Bearb.*, II, 266, plt. 484.
ab. *innocens*, Stdgr. (1871), *Cat.*, IIed., 92.
koechlini, Th.-Meig. (1889), *Natural.*, XI, 181.
ab. *turbida*, Höfn. (1897), *Jahrb. Karn.*, XXIV, II, 174, syn.
r. *faroulti*, Roth (1913-4), *Nov. Zool.*, XXI, 322.

r. *africana*, Obthr. (1914), *Lép. comp.*, XVI, 137, syn.
r. *kashmirensis*, (Hamp.) Strnd., *Arch. Naturg.*, LXXXII, A2, 29 (1917).
ab. *plumbea*, Obraz. (1935), *Ent. Zeits.*, XLIX, 55.

Tutt dealt with: (1) *chrysozona*, Bork, and (2) ab. *innocens*, Stdgr., almost white. He overlooked the four other names which had been given to this species previously, and treated *ranunculina*, *dysodea*, and *ornata* as synonyms, as well as *dysodea*, Hb.

spinaciae, View., *Tab. Verz.*, II, 70 (1789).

Orig. Descrip.—" Anticis cinereis; fascia media obscuriore, utrinque flavo marginata."

" As large as *litura*. The forewings are clear grey, which in a few specimens becomes greenish. A broad band of a dark grey colour above, becoming somewhat narrower towards the inner margin, goes across the discal area. On the innerside there is a straight transverse line, on the outerside a curved one, white with yellowish border. In this band towards the upper part lie the usual stigmata, in which similar yellowish powdering is spread. On the outer margin lie a double row of yellow dots. Head and thorax are grey variegated with yellow."

ornata, de V., *Linn. Ent.*, II, 280 (1789).

Orig. Descrip.—" Alis griseis, punctis auroris adspersis."

" Alae superiores griseae, macula fusca. Subtus omnes modo albidae, modo fuscae. Subtus semi-circulis auroris saepe cinctus. Alae superiores punctis auroris seu atomis auroris ornatae."

ab. *caduca*, H.-S., *Bearb. Eur. Schm. Noct.*, II, 266, f. 484 (1845).

Orig. Descrip.—" Cinerea, fusco- et perparum aurantiaco-mixta."

" Near the common *dysodea*, somewhat smaller, exactly the same marking. The same ashy-grey ground colour, but hardly a trace of the yellowish admixture. The black marking is also more delicate. On the hindwings the middle line is sharper, distinctly light margined on the outer side, thus also giving the dark marginal band the appearance of being more sharply margined. *Serena* differs in being bluish-grey, without any tinging of yellow, sparser and sharper marking, much darker middle area." Crete. July.

Hamp., *Cat. Lep. Phal.*, V, 169 (1905), said: " Forewings whitish-grey without the yellow markings."

f. *koechlini*, Th.-Meig. (*Natural.*, XI, 181 (1889).

Original Descrip.—" Above the forewings very deep slaty-grey, without trace of white on the basal and terminal areas, except two small lines of white points which separate the median band from the rest of the wing; lower wings very obscure with the band of the terminal area almost black. Thorax and abdomen of the colour of the ground. Below the wings are likewise more obscure." Perpignan.

r. *faroulti*, Roth, *Nov. Zool.*, XXI, 322 (1913-4).

Orig. Descrip.—♀. Antennae amber-brown; head and thorax gall-stone-buff, strongly powdered with blackish-grey; abdomen cinnamon-grey buff.

Forewing gallstone-yellow, densely powdered with dark greenish-grey, a sub-basal ill-defined band, a very broad median band with serrated edges, a broad post-median patch, some spots on costa, and a post-discal zigzag line sooty-black, as are the stigmata; a terminal line of golden-yellow dots.

Hindwing, basal half semivitreous yellow wood-buff, outer half wood-brown.

One ♀, September 24, 1913, Victor Faroult.

Draudt-Seitz, *Pal. Noct. Supp.*, III, 101 (1934), said that this and r. *africana*, Obthr., were the same, but from the descriptions it does not appear to be so. They lay stress on the reddish-brown tone, but the description of *faroulti* refers in no way to the reddish-brown tone. But the fig., plt. 14h, is strongly reddish-brown, almost wholly.

ssp. *africana*, Obthr., *Lep. Comp.*, XVI, 137 (1914).

Orig. Descrip.—" Differs almost wholly by the reddish-brown coloration of the ground of the forewings above. The markings are as in European specimens." Algeria.

Hamps., *Cat. Lep. Phal.*, V, 169 (1905), described a form from Kashmir which Strand subsequently named *kaschmirensis*.

ssp. *kaschmirensis*, (Hamp.) Strand, *Arch. Naturg.*, **82**, 29, A.2 (1917).

Orig. Descrip. (Hamps.)—" Darker, especially the medial area of the forewings."

ab. *plumbea*, Obraz., *Ent. Zts.*, XLIX, 55 (1935).

Orig. Descrip.—" In a specimen outside normal examples, with sharper markings, with dark central area, and with whitish outer margin, without any trace of yellowish powdering. Its abdomen is grey and indistinguishable from that of the typical form."

Hecatera, Gn. (1852), Walk., Barr., Sth. [*Polia*, Ochs. & Treit. (1816-25), Hamp., Warr., Drdt.: *Mamestra*, Ochs. & Treit. (1816-25), Dup., Led., Stdgr. I, Stdgr. III, Splr., Cul.: *Melanchra*, Hb. (1820), Meyr., Meyr.] *serena*, Schiff. (Fab.).

Tutt did not go to Schiff., *Verz.*, for his description, but gave that given by Fab., *Mantissa*, 171 (1787).

Tutt, *Brit. Noct.*, III, 40 (1892): Meyr., *Hand.*, 81 (1895): Barr., *Lep. Br. Is.*, V, 221, plt. 161 (1897): Stdgr., *Cat.*, IIIed. (1901): Hamps., *Cat. Lep. Phal.*, V (1905): Splr., *Schm. Eur.*, I, 175, plt. 57, 14 (1905): South, *M.B.I.*, I, 254, plt. 125, 3-4 (1907): Warr.-Stz., *Pal. Noct.*, III, 74, plt. 17f (1909): Culot, *N. et G.*, I (1), p. 111, plt. 19, f. 5, 6, 7 (1909): Meyr., *Rev. Handb.*, 152 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 101, plt. 14h (1934).

Schiff., *Verz.*, 84, P.N. 4 (1775), was the first to use the name *serena* for a pearly-white pale brown streaked Noctua whose larva fed on *Hieracium umbellatum*, *Leontodon hirtum*, *L. hispidum*, and *Ronchus palustris*.

Esper, *Abbild. Noct.*, IV (ii), 596, plt. 166 (1789+?), 4-5, *serena*, 6a ♀ *serena*, which he has called *placida*. Wernebg., *l.c.*, II, 49, said f. 4-5

BRITISH DIPTEROLOGICAL LITERATURE (III).

By H. W. Andrews, F.R.E.S.

For previous Lists see *Ent. Record*, Vol. 43 (March 1931) and Vol. 47 (December 1935).

General.—*Bibliography of Key Works for the Identification of the British Flora and Fauna*: Edited by John Smart, Ph.D., 1942. Obtainable at Linnean Society, Burlington House, W.1, or of Messrs Adlard & Son, Ltd., Bartholomew Press, Dorking, Surrey. Price 7/6. A valuable and up-to-date reference work. The portion allotted to Diptera has 78 references, both British and foreign.

——— do. ———*British Blood-sucking Flies*: Edwards, Olroyd & Smart. Published by The British Museum (Nat. History), 1939. Price 15/-. Deals comprehensively with the identification, distribution, life-histories, and habits of 117 species of 7 families known to be blood-suckers. With 45 coloured plates and numerous text figures. The section dealing with *Hippoboscidae* and *Nycteribiidae* (parasitic flies associated with animals, birds and bats) is the only British publication I know dealing with these two families. For a comprehensive review of this book with some remarks on the nomenclature employed, see Collin, J. E., in *Entomologist's Monthly Magazine*, Vol. lxxvi, March 1940.

——— do. ———Collin, J. E.: "On various new or little known British Diptera, including Species bred from the Nests of Birds and Mammals." [Published in *E.M.M.*, Vol. lxxv, June and July 1939.] Deals with *Anthomyiidae* (mainly), also with species of *Phoridae* and *Acalypterae*.

——— do. ———Collin, J. E., and Wainwright, C. J.: "Some Diptera collected in the South of England in 1930-33." [Published in *Journal Soc. Brit. Entomology*, Vol. i, Pt. 1, May 1934.] In addition to the list of species taken, this paper has notes and descriptions of several species of various families hitherto unrecorded as British.

ORTHORRHAPHA.

(Nematocera.)

Cecidomyidae.—Edwards, Dr F. W.: "On the British Lestremiinae, with Notes on Exotic Species." [Published in *Proc. Royal Ent. Soc. L'dn., Series* B, Vol. 7 (1938), Pts. 1, 2, 5, 9, 10, 11, 12.] Keys to tribes, diagnoses of genera and species, figures of genitalia.

——— do. ———Edwards, Dr F. W.: "Notes on British *Heteropezinae*, with description of a new Genus" (Diptera, *Cecidomyidae*). [Published in *Proc. Royal Ent. Soc. L'dn.*, Series B, Vol. 10 (1941), Pt. 1.] Gives a table of 4 British genera, and notes thereon.

——— do. ———Niblett, M.: "Notes on some Gall-causing *Cecidomyidae*." [Published in *The Ent.*, Vol. 74, October 1941.] Practical notes on collecting and breeding on the same lines as the author's well-known Trypetid notes.

Mycetophilidae.—Edwards, Dr F. W.: "Revision and Additions to Notes on British Fungus Gnats (Dipt., *Mycetophilidae*)." [Published in *E.M.M.*, Vol. lxxvii, January to April 1941.] Explained by its title. I believe this was the last publication before the author's death, a great loss to Dipterology in general as well as to his many friends.

Tipulidae.—Edwards, Dr F. W.: "British Short-palped Crane-flies: Taxonomy of Adults." [Published in *Trans. Soc. Brit. Entomology*, Vol. 5, Part 1, 1938.] Contains a chapter on taxonomy; analytical tables; descriptions of species; check list of British species; bibliography; 5 plates of wings, and numerous text figures.

——— do. ———Edwards, Dr F. W.: "Additions to the list of British Crane-flies." Published in *E.M.M.*, Vol. lxxv, Oct. & Nov. 1939.] Notes on additions to British List since publication of Audcent's "British Tipulidae" (vide *Brit. Dipt. Litt.*, Pt. II) and British Short-palped Crane-flies (vide above) with a revised analytical table for genus *Nephrotoma* = *Pachyrrhina*.

——— do. ———Coe, R. L.: "Some Breeding records of British *Tipulidae* (Dipt.)." [Published in *E.M.M.*, Vol. lxxvii, August 1941.] Explained by its title.

Psychodidae.—Tonnoir, A. L. (the late): "A synopsis of the British *Psychodidae* (Dipt.)." [Published in *Trans. Soc. Brit. Entomology.* Vol. 7, Pt. 2, June 1940.] Analytical tables, descriptions of new species, and check list of British species. Numerous text figures.

ORTHORRHAPHA.

(Brachycera.)

Dolichopodidae.—Parmenter, L.: "*Neurigona abdominalis*, Fln., taken in Hants, and a Key to the British species of *Neurigona*." [Published in *E.M.M.*, Vol. lxxvi, August 1940.] Explained by its title.

——— do. ———Collin, J. E.: "Critical Notes on some recent Synonomy affecting British Species of *Dolichopodidae*." [Published in *E.M.M.*, Vol. lxxvi, November and December 1940.] Explained by its title.

——— do. ———Collin, J. E.: "The British Species of the Dolichopid genus *Medeterus*, Fisch. (Dipt.)." [Published in *E.M.M.*, Vol. lxxvii, June and July 1941.] Analytical table, descriptions of new species, 1 text figure.

Lonchopteridae.—Collin, J. E.: "The British Species of *Lonchoptera* (Diptera)." [Published in *E.M.M.*, Vol. lxxiv, March 1938.] Analytical tables, notes on species, text figures.

Tabanidae.—Collin, J. E.: "Structural differences between the females of *Therioplectes tropicus*, L., *solstitialis*, Mg., and *distinguendus*, Verr." [Published in *E.M.M.*, Vol. lxxvi, August 1940, with plate.] Explained by its title.

CYCLORRHAPHA.

(Proboscidea.)

Pipunculidae.—Collin, J. E.: "The British Species of the *Rufipes* group of *Pipunculus* (Diptera)." [Published in *E.M.M.*, Vol. lxxiii, September and October 1937.] A revision of this group as given in Verrall's Vol. 8. Analytical tables, descriptions of species, and figures of genitalia.

Syrphidae.—Collin, J. E.: "Notes on *Syrphidae* (Diptera). II: (for pt. I see Brit. Dipt. Litt., pt. II, *Ent. Rec.*, 1935) The Genus *Sphegina*, Mg." [Published in *E.M.M.*, Vol. lxxiii, August 1937.]

"Notes on *Syrphidae* (Diptera). III: The Genus *Brachyopa*, Mg.," and "Description of the ♂ of a New Species of *Xylota*, *X. xanthocnema*, Coll." [Published in *E.M.M.*, Vol. lxxv, May 1939.]

"Notes on *Syrphidae* (Diptera). IV: The Genus *Neoascia*, Willst.; *Chrysotoxum octomaculatum*, Curt.; *C. elegans*, Lw., and allied species; *Chamaesyrphus caledonicus*, Coll. n. sp.; *C. lusitanicus*, Sharp, 1903 (nec Mik., 1890) and its nearest allies." [Published in *E.M.M.*, Vol. lxxvi, July 1940.]

——— do. ———Hobby, B. M.: "*Pocota personata*, Harris, 1776 (*apiformis*, Schrank, 1781) in Britain." [Published in *E.M.M.*, Vol. lxxvi, October 1940.]

——— do. ———Coe, R. L.: "*Chrysochlamys ruficornis*, F. (Dip.,, *Syrphidae*), its distinctions from *C. cuprea*, Scop." [Published in *E.M.M.*, Vol. lxxvii, July 1941.]

"Description of the ♀ of *Xylota xanthocnema*, Coll.," and "A Second British Record of *Rhingia rostrata*, L., and its distinction from *R. campestris*, L." [Published in *E.M.M.*, Vol. lxxv., October 1939.]

"*Brachypalpus eunotus*, Lw. (Dipt., *Syrphidae*), new to Britain: its distinctions from *B. bimaculatus*, Mcq., and Notes on Synonomy in the Genus." [Published in *E.M.M.*, Vol. lxxv, October 1939.]

The above papers on *Syrphidae* are mainly explained by their titles. They contain notes on the genera and species concerned, analytical tables, descriptions of new British species and comparisons with others closely related, notes on synonomy, bibliographies. Several are illustrated with text figures.

Conopidae.—Wainwright, Colbran: "A Second British Species of *Leopoldius*, Rond. (*Conopidae*)." [Published in *E.M.M.*, Vol. lxxiv, April 1938.] Notes and descriptions of the two British species of this genus with discussion on their synonomy.

Tachinidae.—Patten, W. S., and Wainwright, Colbran J.: "The British Species of the sub-family *Sarcophaginae* with illustrations of the male and female terminalia." [Published in *The Annals of Tropical Medicine and Parasitology.* Parts I and II, Vol. 29, 1935; Parts III and IV, Vol. 30, 1936; Part V, Vol. 31, 1937: all published so far.] Full descriptions of both sexes of 19 out of 31 British species, camparisons with close allies, and figures of ♂ and ♀ genitalia.

——— do. ———Wainwright, Colbran J.: "The British *Tachinidae* (Diptera): *Second Supplement.*" [Published in *Trans. Royal. Ent. Soc. L'dn.*, Vol. 90, Pt. 14:15, November 1940.] See Parts I and II of *British Dipt. Litt.* for notices of Parts 1 and 2 of this work.

——— do. ———Audcent, H.: "A Preliminary List of the Hosts of some British *Tachinidae* (Dipt.)." [Published in *Trans. Soc. British Entomology*, Vol. 8, Pt. I, pp. 1-42, August 1942.] This comprehensive list consists of (I) A list of some 200 species of *Tachinidae* with numbered references to (II) a full list of their known hosts both invertebrate and vertebrate: (III) a bibliographical list of sources of records. It is clearly arranged for reference and has a very full index. (Copies can be obtained from Lt.-Col. F. C. Fraser, 55 Glenferness Avenue, Winton, Bournemouth, at 2/9 post free.)

Anthomyidae.—Collin, J. E.: "A note on *Anthomyidae* (Diptera) reared from the flowers of *Senecio.*" [Published in *E. Record*, Vol. 48, May 1936.] Notes on the Anthomyid genus *Pegohylemyia* and differentiation of two species bred from *Senecio.*

——— do. ———Collin, J. E.: "A Revision of the Greenland Species of the Anthomyid Genus *Limnophora sens. lat.* (Diptera) with figures of the Genitalia of these and many other Palaearctic Species." [Published in *Trans. Ent. Soc. L'dn.*, Vol. 78, December 1910.] Contains *inter alia* descriptions of two new figures of the Genitalia and of many other British species.

——— do. ———Collin, J. E.: "The British species of *Prosalpra*, Pok. (Diptera, *Anthomyidae*)." [Published in *E.M.M.*, lxxix, April 1943.] Notes on the genus and species, analytical table, and descriptions of new species.

ACALYPTERATE MUSCIDAE.

Trypetidae.—Niblett, M.: "British *Trypetidae*: Additional Notes." [Published in the *Ent. Record*, Vol. 48, February 1936.] Additional records and observations to his "Notes on British *Trypetidae*" (vide *Brit. Dipt. Litt.*, Pt. II).

——— do. ———Niblett, M.: "Notes on Food-plants of the Larvae of British *Trypetidae.*" [Published in *Ent. Record*, Vol. 51, May 1939.] This is one of the most useful of Mr Niblett's papers on *Trypetidae.* It gives the names of the host-plants (where known) of all our British species,

and also of certain continental species not yet on the British List, but whose host-plants occur in this country.

——— do. ———Niblett, M.: "Gall-causing *Trypetidae*." [Published in the *Ent. Record*, Vol. 52, February 1940.] Notes on additional species bred, and new observation on others.

——— do. ———Niblett, M.: "British *Trypetidae*." [Published in *Ent. Record*, Vol. 52, May 1940.] Notes on additional species bred (other than gall-causers), and new observations on others.

——— do. ———Niblett, M.: "Some Diptera inhabiting Thistles." [Published in *North Western Naturalist*, December 1941.] Explained by its title. Deals with *Trypetidae* mainly, and a few Cecidomyids.

——— do. ———Niblett, M.: "Emergences of *Trypetidae*." [Published in *Ent. Record*, Vol. 54, June 1942.] Summaries of the author's breeding experiences for a number of years.

——— do. ———Niblett, M.: "Parasites of Gall-causing Insects." [Published in *Proc. South L'dn. Nat. Hist. Soc.*, 1939-40, July 1940.] This is not strictly relevant to the title of this "List," but will probably be of interest to breeders of *Trypetidae*.

Mr Niblett's papers above are not taxonomic but of considerable value to field workers.

——— do. ———Collin, J. E.: "*Trypeta vectensis*, sp. n., and other new or little known species of *Trypetidae* (Diptera)." [Published in *Ent. Record*, Vol. 49, as Supplement to March 1937 issue.] Notes on genera and species, 13 in all.

——— do. ———Collin, J. E.: "Synonomy in the Genus *Myopites* (Diptera, *Trypetidae*)." [Published in *Ent. Record*, Vol. 52, June 1940.] Explained by its title.

——— do. ———Varley, G. C.: "The Life-history of some Trypetid Flies with description of their Early Stages (Diptera)." [Published in *Proc. Royal Ent. Soc. L'dn.*, Series A, Vol. 12, 1937, Pts. 8-9.] Descriptions, figures, key to larvae of four species of *Euribia* (*Urophora*), and bibliography.

Carnidae.—Collin, J. E.: "Two New Species of the Genus *Meoneura* (Diptera, *Carnidae*)." [Published in *E.M.M.*, Vol. lxxiii, November 1937.] Descriptions with figures.

Ephydridae.—Collin, J. E.: "On the Generic Characters of *Psilopa*, Fln., and the Correct Identity of *Discocerina pulicaria*, Hal. (Diptera, *Ephydridae*)." [Published in *E.M.M.*, Vol. lxxviii, July 1942.] Explained by its title.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to HY. J. TURNER, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—EDS.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris,* and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Culot, *Noctuae and Geometrae.—A. J. Wightman, "Aurago," Pulborough, Sx.*

Duplicates.—Foreign Lepidoptera, e.g., Satyrids, *statilinus, circe, neomiris, maera, hiera, euryale, melas, ida, passiphäe, nurag, oedippus* (including a var.), *leander, dorus, corinna.* Full list sent. *Wanted.*—Palaearctic *H. phlaeas* (with data), particularly from N. America, Scandinavia, Asia, China, India, Madeira, Africa; also other species of Chrysophanids.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. Thursdays, June 10; July 8; 6 for 6.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Communications Promised:—H. A. Leeds, E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, Dr Kettlewell (plates), P. M. B. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, Rev. Desmond Murray (plate), H. Donisthorpe, Prof. J. W. Harrison, etc.

All Communications should be addressed to the Acting Editor, Hy. J. TURNER, "Latemar," 25 West Drive, Cheam.

Printed by T. Buncle & Co., Ltd., Arbroath.

Vol. LV.

No. 6

JUNE 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

NOTES ON THE FIVE SALES OF THE P. M. BRIGHT COLLECTION OF BRITISH LEPIDOPTERA.

By S. G. Castle Russell.

This famous and unrivalled collection of British Butterflies formed during the last 40 years by the late Percy M. Bright, J.P., F.R.E.S., was disposed of by public auction at five sales during 1941 and 1942. The collection consisted of all the British species, including immigrant and reputed specimens, with the exception of three species of the *Lycaenidae*, viz., *Lysandra coridon*, *Lysandra bellargus*, and *Polyommatus icarus*. These were left under the will to the South London Entomological and Natural History Society, and are at present housed at the Hope Museum, Oxford, under the care of Prof. Hale Carpenter.

The sales comprised very large numbers of aberrations, and it may be of interest to give in many instances the values attached to particular insects by the fortunate purchasers. Only what may be termed "major" aberrations are included in this list, and the large number of "minor" forms are not dealt with.

Many of the specimens were of unique form, or very remarkable in their differences from the type, and some were of historical interest: in one particular case dating back nearly 100 years, such, for instance, as the entirely white *Satyrus galathea* caught in 1843. This specimen was first sold at a sale in 1843 for £20; it next appeared at Sir Vauncey Harpur Crewe's sale in 1925, when it realized £35. On this occasion in 1943 it appreciated still further to £49. An entirely black form of the same species was first sold at a sale at Stevens' Auction Rooms for £42; it then appeared at the sale of A. B. Farn's collection, when in 1922 it was bought for £32. At the Harpur Crewe Sale in 1925 it depreciated to £28, but on this recent occasion it advanced to £41.

A remarkable melanic specimen of *Nymphalis io*, Linn., with heavily clouded forewings and hindwings of ab. *belisaria* form, realized the high price of £30 and is probably the most extreme form of aberration of this species extant.

An albino male *Argynnis paphia*, Linn., of light fulvous ground colour, the normal spotting being practically absent, realized £23. Another very remarkable example of this species exhibiting both gynandrous and dimorphous characteristics sold for the moderate price of £15.

An albino male *Argynnis aglaia*, Linn., somewhat similar to the *paphia* albino mentioned above, also fetched £23.

A tawny albinistic specimen of *Argynnis euphrosyne*, Linn., with dull metallic spots, figured in Mosley, cost the buyer £23.

A most remarkable and beautiful specimen of *Argynnis selene*, Schiff., of entirely deep black ground colour, realized £26, and was decidedly one of the prizes of the collection.

An underside of *Argynnis cydippe*, Linn., heavily suffused with black on the forewings and of ab. *charlotta* form on the hindwings, sold for £16 10/-. Taking the species seriatim the following prices were realized, and in nearly all instances the condition was fine and perfect.

Papilio machaon, Linn. Various melanic forms, some being entirely black, fetched £7, £12, £13 10/-, and £14 10/-, all these specimens having been bred by L. W. Newman. The first example of this form was taken wild by J. P. Lloyd in Norfolk in 1921, and was sold to the late Lord

Rothschild for £65. Another, a completely black male, was bred from a number of larvae taken in the autumn of 1926 in Ranworth Fen by S. G. Castle Russell, the imago appearing in 1927. A beautiful rayed form, most of the normal markings being absent, was sold at the moderate price of £12 and was certainly one of the rarest and most remarkable insects in the collection. Two very rare rayed forms of striking appearance realized £10 10/- and £13 each. Two heavily bordered forms sold at £3 and £6 15/-, and a striking pure white form for £5 10/-.

Aporia crataegi, Linn. The long series contained several well-marked ab. *marginata* forms, which were sold very cheaply for 6/- or 7/- each, a curiously inappropriate price. At the Webb sale these were priced at 25/- to 75/- each.

Pieris brassicae, Linn. Two specimens with the normal ground colour replaced by a pinkish-sepia sold for £7 and £5. An extreme form of ab. *fasciata* went for £1 15/-, and an underside of blue colouring, fig. by Frohawk, for £5.

Pieris napi, Linn. A specimen of var. *citronea*, the forewings heavily suffused with black, £5, and a perfect gynandromorph of ab. *citronea* form, £7 5/-.

Euchloë cardamines, Linn. Yellow-tipped males, £2 to £2 5/-, and a very pale lemon-tipped male fetched £8 10/-. Albino forms of the male uppersides brought £8 10/- each, and an underside albino £7 10/-. Mixed gynandromorphous forms were sold for £2 15/-, £7 10/-, £1 12/-, £1 14/-, and £1 2/-. A very extreme example, fig. in Frohawk, realized no less than £11. A very remarkable male, entirely without the usual orange markings, was bought for £14, and is probably unique in Britain.

Gonepteryx rhamni, Linn. Some fine mixed sex forms of gynandrous specimens sold at £5 15/-, £4 5/-, and £7. This last is figured in Mosley, as is a perfect gynandromorph sold for £8. A male with "*cleopatra*" characteristics fetched £7, and a remarkable specimen with all the wings suffused with black, £10 10/-.

Colias hyale, Linn. Forms with the hindwings tinged with blue or green, £3 and £3 10/- each, and one with suffused forewings, figured by Barrett, £2 8/-.

Colias croceus, Frery. A streaked underside, fig. by Mosley, £1 16/-. Various colour forms, 10/- each, and a very pale specimen with prominent hindwing lunules, £1 16/-. A very remarkable and unique mixed gynandromorph, left side *helice*, right side *edusa-helice*, £9 10/-, and a perfect gynandromorph, £7. A male with very pronounced purple sheen on hindwings, £3, a fine example of this form. A female with greenish tinge on hindwings, £3. A curious purple-brown form, £4 10/-. A male of the colour of *helice*, £2, and a lemon-coloured and rayed *helice*, £4, a beautiful insect. A *helice* with *edusa* form hindwings, £5 10/-, and one with suffused inner areas, fig. by Frohawk, £2 10/-. Two *helice*, one with hindwings tinged with blue and the other with hindwings tinged with green, fetched £3 and £3 10/- respectively.

Argynnis paphia, Linn. Some magnificent and beautiful forms of the ab. *melaina*, D'Aldin, were catalogued, and the prices approximated to the extent of the melanic markings and rays. Prices as follows: £10, £12, £11, £10, £10, for males, and £10, £12, £11, £10, £11, £10 10/-, £6, £5, and £6, for females. A pretty example of *melaina-ocellata*, D'Aldin, £5 10/-, but this was a repaired example. Examples of ab.

confluens, Spuler, males and females, realized £2 5/-, £6 10/-, £5, £2 15/-, £2 10/-, £2 16/-, £2 14/-, £3, £5 5/-, £4 5/-, £6, and £4. Two perfect white males realized £13 and £17 each, and a pale straw male, £12 10/-. A remarkable male albino £23, and a gynandromorphous form, right wings female (var. *valezina*) left wings typical male, with a splash of *valezina* colouring, £15, a low price for this extreme rarity. A melanic var. *valezina*, £13, and a banded ditto, £2 2/-. Forms intermediate between type and var. *valezina*, of rare occurrence, £3, £3 15/-, £3 10/-, and £2 10/-. A very rare form of male without markings, except the androconial stripes, £5. A fine mixed gynandromorph, £8 5/-, and another, £6 10/-. A female with a streak of var. *valezina* colouring in forewing, £4. A very dark brown underside, £4, and one similar but not so extreme, £2. A beautiful example of an underside var. *valezina*, the ground colour being completely light blue, £7.

Argynnis cydippe, L. A male with black forewings, £7, and a somewhat similar female, £9. A female also with black forewings fetched £9 10/-. A beautiful cream female, £8, and a silvery specimen, £2 5/-. A silvery-white female was bid up to £14, and a straw-coloured male, £2 10/-. A female suffused on all wings with black, fig. in Barrett and Mosley, £13. This cost £17 in the Sydney Webb sale. Two forms of ab. *cleodoxa*, one fig. in Newman, £3 10/- and £1 8/-. A melanic upperside male, fig. Barrett, £4 10/-. This sold in the Sydney Webb sale for £14. Two underside examples of ab. *charlotta*, £6 5/- and £3 15/-. A specimen streaked with silver, £4, and another with additional silver spots, £2 10/-. A remarkable underside with heavily suffused forewings and hindwings of ab. *charlotta* form, with wide buff border, £16 10/-.

Argynnis aglaia, Linn. A remarkable albino male, £23. A male suffused and rayed on all wings, fig. Frohawk, from Langdon Hole, £13. A male with melanic forewings, £9 15/-. An almost entirely black female with rayed borders, £14. A silvery male, £2 15/- (repaired), while a female with silvery sheen, fig. in South, £5. A rayed male with spots obsolescent, £7, and another similar, £6. An ab. *confluens*, a rare form, £3 5/-. A fine suffused form of ab. *charlotta*, female, £6, and another, fig. in Frohawk, on dark green ground colour, taken by L. W. Newman in Kent, £9 10/-. An almost entirely black male caught by H. Hodges, Dunwich, £10 10/-. A heavily banded female, £5 10/-. Examples of ab. *charlotta*, £5 5/- and £3 10/-.

Argynnis selene, Schiff. A rayed female with spots obsolescent, £7, and another similar, £6. A male with black bordered forewings, and black hindwings, £6 10/-. A heavily banded female, £3 10/-, and a female with suffused forewings and black hindwings, £7. A specimen clouded with black on all wings, £5. An *obsoleta* form, fore and hindwings, £4. White forms, £4, £3 15/-, £2 15/-, £2. A yellow form, £2 10/-. A fine male, entirely deep black on all wings, £26, an exceptionally extreme form, in perfect condition and keenly competed for.

Argynnis euphrosyne, Linn. A male with black hindwings, £5, and a female with suffused and rayed wings, £8. A male with curious zig-zag markings, instead of spots, £5 15/-. A male with obsolescent forewings and melanic hindwings, £6 15/-. A female with obsolete forewings and black rayed hindwings, fig. in Mosley, £5 15/-. A heavily suffused and rayed male, £4 5/-. A male example with fore and hindwings of *obsoleta* form, £4. A male with spotless fore and hindwings, £12. An

almost entirely black female in perfect condition, £15. A tawny albinistic male with dull metallic spotting, fig. in Mosley, £23. This was keenly competed for and its value was raised from £17, for which it was sold at the Brigg's and Horne sales. A rayed and suffused male, £8 10/-, and a form with obsolescent fore and hindwings, £8. A specimen with all wings heavily suffused, £11, and another similar, but not so extreme, £5 15/-; another also similar, £5. Banded and suffused forms, 30/- to £2 15/-. White forms, £4, £3 15/-, £2 4/-. Cream, £2 15/-; yellow, £3, £3, £1 10/-, £1 10/-. An underside of reddish-brick colouring, £3 10/-, and a rayed underside, £5 5/-.

Melitaea athalia, Rott. Examples of ab. *navarina*, £3 15/-, £4, £4 15/-. A form with obsolescent forewings and black hindwings, £3 15/-; another, £2 10/-. A male mostly black with rayed borders, £5 15/-. An underside heavily rayed on all wings, £7 15/-, and one with most of the spots obsolete, £6 15/-. A straw-coloured male, £1 15/-.

Euphydryas aurinia, Rott. Melanic specimens, some bred by Shepherd, Herne Bay, £2 to £4. A fine striated underside, £5. An underside with white marginal bands, £2 10/-. A very pale male, and an underside aberration, £2 10/-.

Melitaea cinxia, L. A suffused female, fig. Frohawk, £1. Melanic and banded forms, £1 5/- to £1 10/-. A heavily banded specimen, £2 4/-. A white and a brown underside form, £3 10/-. A female with rayed forewings, £1 18/-. A fine banded form, £1 12/-. Two forms, the undersides of which resembled *aurinia*, £1.

Argynnis lathonia, Linn. A heavily marked female, fig. in Barrett, £5.

Polygonia c-album, Linn. A female with melanic forewings and obsolescent hindwings, £5 5/-. Melanic forms with barred costal spots on forewings and dark hindwings, £6, £5, £4 15/-, £2 15/-, £2 5/-, and £2 15/-. Two straw-coloured forms, £1 5/- each. A perfect gynandromorph, £3 15/-.

Aglais urticae, Linn. Extreme examples of ab. *nigrocaria* (melanic), £7 and £7 5/- each, the latter being of very dark ground colour. An uncommon form with buff borders and lunules, £7. Various melanic forms, £3 15/-, £3 each. A whitish form, £2, and a yellow one, £1 10/-. A salmon-coloured example, £2 15/-, and a straw form, £1 3/-. An albinistic form, £10. Another partially albinistic form, which sold at the Webb sale for £18, on this occasion was not fancied and only realized £1 6/-.

Nymphalis polychloros, Linn. The very rare form with banded costal spots realized £15, and another very similar, £8 10/-. An unusually dark female, £2 2/-.

Satyrus galathea, Linn. A beautiful example, fig. by Barrett and Mosley, with reduced markings, £13. This sold for £12 5/- at the Harpur Crewe sale. A somewhat similar specimen, although not so extreme, fig. by Barrett, £4 5/-. A buff form, £3; a light brown form, £4; and one with suffused forewings, £3 3/-. An entirely white example, fig. Frohawk, £49, and an entirely black form, also fig. in Frohawk, £41. Prices when last sold in 1925 at the Harpur Crewe sale, £35 and £28 respectively. A curious specimen with five complete wings, 10/-.

Pararge megera, Linn. A form with light hindwings, £4, fig. in Mosley, and a straw-coloured male, £3.

Maniola jurtina, Linn. A white male, £4 10/-, and a golden female, £4 5/-. A white female with golden areas on forewings, £8. A specimen with golden forewings, £2 10/-. A golden female, £2 10/-, and a gynandromorph, a very rare insect, £1 only!

Aphantopus hyperantus, Linn. A good pair of var. *lanceolata*, £5, and another not so extreme, £2 10/-. Four forms of var. *lanceolata*, £3 10/-. An entirely spotless underside, a very scarce form, £1. A specimen of khaki ground colouring, £5 (repaired), fig. in Frohawk.

Eumenis semele, Linn. The remarkable form with additional spots, fig. in Frohawk, in fair condition, only £5. An obsoleta form, and a whitish male, £2 2/-.

Maniola tithonus, L. White forms, ab. *mincki*, £1 5/-, £2, £2 15/-. Yellow forms, £2, £2, £3 10/-. A gynandromorph, £1 2/-.

Nymphalis antiopa, Linn. A black variety, with blue spotting, and costal border missing, £7.

Vanessa atalanta, Linn. Underside forms, with broad red bands, £4 15/-, £3 10/-, £3 10/-. An upperside with heavy white blotches on forewings, fig. in Mosley, £5 5/-. A form with light red bands, £2 15/-.

Vanessa cardui, Linn. A remarkable rayed form of striking appearance, £13 10/-. A rare white form, £8. An extreme type of underside, £8 5/-. A striated ditto, together with a pale form, £5 15/-, and a rayed upperside, £4 5/-. A male with heavily suffused forewings, £5.

Nymphalis io, Linn. Forms of ab. *belisaria*, £3 10/-, £3 5/-, £4 5/-, £3 5/-, £4 10/-, £4 5/-, and £2. A remarkable form in which the spots were surrounded by green areas, £5 5/-. This was sold at the Webb sale for £12 12/-. Examples with ashy markings around the ocelli, sold at £2 15/- to £3 10/-. At the Webb sale the best of these were valued at £11 11/- each. An extreme melanic aberration in which the forewings were heavily clouded with black and the hindwings of ab. *belisaria* form, excited keen bidding, and realized the good price of £30.

Apatura iris, Linn. Forms of ab. *semi-iole* sold for £2, £2 10/-, £2 15/-; ab. *iole*, £3 15/-, £6 10/-, £7 10/-, £6 5/-, £6 10/-, £6 15/-. At the Sydney Webb sale an ab. *iole*, almost entirely black, cost the buyer £16 16/-. A magnificent underside *obsoleta*, £10.

Limenitis camilla, Linn. Ab. *semi-nigrina*, £1 to £3, and ab. *nigrina*, £3 to £5, according to condition. A very uncommon form with black wedges on hindwings, £3 10/-.

Coenonympha pamphilus, Linn. White forms, £1 10/- to £2.

Coenonympha tullia, Müller. Forms of var. *lanceolata*, from Delamere Forest, £1 to £2 10/-.

Heodes (*Lycaena*) *phlaeas*, Linn. A remarkable albino, fig. in Mosley and Barrett, and Humphreys and Westwood, £18 10/-. At the Webb sale this realized £11. Specimens of ab. *bipunctata*, £2 6/-, £2, £4 5/-, £4 15/-, £5, £1, and £1 18/-. An extreme form of same with wide borders and spotless hindwings, £7. Examples of ab. *alba*, 40/-, 50/-, 40/-, 20/-, 40/-; ab. *schmidtii*, 25/- 30/-. Forms of ab. *intermedia*, 20/- 40/-, 50/-, 20/-, 24/-, 20/-. Forms of ab. *radiata* (hindwings), 20/- to 45/-. Streaked uppersides, ab. *radiata*, £8 10/-, £5 15/-, £2 5/-, and one, fig. in Barrett, £9. Streaked undersides, £2 4/-, £1 10/-. A beautiful pale golden form, £5, and a heavily bordered form, £2 5/-. A

gynandromorph, £3 15/-. A remarkable specimen with homoeosis markings on right hindwing, £4 5/-, and another with homoeosis marks on both hindwings, £4 5/-.

Lycaena arion, Linn. A rare form of ab. *caeca* taken by Kershaw at Bude, £12 10/-. An obsoleta form, £3. Five selected undersides, £5 5/-. Three with spotting absent on forewings, £2 4/-.

Lycaenopsis argiolus, Linn. A fine, perfect gynandromorph, £7. A striated underside, £1 12/-. Examples of ab. *caeca*, £1 12/-, £3 12/-. Colour forms, 5/- to 10/- each.

Cosmolyce boeticus, Linn. A nice specimen, taken at Bournemouth, went to enrich a well-known collection for £6 5/-.

Cupido minimus, Fuessl. A rare and fine specimen of ab. *radiata*, £12 10/-. A perfect form of ab. *caeca*, £3 5/-. Other forms of ab. *caeca* and ab. *obsoleta*, 20/- to £2.

Aricia agestis, Schiff. A fine ab. *radiata* underside, £4 10/-, another on cream ground, £5 15/-. A yellow spotted and a light brown form, £2. An ab. *caeca*, 20/-. A striated underside, £3 15/-, and another, £1 5/-.

Plebejus argus, Linn. Lilac coloured males, 26/- to 40/- each. A white and a brown form of ab. *caeca*, £5 5/- for the pair. An entirely blue female, £2 5/-. Forms of ab. *radiata*, £5 and £4 5/-. Two striated forms, £4 and £2 10/-. A khaki female, £4. A perfect gynandromorph, £4 10/-. Series of intersex forms, £4 5/- to £5.

Thecla quercus, Linn. A gynandromorph, 11/-; an ab. *bellus*, 12/-. Gynandrous forms, 10/- to 40/-.

Thecla betulae, Linn. A fine black radiated underside, £3; less than half the price it fetched at a former sale. Two rare forms of undersides, £4 15/-.

Chrysophanus dispar, Haworth. Some thirty very fine and perfect specimens realized from £4 15/- to £6 for males, and £5 5/- to £8 10/- for females. A number of more or less imperfect specimens, fetched from 20/- to 60/- each, according to condition.

Hamearis lucina, Linn. A straw-coloured male, 34/-, and a pretty female form, 34/-.

Adopoea sylvestris, Poda. A white form, 15/-, and a white and a dark form, 22/-.

Hesperia comma, Linn. A light brown and a pale form, 40/-. Two light yellow males, £1 8/-. A remarkable albinistic form, £9.

Thymelicus acteon, Rott. A gynandromorph, £1 8/-.

Carterocephalus palaemon, Pall. A specimen with black forewings and rayed hindwings, £8, and figured in Frohawk. At the Farn sale it realized £5.

Immigrant Specimens: *L. chrysitis*, taken at Folkestone, 32/-. *Everes argiades*, Pall.—Specimens realized from 20/- to 40/- each, according to condition. *Argynnis lathonia*, Linn.—These were priced from 30/- to 42/- each, according to condition. *Pontia daplidice*, Linn.—From 30/- to £2 2/- each, according to state. *Nymphalis antiopa*, Linn.—From 30/- to 40/- each, and a remarkable aberration, £7.

P. huntera. A specimen sold for 20/-.

Danais plexippus. A specimen taken at Bournemouth, £5 5/-.

CABINETS.—An antique walnut cabinet with floral carvings and panelled glazed doors, with interchangeable drawers, 18″ × 16″ × 2″,

51 in number, with camphor cells, £21, and another similar, £18. A mahogany cabinet of 54 drawers, with framed glass covers and camphor cells, with three glazed doors, 18″ × 16″ × 2″, £51. A 20-drawer mahogany cabinet of Brady standard make, £22. A 13-drawer walnut cabinet of good make, £10 10/-.

Remarks.—A considerable number of the insects were of a good age and were either much faded or in indiffierent condition, and these did not attract buyers. These are not included in the list given herein, except when very rare or unique specimens.

Generally the prices offered were good, and compared well with the pre-war standard. The usual remarkable fluctuations in price which occur at these sales were in evidence on this occasion, and whilst some of the insects realized very enhanced prices, others depreciated.

All the very extreme aberrations were keenly competed for, especially in those cases where they have been figured in standard entomological works. Many of the specimens had to be re-pinned, owing to defective points or bent pins, and it is interesting to note that in all these cases black pins had been used in the first place. The white pins, however old, still retained good points and none were found bent. It was also found difficult, although always possible, to remove the black pins owing to the enamel having congealed in the body. Although the collection had been for many years in a coastal area, the insects generally were free from verdigris, owing no doubt to the containing rooms always being kept dry.

The approximate total of the five sales was £3160; a portion, however, was sold in 1938 which realized about £600, thus making a grand total of £3760, which is an easy record for any collection of British Butterflies. The three species of *Lycaenidae* bequeathed to the South London Society were also of considerable value and contained in two cabinets of 51 and 40 drawers. There is no doubt that Mr P. A. Bright possessed a collection the like of which will be hardly equalled, much less excelled, for many years to come.

SOME MIDDLESEX COLEOPTERA.

By Horace Donisthorpe, F.Z.S., F.R.E.S., etc.

(*Continued from p. 44.*)

Lathridiidae.—*Coninomus nodifer*, West., and *Corticaria crenulata*, Gyll., in cut grass, Old Heston Churchyard; *C. elongata*, Gyll., ditto, and in house, Heston; *Enicmus minutus*, L., under bark of posts, Osterley; *E. transversus*, Ol., in frass in old ash, Boston Manor; *Melanophthalma gibbosa*, Hbst., abundant beating Holyhocks in garden, Heston.

Cryptophagidae.—*Antherophagus nigricornis*, F., on flowers of *Impatiens roylei*, Boston Manor; *Telmatophilus schönherri*, Gyll., in stem of Bulrush, Boston Manor; *Cryptophagus setulosus*, Stm., in cut grass, Old Heston Churchyard; *C. punctipennis*, Bris., in house, Heston; *C. dentatus*, Hbst., ab. *flaviclavatus*, Donis., bred from post in hedge, Heston; *C. acutangulus*, Gyll., frequently in bath, over several years,

Heston; *Micrambe villosa*, Heer, beating Holyhocks in garden, Heston; *Atomaria berolinensis*, Kr., in cut grass in some numbers, Old Heston Churchyard; *A. mesomelas*, Hbst., on Holyhocks in garden, Heston; *A. apicalis*, Er., in cut grass, abundant, Old Heston Churchyard.

DERMESTIDAE.—*Megatoma undata*, L., bred from larva in frass in old ash, Boston Manor; *Anthrenus varius*, F., abundant sweeping *Lepidium* and Umbels, Boston Manor; *Helocerus clariger*, Er., in bath, and sweeping nettles, Heston, in Umbels, Osterley.

HETEROCERIDAE.—*Heterocerus marginatus*, F., sluicing mud, in numbers, Boston Manor.

LUCANIDAE.—*Lucanus cervus*, L., on roads, paths in lanes, fences, etc., Heston and Lampton; *Dorcus parallelopipedus*, L., in old elm stumps and on path in lanes, Lampton.

SCARABAEIDAE.—*Aphodius granarius*, L., in house, on the wing, on pavements, etc., Heston; *Geotrupes spiniger*, Marsh., on pavement, Lampton; *Hoplia philanthus*, Füss., on platform in station, Osterley.

EUCNEMIDAE.—*Throscus elateroides*, Heer, in bath, Heston, in 1935, 1938, and 1940.

ELATERIDAE.—*Athous longicollis* Ol., sweeping, Heston; *Agriotes sobrinus*, Kies., in post in hedge, Heston.

TELEPHORIDAE.—*Telephorus lividus*, L., in garden, on trees, etc., common, Heston; *T. lituratus*, Fall., *T. fulvicollis*, and ab. *flavilabris*, Fall., sweeping, Northwood; *T. fulvicollis* and *Malthinus balteatus*, Suf., sweeping Heston.

PTINIDAE.—*Hedobia imperialis*, L., bred from post in hedge, Heston.

ANOBIIDAE.—*Anobium domesticum*, Fourc., in house, Heston; *Ernobius mollis*, L., under bark of fir fence, Heston.

CISSIDAE.—*Cis boleti*, Scop., *C. villosulus*, Marsh., *C. micans*, Hbst., and *C. vestitus*, Mel., in *Polystichus versicolora*, under bark of posts, Osterley.

CERAMBYCIDAE.—*Leptura livida*, F., sweeping Umbels, *Lepidium*, etc., Heston, Osterley, and Boston Manor; *Grammoptera ruficornis*, F., beating hawthorn, etc., Boston Manor.

BRUCHIDAE.—*Bruchus loti*, Pk., sweeping *Lotus corniculatus*, *Lathyrus pratensis*, "Milk Maids," Butter-cups, and beating Hawthorn, Northwood. Eggs found on and larvae bred in *Lathyrus pratensis*. The abs. *ireneae*, Donis., and *holomelaenus*, Donis., and the var *mülleri*, Schil., occurred with the typical form. *B. loti* and ab. *holomelaenus* were also swept off *Lathyrus pratensis*, and the ab. *defectus*, Donis., with the typical form off *Lepidium*, Boston Manor.

(*To be concluded.*)

NOTE ON ATTEMPTED COPULATION WITH WORKERS.

By Desmond P. Walls.

Correction.—p. 51, line 6 (*chtonolasius*) should be spelt with a capital " *C* " and being a subgenus should be inserted in brackets between *Acanthomyops* and *umbratus*. Line 18, new par, " *F. fusca* nests " instead of " *F. furca* nests."

I had in 1941 a nest of *Myrmica raginodis*, Nyl., which had many workers, males and females.

When the males and females were 2-3 weeks old they began to show signs of excitement, the first being the buzzing of wings by a single female. The next day (15th July) a male showed slight signs of trying to embrace a female; I noticed no more excitement till 1.10 p.m. on 17th July, when a male tried to copulate with a worker, and repeated his efforts with several other workers. He paid no attention to the virgin females!

As the days went on I repeatedly saw buzzing of wings; on the 19th July a male flew a little. On 25th July a male tried to embrace a worker (about 11 a.m.). At about 12.30 p.m. a few males got very excited, and tried to embrace workers; one held a worker for a long time, and really appeared to have some success in copulation (?!). Another worker sought to pull him away. Shortly, a male tried to copulate with a virgin female, but she seemed unwilling. Another male seized a female, who, however, escaped him. I saw more attempts at copulation with workers. A male seized a female, who escaped, and he then tried to copulate with every worker he met. Many more such attempts occurred; one male attempted to copulate with a female for a long time, but she continued to resist.

From 3 p.m. to 4 p.m. all the winged ants were very excited, and sought to leave the glass nest (two Lubbock nests connected by a tube). I counted 11 attempts at copulation with winged females.

On the morrow, more workers were embraced by males, and there were more attempts at copulation with females. On July 27th at 5 p.m. I opened the nest in a Forel arena, inside a canvas tent 6 feet by 6 feet by 6½ feet high. By 6 p.m. many winged ants had flown to the canvas roof, and some pairs fell in copulation.

The above account shows plainly that, for some peculiar reason, the first sexual excitement of males is shown in attempts to copulate with workers; virgin females are at first ignored. Is it because the workers, while atrophied, are still adult females, and that the virgin females are not sufficiently adult at first, or are antagonistic to the males?

Note: I uncovered a *M. laevinodis* nest in my front garden last Summer, 1942. There were workers present, two or three queens, and some males. As soon as the bright sunshine fell on the nest, one of the males tried to copulate with a worker.

At times, excited male ants seem to show their excitement in such ways that they forget their mission in life!

As I walked on Bray Head in July 1942 (the day was fine and warm) I uncovered a *F. fusca* nest. Immediately several males flew off into the air, and the same thing happened when I raised another stone; yet there were no other flying ants of any kind visible, nor did any appear throughout the evening!

DESCRIPTIONS OF SOME GYNANDROMORPHS AND PTERERGATES (ANTS).

By Desmond P. Walls.

1. Gynandromorph: *Formica fusca*, L., taken (winged) 13th July 1942 at Barren Hill, Howth, in a nest which contained many winged females, but no males.

General appearance intermediate between male and female.

Antennae distinctly female (shape, number of joints, etc.).

Head almost normal female, but somewhat smaller than normal, and less shining. Eyes female, ocelli distinct. Left mandible small; right normal female.

Thorax almost normal male, dull. Legs more male in colour, but more sturdy than normal male. Wings male. Pedicel male.

Gaster more or less male in shape, with sex segments, but more bulky than male. The gaster is distinctly deformed, terminating in *large* external male genitalia, which are twisted at right angles, to the right-hand side.

Length, 9 mm.

I kept this ant alive until 27th July. Its gait and whole behaviour were female.

17th July. Gynandromorph placed with two *fusca* queens, who had laid a few eggs. The gynandromorph was later seen to lick its companions.

18th July. Gynandromorph spread wings.

19th July. Gynandromorph with only one forewing and one hind-wing. Gynandromorph carried packet of eggs.

27th July. Gynandromorph dead, with no wings.

2. Gynandromorph:* *Myrmica ruginodis*, Nyl., in nest on Ireland's Eye, August 1942.

Winged (completely). Antennae and head entirely normal female. Thorax, as far as epinotum, female, rather light in colour. Epinotum quite smooth, having no spines, but small knobs as in the male. Legs female.

Petiole, post-petiole and gaster entirely male; the gentalia, however, are rather less prominent than normal.

Length, 5-6 mm.

Pterergates: *Myrmica ruginodis*, Nyl., born in captivity, June 1942.

A. Size as large as female. Head very large, fairly dark; gaster brown; otherwise yellow. Thorax worker, but shoulders enlarged; thorax on the whole *slightly* enlarged, suture behind mesothorax very distinct. Remnant of left forewing, stringy, about 1 mm. long. Very small right forewing remnant, but this may have been broken in examining the specimen. Gaster almost as large as female.

Length, 6 mm.

B. Head as in A, but darker; body darker than in A. Thorax intermediate in bulk between worker and female; suture very marked;

but general appearance is worker. Very slight trace of right forewing; stringy remnant of left forewing, 2-3 mm. long.

Length, 6 mm.

C. Head dark, as large as female; gaster fairly large; thorax slightly larger than normal worker, but no wing remnants.

Length, 6 mm.

D. Almost identical with C.

The four ants described above (A, B, C, D) were all reared with female pupae, and workers of normal size did not develop until somewhat later. I had, in another *ruginodis* nest in 1942, a number of large workers of this type reared, contemporaneously with the batch of female pupae, turning brown at the same time, etc. These last facts seem to me to be the most important, and not the actual presence of wing-remnants, etc. It was only on close inspection that these "pseudo-female" *pupae* could be seen to be wingless.

N.B.—A, B, C and D above had ocelli exactly as in female.

Pterergates of Myrmica scabrinodis, Nyl. Born in Lubbock nest in which I had also a small colony of *F. fusca*. (I wished to see whether these species could live together amicably. The *fusca* were continually offensive, however, and eventually both species dwindled almost to nothing.)

These Pterergates were reared with some normal winged females. All were large, i.e., of female size.

(a) Two small knob-like remnants of forewings; stringy remnant of left hindwing; tiny trace of right hindwing.

(b) Small projecting remnants of hindwings; slight traces of forewings.

(c) No wing traces; is peculiar in having thorax light above dark below.

(d) Light colour above; head, gaster, lower part of thorax dark; thorax slightly twisted, head inclined to left side; no wing traces.

(e) All dark; trace of left forewing and right hindwing.

*This brings the total of described Gynandromorphous Ants up to 67 to date.—H.D.

COLLECTING NOTES.

"Cynthia hampstediensis."—I agree with Mr Hudson that *Cynthia hampstediensis*, Stephens 1827, was a *Precis* (*Junonia*) agreeing with *villida*, Fb., so far as can be judged from the copies of *Petiver's* figures in (1) Mr Allan's book and (2) Stephens' *Haustellata* I, t. 5, ff. 3, 4. The figure given in Humphreys and Westwood, *British Butterflies*, t. 14, f. 7 (1841), is much more vividly coloured: of this Humphreys said (p. 52) that it had "the air of a species or variety of *Hipparchia*"; but Westwood, with more knowledge of Exotic Butterflies, stated (p. 80) that he had "no doubt that it is an exotic species which had been accidentally brought to this country . . . it is evidently allied to *Cynthia orithya*" [now placed in *Precis*].

But I certainly do not suppose that " Albin's Hampstead Eye " was " caught by this curious person " in a living state at Hampstead, nor can I see any evidence for the idea that the world distribution of *P. villida* should have been quite different, two hundred years ago, from what it is now—and that is wide enough, " nearly ten thousand miles from E. to W., and in latitude from Yap to S. Tasmania " (Watkins, *Entom.*, lviii, 33: ii, 1925).

I am familiar with the most westerly form of *P. villida*, described as subsp. *chagoënsis* by Watkins (*l.c.*) from specimens taken by me twenty years earlier in the Chagos Islands, where the larva was found feeding on *Scaevola koenigii*, a Goodeniaceous shrub which is abundant along sandy sea-shores in Tropical East Asia, the Malay Archipelago and Polynesia, and which we also found on all the small coral islands between Mauritius and the Seychelles. Yet *P. villida* does not occur in these African Islands nor has it even succeeded in crossing from the Chagos Archipelago or from Java into Ceylon or India. In Australia, where the local race is *calybe*, Godart (teste Watkins, *l.c.*), the larva feeds around Sydney chiefly on *Erythraea australis*, according to Rainbow (*Guide Study Austral. Butterflies*, pp. 75-76, figs. 43-47: 1907), who adds that " Anderson and Spry say that, in Victoria, the larvae feed chiefly upon the various plantains, but have also been found on snapdragon (*Antirrhinum*) and several garden plants." Such adaptability in the way of food-plants would facilitate extension of its range, even in the absence of *Scaevola*, which grows on any tropical sandy shoreline likely to be reached by overseas migrants. But the fact that this butterfly " may be divided geographically into four main forms, connected up by intermediates " (Watkins, *l.c.*) seems to negative any regular syngamic connection, by migration, between these races; and the New Zealand records given in Mr Hudson's publications appear to indicate very occasional and erratic crossings of the Tasman Sea, perhaps suggestive of individuals that were storm-swept rather than regular migrants.

As regards the alleged capture of the butterfly at Hampstead, all we have is Petiver's statement that it was caught there by Albin. A glance at the list of Petiver's publications, as given by Hagen, shows that he was actively acquiring specimens from all parts of the world and, in days when specimens bore no locality-labels, it is easily understandable that many locality-errors occurred; in fact, any one familiar with literature can recall all too many such. Our " British List " still carries many names of species which were reputed to have been captured, often a hundred years ago or more, but never found since, and their original records almost certainly founded on " foreigners " introduced into supposedly " British " collections. To say this implies no special reflection on the verbal accuracy of Petiver or of Albin, any more than on Linnaeus, Fabricius, Haworth, Donovan, or others in similar cases, for having made similar errors in quoting localities or in having named insects after food-plants which their larvae do not eat.

Mr Allan's photographic copy of Petiver's original figure, so far as detailed comparison is possible, agrees with specimens of *Precis villida chagoënsis* and it does not seem unlikely that this butterfly may have been brought back from one of the Chagos Islands by some ship sailing between Mauritius and Madras. Hagen (*Bibl. Entom.*, ii, 40) men-

tions papers by Petiver on Insects from India (items 4-6) and from the Philippines (item 7)—I assume that this "Fort St George" was the one in Madras—so we know that Petiver did receive Lepidoptera from the Oriental Region. Hagen also stated, by the way, that Petiver's Insects were then preserved in the British Museum, so it is possible that speculations regarding the exact identity and provenance of "Albin's Hampstead Eye" may yet be solved by examination of the actual specimen.—T. Bainbrigge Fletcher, Rodborough, 6.v.1943.

Some Early Appearances of Lepidoptera.—In common with other parts of the country Spring, this year, has been decidedly early in Somerset; and in response to the request for first appearances of insects I now send the following list of some of the more forward Lepidoptera met with in the Clevedon district, but have inserted in brackets earlier records from my Somerset, or Gloucestershire, note-books when this season's date is later. None of these items refer to insects reared.

Pieris brassicae, 19th April; *P. rapae*, 2nd April (Som., 23.3.18; Glos., 23.3.38). I would like to mention here that one of my sons, when home on leave, told me that he was surprised to see an example of *P. rapae* on the wing near Great Yarmouth on 12th March. *P. napi*, 13th April (Glos., 7.4.38); *Anthocharis cardamines*, 15th April (Glos., 6.4.38); *Gonepteryx rhamni*, 9th March (Glos., 6.3.38); *Polygonia c-album*, 5th March; *Nymphalis io*, 18th February (Som., 8.2.13); *Brenthis euphrosyne*, 26th April; *Pararge aegeria*, 2nd April; *P. megera*, 4th May (Som., 25.4.14); *Coenonympha pamphilus*, 4th May (Som., 2.5.14); *Pyrgus malvae*, 15th April; *Erynnis tages*, 4th May; *Macroglossum stellatarum*, 15th April (Glos., 20.3.38); *Drepana cultraria*, 26th April; *Celama cristatula*, 20th April; *Cycnia mendica*, 25th April (Glos., 24.4.38, when a few ♂s were attracted by light); *Apatele psi*, 3rd May (Glos., 28.4.26); *Phlogophora meticulosa*, 31st March; *Lobophora halterata*, 6th May (Glos., 3.5.26); *Eupithecia venosata*, 27th April; *E. dodoneata*, 26th April; *Ligdia adustata*, 20th April; *Bapta bimaculata*, 22nd April; *B. temerata*, 4th May; *Opisthograptis luteolata*, 24th April; *Ectropis bistortata*, 2nd April (Som., 22.2.18); *E. punctulata*, 30th April (Glos., 22.4.12).—J. F. Bird, Redclyffe, Walton Park, Clevedon, Somerset.

Some further Early Appearances, and Migrants during May.—With a deterioration of weather conditions, after the first week of May, the emergences of Lepidoptera became more normal, but I was able to record a few more early appearances which I now append: *Lyncometra ocellata* and *Xanthorhoë montanata*, 12th May; *Eilema sororcula*, *Scopula floslactata*, *Colostygia pectinataria* and *Perizoma flavofasciata*, 13th May; *Mimas tiliae*, 15th May; *Electrophaës corylata*, 17th May; *Parasemia plantaginis* and *Zanclognatha grisealis*, 18th May; *Eupithecia palustraria*, 21st May; *Hemaris fuciformis* and *Eustrotia uncula*, both netted by my youngest son when we were out together, on 28th May. That the last named was beaten from tangled undergrowth in a hillside wood, some distance from any marshy ground, was curious.

During May there appeared to be two waves of migration; the first starting about the 14th of the month when, within a period of five days, the following migrant species put in an appearance: *Vanessa* (*Pyrameis*) *cardui*, 14th May; *Nomophila noctuella* (numbers suddenly appearing everywhere, including my garden), 15th May; *Plusia gamma*, 16th May;

Nyctosia obstipata (a ♂ netted by my son at dusk in the garden), 17th May; and *Vanessa* (*Pyrameis*) *atalanta*, 18th May. For a time *P. gamma* was moderately common at *Centranthus ruber*, then the numbers slowly dwindled until by the 29th hardly one was to be seen. Next day, 30th May, a second wave of migration became evident with a great multitude of *P. gamma*, and on the same evening my son and I each observed, with pleasure—and missed, with grief!—single specimens of *Celerio livornica*. Next evening, however, we again saw two more *livornica* and one, a large and perfect ♀, was triumphantly netted off the valerian by my son; a splendid *finale* to an interesting month.—J. F. Bird, Redclyffe, Walton Park, Clevedon, Som., 1st June 1943.

Second Emergence of Eupithecia venosata.—It may be interesting to record that a ♂ example of *Eupithecia venosata* was taken at rest on 29th July 1942. The specimen, slightly smaller than usual, was evidently freshly emerged; which seems to indicate that this species is occasionally double-brooded.—*Id.*

Pygaera pigra, Hufn., in the Inner and Outer Hebrides.—My first Hebridean experience with this species was on the Isle of Raasay, where I found it quite commonly on *Salix aurita* on the old path from Fearns to Hallaig. Later, on the same island, it turned up in the southern areas east of the Point of Eyre lighthouse. On the Isle of South Rona, to the north, it could only be described as rare. South of Raasay, on Scalpay, the sallows in some places were almost defoliated by it. Again, on the tableland of the isolated mass of Torridonean sandstone composing the Isle of Longay, it once more abounded. To the south of Skye, on the Isles of Rhum, Canna and Soay, it is of sparse occurrence. Although the larvae were searched for and beaten for on Coll, Tiree and Gunna, none were discovered. However, on the small Isle of Ornsay, lying off Coll, very small numbers were detected.

In the Outer Isles, the species is distinctly rare; only in Isle of Pabbay (Barra Isles) and on South Uist did we notice it. In both cases the type of habitat was the same, low jagged cliff ledges supporting colonies of *Salix aurita* being preferred. This contrasts with the chosen stations mentioned as producing the insect in the Inner Isles. Except as mentioned in the case of Raasay, all the colonies observed were located on open moorlands.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

Pericallia syringaria, L., in Durham and Northumberland.—Of this species, Robson in his Catalogue of the Lepidoptera of Northumberland and Durham is only able to report two specimens, one from Thornley (Derwent Valley), Co. Durham, and the second from Meldon Park, Northumberland. Recently, it has been captured in considerable numbers, as the larva, in both areas. In particular Gibside and Chopwell Woods (Durham) and Styford and Wylam (Northumberland) produce this usually rare moth in considerable quantities. Contrary to what Robson indicates, its only food with us is honeysuckle. The larvae are light-sensitive, and, owing to the different reactions to the stimulus of the lighting of the environment, many beautiful forms may be beaten. The imagines they produce call for no comment.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

The Foodplant of Dasypolia templi in the Hebrides.—Except for an indefinite remark in Spuler and Hoffman to the effect that the larvae of this species feeds on the roots of *Heracleum* and the larger Umbelliferae, all the authorities to which I have access give *Heracleum sphondyllium* alone as the foodplant of the species. On the Isle of Raasay, where we have taken the imago at sallow blossom in Spring, this cannot be the case, for the cow-parsnip only grows in one station near the Post Office, where it is almost certainly introduced. Our specimens of *D. templi* came from Balachuirn, where no *Heracleum* occurs. Under these circumstances, I suggest that *Angelica sylvestris*, everywhere abundant, acts as the foodplant. Larvae from captured females when brought home readily accepted *Heracleum*.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

The Occurrence of Hibernated Nymphalis io in Northumberland and Durham.—Over seventy years ago the Peacock Butterfly vanished from these counties, not to reappear until just prior to the last war, when occasional examples occurred in August in two or three successive years. In June 1918, however, I captured a fine hibernated female at Lamesley, North Durham. Subsequent to that, the species increased in numbers until last season it was really common. During March of this year, commencing on 12th March, over-wintered examples have been reported from several places—Newcastle Town Moor, Stocksfield, and Cullercoats, all in the Tyne Valley on the Northumberland side. It really seems as if the species is now firmly re-established with us.—J. W. Heslop Harrison, King's College, University of Durham, Newcastle-upon-Tyne.

CURRENT NOTES.

Revision of Tutt *British Noctuae*. The following species will shortly come under consideration and it would be of value if anyone would go through their series and describe any aberration, or local race (dark, light, mottled, deficient in marking, etc.), and forward the notes to me for consideration:—*lutulenta, oxyacanthae, aprilina, lucipara, prasina, occulta, nabulosa, tincta, advena, porphyrea*.—Hy. J. T.

A rather large consignment of pamphlets dealing with entomological work, mainly economic, has reached our table, mostly from Carlos A. Lizar and Trelles, of the Argentine. Where large areas of cultivation are carried out pests often have great advantages and Locusts, Coccids, etc., have to be known and dealt with. These pamphlets show from experience and experiment what may be done in counter attack.

OBITUARIES.

We regret to announce the decease of Alfred Sich, who for many years was on the panel of editors on the front cover of this magazine. Half a century ago he was a familiar attendant at both the Entomological Society of London and the South London Entomological and Natural History Society. He served on the Council of both for a period and had been twice President of the latter Society. He was a member of the well-known family of Chiswick Brewers but owing to the ill health of his wife latterly spent a considerable time on the Continent. His main interest in Entomology was the breeding of the Micro-lepidoptera when opportunity occurred. He was a pleasant companion in the field and came to many a field meeting of the Society. His short papers were always appreciated, both when read at a Society or when communicated to a magazine. His sketches were quite good as seen in South's works. He was for a considerable period a member of the famous Entomological Club. He had latterly been gradually fading away both physically and mentally and last year his son asked that his name might be taken from the cover of the magazine and also that his resignation be accepted by our Societies. He was considerably over 70 years of age.—Hy. J. T.

We have just heard that on 30th May A. Ford of Bournemouth passed away. For many years he collected Coleoptera, Lepidoptera and Natural History Books and was known to most entomologists who went to the Bournemouth area. Originally he came from Hastings where we met him more than 60 years ago, and by him was introduced to that famous entomologist of long, long ago, the Rev. Bloomfield of Guestling. Ford was a very active man until quite recently when we understand he had a stroke, from which he never really recovered. He was a frequenter of Stevens salerooms in the early days of this century.—Hy. J. T.

We have to record the passing of F. N. Pierce whose works on the genitalia of all the species of Lepidoptera met with in the British Islands are known to all our students of the Order. It was well that he finished his life's task before leaving us. He found help from many who were able to work with microscope and needle from the late Rev. C. N. Burrows, who for long until he himself was failing gave of his best to his great friend, until younger men came in to help Pierce carry on, with the results we all know. His last work was " The Female Genitalia of the Noctuidae " of which the Male Genitalia was published as far back as 1909. Now that we have complete records of these details of the structures let us hope that not too much importance will be stressed in the use of this knowledge, which should fall into its place with other characters, which in turn have had their period of dominance. Mouth parts and wing venation each in turn have been treated as *the* specific key to separate species from species in disregard of other characters.

were bad. 4 too yellow in the band; 5 like *corsica*, Ramb. (possibly a race of *serena*). 6, *placida* he considered to be *viminalis*.

Ernst & Engr., *Pap. d'Eur.*, VI, 117 and 118, fig. 352 and 353 (1788), have described and figured two species of which the larvae of the former is given as feeding on willow and probably referred to *viminalis*, while the latter has been called *serena* (e.g. Treit.) but does not fit to that species. The hindwings are very dark and not pearly-white.

Werneburg, *Beitr.*, II, 112 (1864), definitely said that figs. 352 c-f are *serena*, and that figs. 353 a-c represent forms of *viminalis*, and that Treit. and others erred in their judgment.

Scriba (Bork.), *Mag.*, III, 1 (1791), described under the name *hieracii* a form of *serena* and gave a very good figure, plt. xiii, 1-2.

Bork., *Naturg.*, IV, 270 (1792), said that the larvae he found on the above plants were of two kinds and produced an unknown species besides *serena*. He described the two forms of larva.

Illiger, *Ausg. Verz.*, I, 285 (1801), said that the descriptions by Bork., *Naturg.*, IV, and Brahm, *Kal.*, II, were f. *serena*, Schiff., but the former considered that the larva did not belong here.

Hb., *Samml. Noct.*, 54 (1800-3), is a very good figure of *serena*. In his Text, p. 173, Hb. gave the *placida*, Esp., as this species and the *serena* of Schiff., *Verz.*

Duponchel, *Hist. Nat.*, VI, 314, plt. 92, 4 (1826), gave a figure somewhat resembling *serena*, as he said, but with the discal band of the forewing grotesquely irregularly shaped and enlarged, touching the costa only by two square extensions. It was taken in the Dauphiné Alps. The ground colour is very clear white with very few small darker clouds.

Guen., *Hist Nat.*, VI, 29 (1852), said it was the *hieracii*, Scriba, plt. xiii, 1-2, the *par*, Donovan, X, plt. 358, and the *placida*, Esp. He referred to Engram., 352e, f.

Freyer, *Neu. Beitr.*, I, 158, plt. 87 (1833), gave a fair figure of a form of *serena*, somewhat too light for our usual form. He associates it with the *hieracii* of Scriba's *Beitrag*, and with the figure 54 in Hb., *Samml. Noct.* H.-S., *Sys. Bearb.*, II, 266 (1845), said of Hb., fig. 54, "The grey ground colour is too dark." H.-S., *Sys. Bearb.*, II, *l.c.*, said of Frr., *Neu. Beitr.*, 87, "The stigmata too white."

Meyr., *Handbook*, 81 (1895), used the genus *Melanchra*, Hb.

Barrett, *l.c.*, plt. 161, gave two very good figures, except that the hindwings are uniformly dark.

Hamp., *Cat. Lep. Phal.*, V, 170 (1905), dealt with the three forms, *leuconota*, *obscura* and *corsica*, and used the genus *Polia*. He treated *placida*, Esp., *hieracii*, Scriba (Bork.), *monticola*, Dup., *bicolorata*, Led., and *intermedia*, Walk., as synonyms.

Splr., *Schem. Eur.*, I, 175, plt. 37, 14 (1905), gave a figure rather light and with the markings somewhat dull.

Meyr., *Rev. Handb.*, 152 (1928), used the genus *Melanchra*, Hb.

South, *M. Brit. Is.*, I, 254, plt. 125, 3-4 (1907), gave two excellent figures of our average British form which is the race *leuconota*, Eversm.

Warr.-Stz., *Pal. Noct.*, III, 74, plt. 17f (1909), gave *corsica*, Ramb., as a good species and gave figures ♂ and ♀ more uniformly darker grey, figs. 17e. Larva on Asphodel.

They treat *placida*, Esp., *hieracii*, Scriba (Bork.), *bicolorata*, Led., and *intermedia*, Walk., as synonyms. The forms figured are quite good

17f, *serena*, *leuconota*, *obscura*, ♂ and ♀. The *monticola*, Dup., they treat as a syn. of *leuconota* and include the *leucomalaena* and *albicans* of Splr. and the *obscura*, Stdgr. They took Schiff. as the priority author for *serena*.

Culot, *N. et G.*, I (1), 111, plt., xix, 5, 6, 7 (1911), dealt with *leuconota*, Ev. (*monticola*, Dup.), and *obscura*, Stdgr., and treated *corsica*, Ramb., as a true species attached to Asphodel. Fig. 5 is the typical (Continental) form. Fig. 6 is the dark banded, pure white ground form, *leuconota* (British). Fig. 7 is the dark suffused form *obscura*, Stdgr. All are excellent figures. Fig. 8 is the species *corsica*, Ramb. *Mamestra*.

Draudt-Stz., *Pal. Noct. Supp.*, III, 101 (1934), added another form *weissi*, which was figured on plt. 14h.

The Names and Forms to be considered:
[*bicolorata*, Hufn. (1766), *Berl. Mag.*, III, 4, 410.]
serena, Schiff. (1775), *Verz.*, 84, P.
serena, Fab. (1787), *Mantissa*, II, 171.
placida, Esp. (1789+?), *Abbild. Noct.*, IV (2), 596, plt. 166. Syn.
hieracii, Scriba (Bork.) (1793), *Beitr.*, III, 195, plt. xiii, 1-2. Syn.?
ab.? *par*, Donovan (1801), *Nat. Hist. Br. Ins.*, x, 32, plt. 338, f. 3.
r. *monticola*, Dup. (1826), *Hist. Nat.*, VI, 314, plt. 92, 4.
[*corsica*, Ramb. (1832)] *Ann. Soc. Fr.*, 279, plt. 9, 3 (a species).
r. *leuconota*, Ev. (1842), *Fn. Volg.*, 235. The British Form.
intermedia, Walk. (1858), *B.M. Cat. Lep.*, XV, 1716. Syn.?
ab. *obscura*, Stdgr. (1871), *Cat.*, IIed., 92.
ab. *leucomelaena*, Splr. (1905), *Schm. Eur.*, I, 178, plt. 57, 14.
ab. *albicans*, Splr. (1905), *l.c.*
f. *weissi*, Drdt. (1934), *Pal. Noct. Supp.*, III, 101, plt. 14h.

Tutt dealt with the (1) typical grey Continental form as described by Fabricius; (2) with the pearly-white ground form, the *leuconota*, Ev., and (3) var. *obscura*, Stdgr., a more unicolorous dark form. He included also *corsica*, Ramb., now found to be a good species.

Barrett reported on the Variation:
Usually very constant in colour and markings, but occasionally the pure white ground colour is tinged with grey.
He reported one which has "the central dark band much extended and the apical and hind marginal region slate-grey."

ab. *bicolorata*, Led., *Noct.*, 32 (1857). This reference is frequently given but it is invalid because there is no description. (Hamp., Seitz, etc., etc.)
ab. *bicolorata*, Hufn., *Berl. Mag.*, III, 410 (1766). Of this
Rott., *Naturf.*, IX, 137 (1776), under the name *bicolor*, said "The forewings are pale grey next to the outer margin, then follows in the middle of this wing a broad dark grey transverse band, which on its inner side is uniformly whitish, and on the hind margin lie two distinct black dots close below one another. The rest of the forewing up to the outer margin is wholly whitish-grey. The lower wings are white-grey, somewhat darker towards the outer margin and have a white border." It is the size of *fuliginosa*.
Treit. & Zeller accepted this as a form of *serena* but Werneberg did

not agree, he considered it another species, the *bipuncta*, Treit. It has been rejected by most authors.

Esp., *Abbild. Noct.*, IV (1), 596, plt. 166, fig. 4 (1788+?), gave a bad figure of *serena*, very obscure, with yellow in the middle area and a suffused dark mottled ground with a light narrow submarginal line. His figs. 5-6, equally bad, he called ♂ and ♀ *placida*. These figs. have been cited to *serena* by authors (H.-S.), but Werneb. placed fig. 6 to *viminalis* and fig. 5 to *serena*, and this latter very *similar* to ab. *corsica*, Ramb. Since confirmed by Seitz.

hieracii, Bork., *Scriba Beitr.*, III, 195 (1793).

Fig.—*l.c.*, plt. xiii, 2.

Orig. Descrip.—" The wings are margined with fine round teeth. The forewings have a pearl-coloured or bluish-white ground. There are, as in most Noctuae, three transverse lines, a smaller abbreviated one at the base, a straighter one near the middle, and finally a curved one extending towards the outer area into cap-shaped loops.

All of the lines are dark bordered and of yellowish colour, either more or less suffused. The area between the two outer lines is filled in grey-brown and forms a grey-brown band between the two yellowish-edged lines. In this lies the usual stigmata of which the first is circular but the outer one is reniform; both are pearl coloured and have a greyish central spot.

In the neighbourhood near the apex of the wing is a grey-brown spot, from which a fine blackish even line runs out parallel to the hind margin to the inner margin. On the hind margin lie black arrowhead spots and the fringes are chequered bluish-white and black. The costa is white and black spotted. The hindwings are lightish grey with a blackish band on the hind margin, in which near the inner angle a whitish spot and a single small streak lie. The fringes are light grey.

ab. *par*, Donovan, *Nat. Hist. Br. Ins.*, x, 32, plt. 338, f. 3 (1801).

Fig.—plt. 338.

Description.—" A very clean cut figure and definite marking. The ground colour a blue creamy-white with a well-defined central band, the reniform and orbicular of the pure ground colour. The submarginal dots in the marginal area very clear and well defined. Terminal line dark, fringes a light brown. The dark band with irregular transverse lines darker than the internal dark brown space. The basal area with indications of a dark partial transverse line or band. The hind wings uniformly very dark brown with a fine light discal line. Thorax white, body light grey."

r. *monticola*, Dup., *Hist. Nat.*, VI, 314 (1826).

Fig.—*l.c.*, plt. 92, 4.

Orig. Descrip.—" It somewhat resembles *serena*; its forewings above are of an impure white with their centre crossed by an irregular wide brown band margined by two waved black lines. The two usual stigmata, which are depicted in white on this band, are also bordered with black, and the orbicular is very small. The bar of the wing has a black irregular line on a brown ground, and the outer margin is marked by a sinuous interrupted brown line. The fringe which is white is chequered with brown." Dauphiné Alps.

f. *intermedia*, Walker, *Cat. Lep. Het. B.M.*, XV, 1716 (1858).

Orig. Descrip.—" Alba; thorax robustus, dense pilosus, nigro subconspersus, linea antica nigra; abdomen cinereum, basi apiceque albis; alae anticae basi fuscae lineis duabus nigris, fascia media lata fusca antice dilatata lineas tres denticulatas nigras includente, orbiculari et reniformi albo marginatis, annulo intermedio nigro; postice fascia fuscesente marginali, lunulis marginalibus fuscis.

Male. White. Head and under side slightly cinereous. Thorax very stout, densely clothed, with a slight black line in front and with a few black speckles hindward. Abdomen cinereous above, white at the base, and with a white apical tuft. Forewings brown and with two black lines in front at the base, and with a broad middle brown band, which is dilated in front, and comprises three denticulated black lines; a slight trace of the submarginal line; a black ringlet between the orbicular and reniform marks, which are in the brown band and have white borders. Hind wings with a brownish marginal band, and with brown marginal lunules.

ab. *leucomelaena*, Splr., *Schm. Eur.*, I, 175 (1905).

Orig. Descrip.—" The thorax is whitish, the marginal area almost without marking or with quite slight marking."

ab. *albicans*, Splr., *Schm. Eur.*, I, 175 (1905).

Orig. Descrip.—" The central area definite, covered whitish."

f. *weissi*, Drdt.-Seitz, *Pal. Noct. Supp.*, III, 101 (1934).

Fig.—*l.c.*, plt. 14h.

Orig. Descrip.—" Paler, less brightly marked, much paler hindwings." Southerly localities, Catalonia.

Polia, Ochs. & Tr. (1816-25). Most authors. [*Antitype*, Hb. (1821) Warr.-Stz., Drdt.-Stz.] *chi*, Linn. (1758).

This species is a widespread one, which occurs in almost every area of Central Europe, and has been mentioned, described, or figured by almost everyone of the older authors, even by those before Linné.

Tutt, *British Noctuae*, III, 41 (1892): Meyr., *Hand.*, 54 (1895): Barr., *Lep. Br. Is.*, IV, 305, plt. 170 (1907): Stdgr., *Cat.*, IIIed., 180 (1901); Splr. *Schm. Eur.*, I, 202, plt. 38, 25 (1905): Hamp., *Lep. Phal.*, VI, 372 (1906): South, *M.B.I.*, I, 286, plt. 138, 2-5 (1907): Warr.-Stz., *Pal. Noct.*, III, 138, plt. 33j, 34a (1910): Culot, *N. et G.*, I (1), 189, plt. 34, 15-16 (1913): Meyr., *Revis. H.*, 133 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 144, plt. 18e (1934).

Rösel., *Ins. Belust.*, I (2), plt. 13 (1746+), gave two very good figures of the moth subsequently called *chi*, L.

Esp., *Abbild. Noct.*, IV, 253, plt. 114, f. 1 (1788+?), gave a good figure of *chi*, L., its larva and food-plant.

Ernst & Engram., *Pap. d'Eur.*, VI, 119, fig. 354, c, d, e, f (1788), gave four good figures of this species, which so many earlier authors had recognized under the name *chi*, L.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. Turner, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—Eds.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr Hy. J. Turner, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris*, and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Duplicates.—Foreign Lepidoptera, e.g., Charaxes, *castor, pollux, saturnus, candiopa, citnaeron, bernsteinii, cydalina*. Full list sent. *Wanted.*—Palaearctic *H. phlaeas* (with data), particularly from N. America, Scandinavia, Asia, China, India, Madeira, Africa; also other species of Chrysophanids.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

Book Wanted.—Barret, *British Lepidoptera*, Vol. 3.—*L. E. Savage, 65 Cranmer Avenue, Hove 4, Sussex.*

Books Wanted.—Culot, *Noctuae and Geometrae.—A. J. Wightman, "Aurago," Pulborough, Sx.*

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. Thursdays, July 8; August 12; 6 for 6.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham.. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Communications Promised:—H. A. Leeds, E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, Dr Kettlewell (plates), P. M. B. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, Rev. Desmond Murray (plate), H. Donisthorpe, Prof. J. W. Harrison, etc.

All Communications should be addressed to the Acting Editor, Hy. J. TURNER, "Latemar," 25 West Drive, Cheam.

Printed by T. Buncle & Co., Ltd., Arbroath.

Vol. LV.

Nos. 7-8

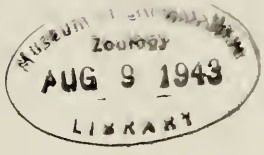
JULY-AUG. 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).



LEGEND FOR PLATE I (III).

The Oberthür Collection and the Joicey Collection are in the British Museum.

Fig. 1. *Panaxia rossica*, Kol., ex Oberthür Collection.
Labelled "*Dominula-rossica*, Lagodachi. ex Romanoff."
This is the same insect figured by Oberthür in "Lepid. Compar.," Vol. vi, Pl. cxviii, No. 1038. The extra black spot on the hindwing cannot be seen on the upper surface. It is present on the underside.

Fig. 2. *Panaxia rossica*, Kol., ex Oberthür Collection.
Labelled "Ex Musaeo Boisduval."
The extra black mark on the costa can just be seen. Well developed on the underside.

Fig. 3. *Panaxia dominula*, subsp. *lusitanica*, ab. *bieli*, ex Joicey Coll.
Labelled "Oporto, Portugal."
This is not an extreme example.

Fig. 4. *Panaxia dominula*, subsp. *lusitanica*, Staudinger, in Tring Museum.
Labelled "Portugal, ex Groum-Grachimailo Coll."

Fig. 5. *Panaxia dominula*, subsp. *persona*, Hübner, ex Oberthür coll.
Labelled "Toscane, 1885, Stgr."
This is the same insect figured by Oberthür in "Lepid. Compar.," Pl. cxvii, Vol. vi, No. 1032. Genetic formula probably "Aa bb" Goldschmidt.

Fig. 6. *Panaxia dominula*, subsp. *persona*, ab. *nigradonna*, ex Oberthür Coll.
Labelled "Italie Vallombrosa, ex Verity, Juin 1907."
Identical insect figured by Oberthür in "Lepid. Compar.," Vol. vi, Pl. cxvii, No. 1034. Genetic formula probably "AA Bb" Goldschmidt.

Fig. 7. *Panaxia dominula*, subsp. *persona*, ab. *italica*, Standfuss, ex Oberthür Coll.
Labelled "Italie Vallombrosa, ex Verity, Juin 1907."
Figured by Oberthür in "Lepid. Compar.," Vol. vi, Pl. cxvii, 1030. Genetic formula probably "aa bb" Goldschmidt.

Fig. 8. *Panaxia rossica*, subsp. *teberdina*, Shel., ab. *flavoteberdina*, in Tring Museum.
Labelled "Teberda (Cauc.), 27.vii.1933, P. Sheljuzhko."

Fig. 9. *Panaxia rossica*, subsp. *teberdina*, Shel., ab. *rubroteberdina*, Tring Museum.
Labelled "Teberda (Cauc.), 26.vii.1933, P. Sheljuzhko."

Fig. 10. *Panaxia dominula*, ab. *lutea*, Staudinger, ex Oberthür Collection.
Labelled "Paris."
Identical insect figured by Oberthür in "Lepid. Compar.," Vol. vi, Pl. cxviii, No. 1036, as "*dominula-lutescens*."

Fig. 11. *Panaxia dominula*, ab. *lutea*, Staudinger, in my collection.
Bred ex L. W. Newman, Deal, Kent.

Fig. 12. *Panaxia dominula*, subsp. *majellica*, Dannehl, in Tring Museum.
Labelled "Italie, Majella a Zucht., v, 1931."

Fig. 13. *Panaxia dominula*, subsp. *persona*, ex Oberthür Collection.
Labelled "Tuscany."
Genetic formula probably "AA bb" Goldschmidt.

Fig. 14. *Panaxia dominula*, ab. *romanovi*, Standfuss, "Yellow *romanovi* 2," ex Oberthür Collection.
Labelled "Ex Schiller Furth, 1913, Hybrid *romanovi-italica*."

Actual size.

CLASSIFICATION OF "YELLOW HINDWINGED *DOMINULA*."

To face p. 45.

LEGEND FOR PLATE II (IV).

Fig. 1. *Panaxia dominula*, ab. *illustris*. In my collection.
Labelled " Bred ex larva, Hampshire, 1938." TYPE.

Fig. 2. *Panaxia dominula*, ab. *illustris*. In my collection.
Labelled " Bred ex larva, Berkshire, 1938." PARATYPE.

Fig. 3. *Panaxia dominula*, ab. *paradoxa*, Reich. In my collection.
Labelled " Bred ex larva, R. Pitman, 1939."

Fig. 4. *Panaxia dominula*, ab. *diluta*. In my collection.
Labelled " Bred ex larva, Deal, 1937." TYPE.

Fig. 5. *Panaxia dominula*, ab. *ocellata*. In my collection.
Labelled " Bred ex larva, Hampshire, 1940." TYPE.

Fig. 6. *Panaxia dominula*, ab. *juncta*, Cockayne. In my collection.
Labelled " Bred ex larva, Salisbury, 1940."

Fig. 7. *Panaxia dominula*, " Var. B. Rippon." In my collection.
Labelled " Bred ex ova, L. W. Newman, *bimacula* × *medionigra*, 1939."

Fig. 8. *Panaxia dominula*, ab. *medionigra*, Cockayne. In my collection.
Labelled " Bred ex ova, *bimacula* × *medionigra*, 1939."
This is a fairly extreme example of *medionigra*.

Fig. 9. *Panaxia dominula*, ab. *brunnescens*. In my collection.
Labelled " Bred ex larva, Deal, 1940." TYPE.

Fig. 10. *Panaxia dominula*, ab. *junclasuffusa*. In Dr Cockayne Collection.
Labelled " Wicken Fen, F. Norgate, 1896. B. S. Harwood Coll. Stevens Sale 15319." TYPE.

Fig. 11. *Panaxia dominula*, ab. *decolorata*. In my collection.
Labelled " Bred ex larva, R. Pitman, Wiltshire, 1939." TYPE.

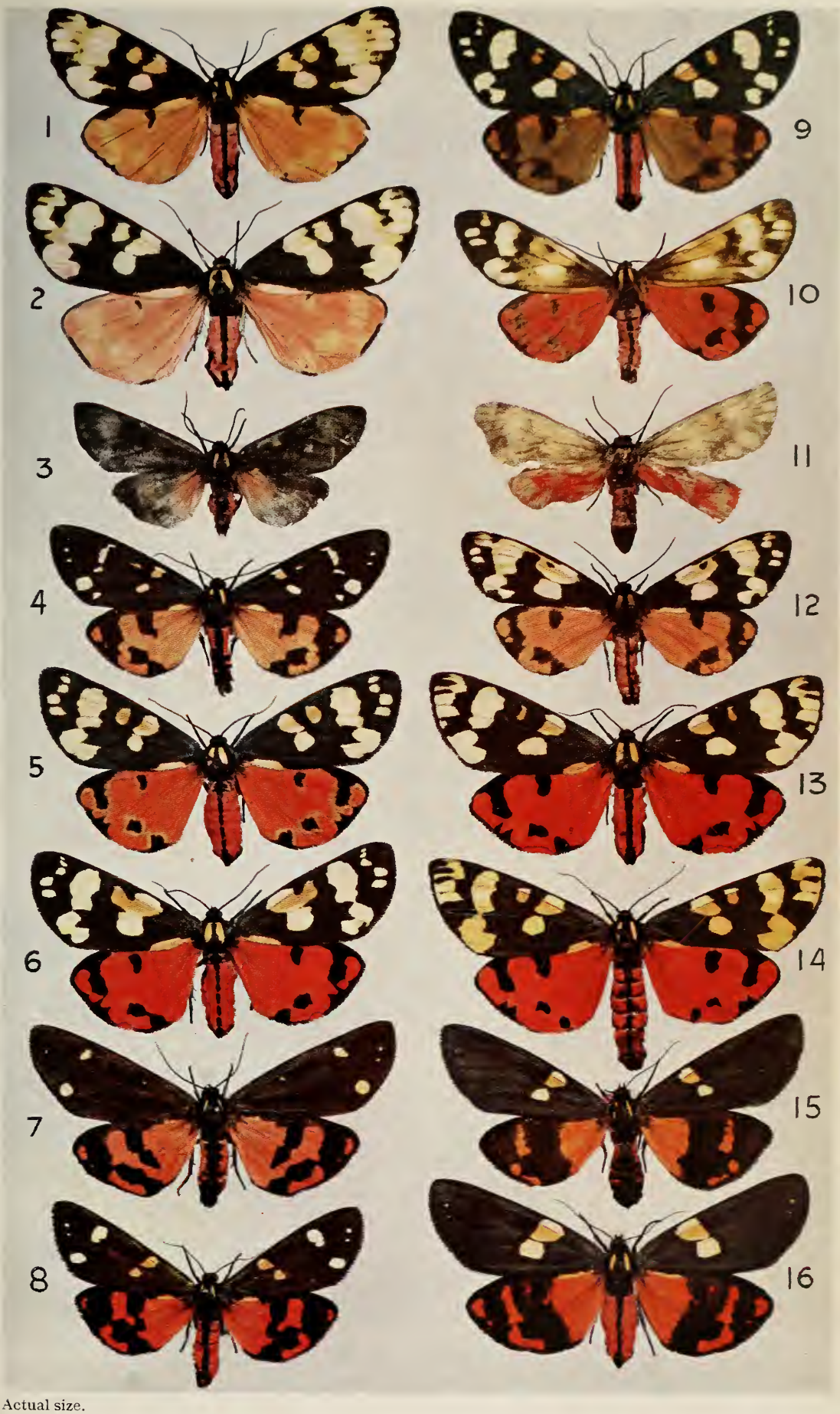
Fig. 12. *Panaxia dominula*, ab. *conjuncta*. In my collection.
Labelled " Bred ex larva, Hampshire, 1938." TYPE.

Fig. 13. *Panaxia dominula*, ab. *albomarginata*. In my collection.
Labelled " Bred ex larva, Hampshire, 1938." TYPE.

Fig. 14. *Panaxia dominula*, ab. *flavomarginata*. In my collection.
Labelled " Bred ex larva, L. W. Newman, vii.1934, Kent." TYPE.

Fig. 15. *Panaxia dominula*, ab. *bimacula*, Cockayne. In my collection.
Labelled " Bred ex ova, *bimacula* × *bimacula*, L. W. Newman, 1940."

Fig. 16. *Panaxia dominula*, ab. *bimacula*, Cockayne. In my collection.
Labelled " Bred from wild larva, Dry Sandford, vii.1938."
Showing difference in colour of abdomen from fig. 15.



Actual size.

SOME NEW ABERRATIONS OF BRITISH *PANAXIA DOMINULA* L.

LEGEND FOR PLATE III (V).

Fig. 1. *Panaxia dominula*. Normal red body and red hindwings. Labelled " Piemont, ex Bellier Coll." In Oberthür Collection.

Fig. 2. *Panaxia dominula*, subsp. *rhodanica*. Forewing spots all golden-yellow. Labelled " Valais. 1900."

Fig. 3. *Panaxia rossica*, Kol. Forewing spots all white. Hindwings red. Well marked extra black spot on costa more marked on the underside. From Serdab-e-bala, North Persia. Figured by Le Cerf in " Annales D'Histoire Naturelle," 1913, Vol. 2, p. 82. In Paris Museum.

Fig. 4. *Panaxia rossica*, Kol. Underside showing the presence of the extra black mark on the costa of the hindwing. It is not as well developed as usual. For comparison with *P. dominula* underside opposite. (Fig. 9.)

Fig. 5. *Panaxia dominula* aberration. Forewing markings running in bands transversely. They are edged in yellow. Hindwings red with diminished black markings. ? ab. *fasciata*, Spuler. Labelled " Paris, Bellier Coll."

Fig. 6. *Panaxia dominula*, subsp. *pompalis*, Nitsche. Forewings glossy green. Hindwings bright red. Labelled " Meran, South Tyrol." The abdomen (missing) was black. Tring Museum.

Fig. 7. *Panaxia dominula*, subsp. *bithynica*, Staudinger. Forewing spots all yellowish. Labelled " Broussa, Asia Minor, 1882." For comparison with subsp. *rhodanica* opposite. (Fig. 2.)

Fig. 8. *Panaxia rossica*, ab. *persona*, Spuler. Tring Museum. Forewing spots much reduced. Hindwing with greatly increased black markings. Labelled " Armenia, ex H. J. Elwes Coll., 1920." In Joicey Collection.

Fig. 9. *Panaxia dominula*, L. Normal underside. For comparison with *P. rossica* underside opposite. (Fig. 4.) Kettle. Coll.

Fig. 10. *Panaxia dominula*, ab. *paradoxa*, Reich. Forewings sooty black. Lighter areas due to scale defects. Hindwings blackish with yellow-red suffusion towards base. Type specimen figured by Reich in " Mitt. Deuts Ent. Ges.," 5, p. 18, 1934. From Gr. Raum, E. Prussia. Reich Coll.

To face p. 45.

ABERRATIONS OF P. DOMINULA, L.

THE OVIPOSITION OF PHOLIDOPTERA GRISEOAPTERA (ORTH.).

By L. R. A. Grove, B.A., F.R.E.S.

In September 1938 Dr Malcolm Burr wrote and asked me to try keeping *Pholidoptera griseoaptera*, De Geer, *cinereus*, Gmel.,' in order to witness the method of ovipositing. I was unable to do much towards this end until the late summer of 1942, when I managed to obtain plenty of examples of the Tettigoniid in the neighbourhood of Brick Hill Wood, Blundeston, Suffolk, which is quite near Lound Woods, where the Pagets found them in the eighteen thirties (C. J. and James Paget: " Sketch of the Natural History of Yarmouth," 1834).

In the meantime Dr F. E. Zeuner had succinctly epitomized our present scanty knowledge of the egg-laying activities of *Pholidoptera cinerea* and allied species and had pleaded for further observations (1941, " The Classification of the Decticinae hitherto included in *Platycleis*, Fieb., or *Metrioptera*, Wesm."—" Trans. R. ent. Soc. Lond.," vol. 91, p 11). He emphasized that " little is known so far of the mode of oviposition in most of the genera."

Of the Blundeston examples the only female which survived to lay eggs was captured on the 29th of August. She had a wide interest in food and at various times disposed of her mate, several Opiliones, small flies, shrimps and large white butterfly caterpillars, although the last were not much to her taste. On the 10th of September I flashed a shaded torch into the glass container, which held her and found her in the act of ovipositing. In the container were a green twig from a rose bush, a spray of black poplar and two pieces cut from a hollyhock stem, both one-third of an inch in diameter. All were placed in sand. The Tettigoniid was climbing up one of the pieces of hollyhock and nibbling off the green skin (epidermis), thus exposing the pith and was occasionally pressing in her ovipositor as that instrument came to the exposed pith. A small roundish hole resulted. In order to lay, the insect braced herself on her backlegs and bent the abdomen almost into a semicircle so as to form a reversed-S line with the ovipositor, the point of which was inserted into the pith at an angle varying between 45° and 60°.

No eggs were found until the 20th of September when one, in excellent condition, was found lying tucked under the green epidermis of the hollyhock. The length was 5/32 inch and the greatest width 1/32 inch. It was like a smooth miniature French roll, narrowly elliptical in plan, an unequally flattened oval in section and from the side view appearing more curved on the top side than on the bottom.

SOME MIDDLESEX COLEOPTERA.

By Horace Donisthorpe, F.Z.S., F.R.E.S., etc.

(*Concluded from p. 62.*)

Chrysomelidae:—*Crioceris lilii*, Scop., bred from eggs and larvae on the white garden lily in garden, Heston. The resulting brood hibernated without laying eggs, etc. *Phaedon tumidulus*, Germ., on *Hera-*

cleum spondylium, Northwood; *P. cochleariae*, F., and larvae abundant on *Nasturtium amphybium*, variable in colour, Boston Manor; *Longitarsus melanocephalus*, De G., sweeping, Boston Manor; *Phyllotreta consobrina*, Curt., sweeping *Lepidium*, Boston Manor; *P. cruciferae*, Goez., and ab. *nigricornis*, Donis., sweeping cabbages, Heston; *P. vittula*, Redb., and *P. undulata*, Kuts., sweeping, Boston Manor; *P. nemorum*, L., sweeping in garden, Heston; *Podagrica fuscicornis*, L., on Hollyhocks in garden, Heston; *Chaetocnema hortensis*, Fouc., on stone, Old Heston Churchyard; *Cassida flaveola*, Thunb., sweeping, Boston Manor.

TENEBRIONIDAE:—*Tenebrio molitor*, L., in house and in bath-room, Heston, and on footpath, Old Heston.

OEDEMERIDAE:—*Oedemera lurida*, Marsh, sweeping in garden, Heston, on herbage, Osterley, and very abundant, Boston Manor; *Nacerdes melanura*, L., on pavement, Heston.

ANTHICIDAE:—*Anthicus floralis*, L., and *A. antherinus*, L., in cut grass, Old Heston Churchyard.

CURCULIONIDAE:—*Apion miniatum*, Germ., sweeping docks, Boston Manor; *A. aeneum*, F., and *A. radiolus*, Kirb., on Hollyhocks in garden, Heston; *A. loti*, Kirb., sweeping, Boston Manor and Northwood; *Otiorhynchus sulcatus*, F., on path, Heston; *O. ovatus*, L., in cut grass, Old Heston Churchyard, and *Barypeithes pellucidus*, Boh., not uncommon in last locality; *Tanymecus palliatus*, F., sweeping thistles, Northwood; *Sitones hispidulus*, F., under brick; *S. salcifrons*, Thunb., *Hypera punctata*, F., and *Liosoma ovatulum*, Clair., in cut grass, Old Heston Churchyard; *Erirhinus acridulus*, L., sweeping at Boston Manor and Northwood; *Miccotrogus picirostris*, F., *Gymnetron marshalli*, Donis., and *Mecinus pyraster*, Hbst., in cut grass, Old Heston Churchyard; *Anthonomus pomorum*, L., under apple bark, Old Heston; *Nanophyes lythri*, F., sweeping *Lythrum salicaria*, Boston Manor; *Poophagus sisymbrii*, F., and *Ceuthorhynchus litura*, F., sweeping *Nasturtium amphybium*, Boston Manor; *C. chalybaeus*, Germ., sweeping *Sisymbrium*, Heston, and *Nasturtium*, Boston Manor; *C. assimilis*, Pk., sweeping *Lepidium*, Boston Manor; *C. sulcicollis*, Gyll., sweeping *Sisymbrium*, Heston; *Ceuthorhynchidius floralis*, Pk., sweeping *Lepidium*, Boston Manor; *C. troglodytes*, F., sweeping, Heston, in garden; *Rhinoncus gramineus*, F., and *R. perpendicularis*, Reich., sweeping *Polygonum*, Boston Manor; *Rhyncolus lignarius*, Marsh., in old Walnut tree, Heston; *Magdalis armigera*, Fourc., on fence, Heston.

THE QUESTION OF THE OCCURRENCE OF CUCULLIA SCROPHULARIAE IN BRITAIN.

By A. J. WIGHTMAN, F.R.E.S.

I have carefully read Mr E. P. Wiltshire's reply to my note challenging him to prove the existence of *C. scrophulariae* Capieux on the Continent. I find he has failed to grasp the purport of what I said and has muddled up the challenge and my recent notes on which I admitted Dr Cockayne's differentiation of Durand's *scrophulariae* from *lychnitis*. He

also puts forward some rather extraordinary ideas. He now says that he cannot immediately produce the proof asked for, and seeks to screen this by issuing a challenge to me to disprove the claims of his mentor Boursin.

To challenge any one to prove that a species they are setting up is in fact distinct from previously described species is reasonable, to challenge a doubter to disprove these assertions is unreasonable, to challenge a doubter after he has plainly stated that his doubts have been removed is absurd.

Mr Wiltshire proceeds to say that he finds my arguments far-fetched and this I can well understand. But when he says that he finds I argue " That since British Entomologists are probably wrong in having thought *scrophulariae* occurs in Britain, therefore Continental Entomologists are wrong in believing it exists in Europe," I begin to wonder what his ideas can be. Such an idea is obviously absurd and is tantamount to denying the existence of all non-British European species. Mr Wiltshire can safely claim the idea as being entirely his own.

He further accuses me of saying that he stated that the larval distinction was the only one really. Surely he is aware that unless it can be proved that Boursin's larva is beyond doubt Capieux's larva, Boursin's species cannot be *scrophulariae*. In fact, I cannot find that Mr Wiltshire has made any contribution to the discussion beyond saying that the genitalia test is not very satisfactory and referring to Boursin and other persons, who he thinks can make up for his lack of personal experience, which last he does gracefully admit. It is clear from what he has now told us, that at the time he suggested that South had differentiated *scrophulariae* from its near neighbours, by " season " he was aware, or at least now claims to have been aware of definite points of distinction as regards *scrophulariae* and that since South was a capable entomologist, he could not have had *scrophulariae* or he would have seen the differences and distinguished the species in the normal way without recourse to such an unsatisfactory and questionable method as " season."

So when Mr Wiltshire used this supposed instance of differentiation by season to prop his phenological classification idea, he knew it was false. Dr Cockayne has now produced the information, which has so long been denied to us.

This resulted from his own examination of Durand-supplied material. He did not find that the points relied upon by Durand, i.e., ground colour of larva, time of appearance, foodplant, etc., were conclusive, and this he has confirmed to me (*in litt.*) adding that he does not pretend to distinguish the perfect insects.

I appreciate that Mr Wiltshire depends upon Boursin, and Dr Cockayne selected Durand, but Mr Wiltshire himself referred the matter to Dr Cockayne, and I do not expect that when in due course he produces his proof it will add much to what we already know.

COLLECTING NOTES.

EARLY APPEARANCES—1943.—During this remarkably mild Spring the following " early dates " for mid-Norfolk may be of interest:—January 29, *Nymphalis io* flying in the garden.

March 12, *Aglais urticae*; 23, *Gonepteryx rhamni*.

April 2, *Pieris rapae*; 4, *Xylocampa areola*; 16, *Euchloë cardamines*; 29, *Xanthorhoë fluctuata*.

May 5, *Bapta bimaculata*; 7, *Pararge megera*; 14, *Callimorpha jacobaeae*; 16, *Vanessa cardui* and *Plusia gamma*; 18, *Heodes phlaeas*; 23, *Plusia chrysitis*; 24, *Phlogophora meticulosa*; 26, *Polyommatus icarus* and *Euproctis similis*; 27, *Spilosoma lubricipeda*.

June 5, *Spilosoma lutea*; 6, *Procus strigilis*, var. *aethiops*; 9, *Augiades sylvanus* (*Ochlodes venata*), *Plusia festucae* and *Hepialus humuli*; 13, *Maniola jurtina*.

A feature of the season has been the preponderance of males over females of *E. cardamines*. There has also been an unusual abundance of *P. gamma*.—A. H. TURNER (F.R.E.S.), Astrantia, Wendling, Norfolk (14.vi.43).

PSEUDOPANTHERA (VENILIA) MACULATA.—On 19th May last I caught, in the New Forest, an interesting aberration of this species, with melanic characteristics.

Upperside.—The *forewings* are of a dull bronzy yellow and immaculate, with the exception of several very faint light yellow pin-point spots in the central area of each wing. The fringes are dark except in two small places, where it is light yellow. The *hindwings* are deep black with a bronzy tinge in the inner margins and two faint small light yellow spots in the costal area. Fringes are black with several light yellow portions at the bases. Head and body black.

Underside.—Forewings—The costal area is bronzy dusky yellow, and the remaining three-fourths of the wings are deep black except for several very small light yellow spots. Fringes black with several small light yellow areas. *Hindwings*—Bronzy dark yellow immaculate, except for two tiny light yellow spots in central area. Fringes at base variegated with light yellow small areas. Body black with minute light yellow dividing segmental lines.

The insect is a female and was taken with others of the same species on the wing. This species has been more in evidence this season, although not in the great abundance that used to occur in all districts years ago. It is interesting to note that the colour markings are reversed on the upper and undersides.—S. G. CASTLE RUSSELL, Springetts, Highcliffe.

ARGYNNIS PAPHIA, LIN.—AN EXPERIMENT IN BREEDING FROM A MELANIC FEMALE.—In July 1942 Colonel V. R. Burkhardt caught an almost entirely black female of this species in the New Forest. It was taken in copulation with a typical male, and was in freshly emerged condition, except for a damaged forewing, apparently the result of an attack by a bird. We decided to obtain ova from the insect, and she obliged by laying some 200 eggs, many of which were infertile. Ultimately, in February 1943, 28 larvae were found to have survived hiber-

nation, and these in due course fed up and pupated. The resultant imagines were as follows:—

Typical males	10
Typical females	8
Valezina females	5
Died in pupae	5
	28

As will be noted, no melanic examples were produced, but it is interesting that as many as five *valezina* females emerged. It is possible that the melanic specimens of *valezina* females that are occasionally taken in the Forest may have emanated from a melanic form of the typical female.

I could not induce any of the perfect insects to pair and after keeping them for a week allowed them their liberty.—S. G. Castle Russell.

[The obvious explanation is that the male carried the dominant sex-limited gene for *valezina*. His suggestion is not tenable.—E.A.C.]

Birds Attacking Vanessa Larvae.—Recently in this district there have been very large numbers of larvae of *Aglais urticae* and *Nymphalis io*. Almost every nettle patch contained nests. During the early Spring the imagines of both species were in much larger numbers than usual, and far more were to be seen than in the previous Autumn. I collected several nests of *A. urticae* but found that practically all the resultant pupae were dead, due to a disease. As the larvae were collected when newly hatched, ichneumons had very little chance to get at them, but some had evidently been successful in depositing ova in the larvae, as I found a small number in the cages.

I visited daily many of the large number of nests in the near vicinity but found that after attaining a certain size they disappeared. The same thing happened in the case of the larvae of *N. io*, which were even more numerous than the *A. urticae*. From the fact that a blackbird had attended me during the times I changed the foodplant of the larvae of *A. urticae* I was rearing and picking up (often at my feet) stray larvae that fell from the foodplant. I suspected that birds were the cause of the disappearance of the larva from the nettle patches, and this was the case as I saw sparrows perching on the nettle stems and eating *io* larvae rapidly. The consequence is that nearly all the numerous nests disappeared after the larvae had attained sufficient size to be conspicuous. The blackbird I have mentioned used to fill his beak with a number of larvae and then fly off to his nest. After a time he brought his mate, and ultimately a small family of two young ones. A very ragged robin also found out that the larvae were useful for feeding his young. There seems to be no doubt that birds are responsible for the scarcity of Lepidoptera as compared with past years, to a large degree. The mild winters and the " Preservation of Wild Birds Act " have tended to produce large numbers of birds, especially in suburban areas, where they are encouraged by being fed. In the wild parts possibly larvae have a better chance of survival as the birds are not so numerous.—S. G. Castle Russell.

CYNTHIA HAMPSTEDIENSIS.—In his able note Mr T. Bainbrigge Fletcher, with his obviously intimate knowledge of the above butterfly and its native haunts, barely seems to give Mr Hudson sufficient credit for being the first to point out what " Albin's Hampstead Eye " really was. He admits the correctness of the attribution, but had never made the interesting suggestion. After all he asks us to accept his " ipse dixit," against that of Petiver, that Albin never caught the butterfly alive at Hampstead. The Acting Editor pointed out that it might have come from some Dutch produce. There appears to be no *prima facie* reason, biological or otherwise, why, in the days of sail, it might not have come to London with a package of tulips in the egg state; as in Albin's time both we and the Dutch were great competitors in these flowers. (See *Jacob on Tulips*, 1912, p. 4.) Albin himself produced a book (1720) on English insects which was re-issued several times and 26 years after his death, up to 1749. Mr Allan calls him " the best entomologist of his day, a close and careful observer " (*A Moth Hunter's Gossip*, p. 291), and he figures in the D.N.B. (*Dict. of National Biog.*) as a naturalist and teacher of water colour.—(Captain) A. F. L. BACON, M.A., Barrister-at-Law, Burghcleve, Hants.

P.S.—In explanation of my reference to biological possibility above (Mr Fletcher may of course be able to show the impossibility), but if *P. villida* is a hibernator in any stage (apart from the old dormant egg theory), could not an imago from (say) the Chagos Is. have come viâ the Cape—when in Dutch hands as a watering station for Dutch merchantmen on passage from the E. Indies—and laid eggs on shipboard, which might have produced the imago caught at Hampstead, even though the date was before the clipper age?—A. F. L. BACON.

[In 1730-4-8 Albin published a work on British Birds with coloured plates; and in 1736 " A Natural History of Spiders," of which work I possess a copy. I also have a set of coloured drawings, prepared by Albin, presumably for a projected work on exotic butterflies. This last comprises over 80 figures on 26 plates signed " E. Albin." In addition, there are 2 proof sheets of a " Nat. Hist. of English Insects."—HY. J. T.]

CELERIO LIVORNICA AND HELIOTHIS PELTIGERA AT CLEVEDON.—Despite persistent and gusty winds, frequent showers or drizzle, and a low temperature, my son and I each netted two *Celerio livornica* during the beginning of June, following the capture of the first specimen on 31st May, already noted in the current volume of the *Ent. Record*, on page 68. Altogether we observed, or captured, twelve examples between 30th May and 9th June when, apparently, the " invasion " ceased as we saw no more after that date. Perhaps a record of the appearances of this migrant here may be of interest: 30th May, two seen; 31st May, one netted and another observed; 5th June, two captured and another seen; 6th June, only one seen; 9th June, two netted and another seen. Of the five specimens secured only one is a male. The earliest time they appeared in the evening was at 8.40 p.m. (G.M.T.), and usually none were seen after about 9.15 p.m., but one was observed by my son as late as 9.45, on 9th June. All were taken hovering over Valerian except one which, after visiting the Valerian, was netted from a large plant of

Salvia in bloom. The only male has a wing span appreciably less than the average female, but one of the latter is almost as small. The specimens seen, but not captured, were all full-sized and probably females, so it would almost appear that the female is the commoner. The male captured was much more erratic in his flight than any of the females, and only hovered for a second or two at each blossom; and when moving to a fresh flower zig-zagged nervously and rapidly around the plant before taking another hasty sip of the nectar. Besides our own records I was also informed of the capture at Clevedon, during the same period, of still another specimen which was found resting on a grass bank by the side of a path in the captor's garden.

Whilst on the watch for *livornica* my son was fortunate enough to capture two lovely examples of *Heliothis peltigera*, also off the Valerian, on 10th and 11th June. These were both netted early in the evening when it was still very light.—J. F. Bird, Redclyffe, Walton Park, Clevedon, Somerset, 30/6/43.

Rhyacia simulans in Somerset.—Hitherto *Rhyacia simulans* has not been recorded as having been taken in Somerset, so I think it is worth noting that I netted a specimen on 28th June off Valerian in my garden at dusk.—Ibid.

CURRENT NOTES.

By the kindness of Dr Kettlewell, and the permission of the S. London Entomological and Nat. Hist. Society, we are able to publish the three beautiful plates, two of which Messrs P. Siviter-Smith of Birmingham prepared by the four-colour process.

Part IV of Vol. XVIII (1942) of the Spanish Entomological Journal *Eas* has recently reached us, consisting of pp. 243-392, comprising six memoirs with 6 plates and some text-figures. Dr Karl Jordan describes and figures 4 new bat-fleas from the B.M. collection. There are articles on Hymenoptera, Coleoptera from Tripolitania, with 2 plates, and Orthoptera from the Oxford expedition to Sarawak. The article of most general interest, perhaps, is that by R. Agenjo on *Arctia villica*, L., describing and figuring in b and w numerous varieties and local forms, eleven of which are new.

An extraordinary mass-movement of *Celerio livornica* is being recorded, and the species is actually noted as common in Cornwall, where one observer had counted 200 by the 19th June. It is also said to have been common in Belfast, and ova have been obtained at Trowbridge. A number have been reported from Torquay and one taken as far north as York. Capt. Dannreuther is anxious to get all the records and he asks if any are bred for reports of all details of the life-history with conditions of temperature, foodplant, etc., etc.

Articles and Notes (Current as well as Collecting) are needed for the Autumn numbers of the Magazine.

Correction.—On page 70, line 18 from top, read " 80 " in place of " 70."

OBITUARY.

H. Worsley Wood died in Addenbrooke's Hospital, Cambridge, on 28th April 1943, after an illness of several months' duration. Born in Hammersmith on 10th September 1878, he was educated at the Godolphin School there. He served in the Great War from 1916 to 1919, and attained the rank of Sergeant, having refused to accept a commission.

Wood was a good field naturalist and was particularly interested in the genus *Xanthia*, on which he wrote a valuable and comprehensive paper dealing with all the Palaearctic species (*Ent. Month. Mag.*, 1915, **51**, 151, 185). Before the discovery of *X. ocellaris* in large numbers in Suffolk he supplied most of the British collections with specimens, which he bred from females taken near Shepperton in the Thames Valley. He was very skilful in breeding all the British species and succeeded in hybridizing *X. ocellaris* and *X. icteritia* (*fulvago*). He was also successful in capturing and breeding the pale yellow form of *Brephos parthenias*, which he named ab. *flava*. It is to be regretted that he made so few contributions to Entomological literature, and that so much of his knowledge is now lost.

He was an active member of the City of London Entomological Society, and after the amalgamation acted as Curator of the London Natural History Society. Later he served on the Council of the South London Society, and was a regular attendant at its meetings. After he went to live in Cambridge he still came to London frequently to see his old friends at the Society meetings and the Verrall Supper. As time passed, his visits became more and more irregular, but he became the centre of an enthusiastic group of undergraduates, many of whom are now well known for their contributions to Entomology. *Metachrostis impar*, supposed by some to be extinct, became his chief Entomological interest in Cambridge, and he found it in small numbers every year, amassing a magnificent series of all its forms for himself and supplying many of his friends.

Wood had great ability and was a most interesting and amusing companion, and he will be missed greatly by all who had the pleasure of meeting him and still more by those who had the privilege of collecting with him.—E. A. C.

Fig. 294e, f, *l.c.*, p. 23, are said by Wernebg., *Beitr.*, II, to be *chi*, a red aberration and not an ab. of *megacephala* as the figs. 294a, b, c, d on the same plate are labelled by the authors.

Hb., *Samml. Noct.*, 49 (1800-3), gave a good figure with some marking rather larger and darker than in our normal British examples. *Text*, p. 172.

Dup., *Hist. Nat.*, VI, 422, plt. 99, f. 4 (1826), gave an excellent figure of *chi*.

Guen., *Hist. Nat.*, VI, 35 (1852), referred to Engr. 354a-f. He had not seen the *olivacea*, Steph., *Ill.*, III, 325.

Stdgr., *Cat.*, IIIed., 180 (1901), recognized the forms *olivacea*, Steph., and *subcaerulea*, Graes.

Splr., *Schm. Eur.*, I, 202, plt. 38, 25 (1905), gave a figure and considered the forms ab. *suffusa*, Rbsn., ab. *nigrescens*, Tutt, and *olivacea*, Steph.

South, *Moth. Br. Is.*, I, 286, plt. 138, figs. 2, 3, 4, 5 (1907), gave four very good figures. 2 and 3, ♂ and ♀ typical English forms; 4 and 5, the greenish-grey *olivacea*, Steph.

Warr.-Stz., *Pal. Noct.*, III, 138 (1910), gave six good figures, plts. 33i, 34a, ♂ and ♀ *chi*, ♂ and ♀ *olivacea*, Steph., and ♂ and ♀ *langei*, Harrison. They treated also of the forms *subcaerulea*, Graes., ab. *suffusa*, Robs., and *nigrescens*, Tutt.

Culot, *N. et G.*, I (1), 189, plt. 34, f. 15-16 (1913), gave two excellent figures, 15 typical pale *chi*, and the dark form *olivacea*.

Draudt-Stz., *Pal. Noct. Supp.*, III, 144, plt. 18e (1934), gave a good figure of *subcaerulea*, Graes., and referred to four fresh names. He considered that *marsicana*, Dnhl., is the same as *diluta*, Hrtg.

Of the Variation Barrett said:

Extremely variable in the ground colour from pure clear white to every shade of paler and darker slate-grey, smoky-grey, and even grey-black. Occasionally in the whitest examples the markings are indistinct and partially suppressed and in the darkest they are at times much obscured, but as a rule the markings are very constant. With regard however to the intermediate white lines or stripes with which the usual transverse lines are embellished there is great and marked variation; often in the various shades of grey, these remain conspicuously white, so that the slate-grey, or smoky-grey surface is broken up and beautifully set off, and in more black-grey examples this results in producing remarkably handsome specimens; but quite as frequently these lines share the general suffusion of grey-light, slate, smoky and blackened—producing a smooth uniform or even gloomy appearance—which even the dark markings scarcely relieve. Intermediates are of course found.

He reported a specimen "♂ black-grey to the subterminal line which is brightly white, with its edging of black arrowheads also sharply defined."

Another "smoothly and regularly blackish slate-colour," cf. *psi*.

In all cases the thorax agrees with the forewings, but the hindwings, though sometimes darkened, are by no means always so.

Another "yellowish-grey or brownish-grey, but in this form the white lines are seldom distinct."

Barrett, *l.c.*, plt. 170, gave nine figures, 1 and 1a, the ordinary grey ♂ and ♀ familiar to us in the South of England; 1b, a very dark brown form with markings suppressed except the whitish transverse lines usual to the Noctuae; 1c, a dark form in which the lighter mottling has a slight olive tinge; 1d, a dusky-brown form with the usual transverse lines emphasized white as are the two stigmata; 1e, has ground similar to the last, with blackish markings, a white submarginal line, a partially white reniform stigma and hindwings light cream colour with three large dark marginal blotches; 1f, is a light black form with very black marginal area and very dark hindwings; 1g, is a very beautiful light grey form with a slight tendency to yellow, 1h, is the form *olivacea*, very dark with a dark olive suffusion.

The Names and Forms to be considered are:

chi, L. (1758), *Syst. Nat.*; Xed., 514.
olivacea, Steph. (1829), *Ill.*, III, 325.
f. *subcaerulea*, Graes. (1888), *Berlin. E. Zeit.*, 329.
ab. *suffusa*, Robs. (1891), *Ent. Rec.*, II, 84.
ab. *nigrescens*, Tutt (1892), *Brit. Noct.*, III, 43.
ab. *langei*, Harrison (1907), *Ent. Record*, XIX, 277.
ab. *albofasciata*, Kief. (1912), *Ent. Rund.*, 70.
ab. *caerulescens*, Hartig (1924), *Ent. Rund.*, XLI, 46.
[ab. *caerulescens*, Dnhl. (1926), *Ent. Zeits.*, XXXIX, 100.] Syn.
r. *diluta*, Hrtig. (1926), *Studi. Trentini*, VI, 6 [Drdt.-Stz., *Pal. Noct. Supp.*, III, 144].
[r. *marsicana*, Dnhl. (1929), *Mitt. Münch*, XXX, 112.] Syn.

Tutt dealt with (1) the typical *chi*, L.; (2) the form *olivacea*, Steph.; (3) the ab. *suffusa*, Robs.; and (4) the ab. *nigrescens*.

No one has recorded a red form such as the figure in Ernst & Engram., fig. 294.

f. *subcaerulea*, Graes., *Berl. Ent. Zeit.* (1888), 329.

Orig. Descrip.—" The ground of the forewing is a moderately dark blue-grey, which in the disc is darkened blackish; the stigmata and transverse lines are not filled up with whitish as in the typical form, but are not paler than the ground colour. The hindwings, especially in the females, are darker grey than in typical *chi* and the var. *olivacea*, Steph."

A very constant form.

ab. *langei*, Harrison, *Ent. Record*, XIX, 277 (1907).

Orig. Descrip.—" The markings follow those of ab. *olivacea*, except that the subterminal white line is much reduced and tends to disappear, and the black praesubterminal wedges are either obsolete or at most merely indicated. The cilia are not conspicuously barred as in *olivacea*, but are almost uniformly black. The ground colour of the wings is a rather dark slate colour. The underside of the forewings instead of having only the costa black and the subterminal line shown as in *olivacea*, is wholly black with the merest indication of the line. The hindwings are like those of *olivacea* except that the cilia have a black line on them which *olivacea* is nearly always without. The underside of the hindwings is just a little darker than that of *olivacea*. The thorax in-

stead of being powdered with yellow-green scales as in *olivacea*, is powdered with scales of the same colour as the ground colour of the forewing. The abdomen is so much darker than that of *olivacea* as to appear nearly black." Northumberland, Durham, and York.

ab. *albofasciata*, Kief., *Ent. Rund.*, XXIX, 70 (1912).

Fig.—*l.c.*

Orig. Descrip.—" Upperside of forewing dark grey with a distinct moderately wide and light grey irregular band. The outer margins of the inside of the band are lined with deep black. The rest of the marking of the forewing near the base are very obsolescent. Hindwing and undersides of all the wings are as in the typical form. A female, distinctly smaller than a typical form." Ennstale, S. Tyrol.

ab. *caerulescens*, Hrtg., *Ent. Rund.*, XLI, 46 (1924).

Orig. Descrip.—" The ground colour of the forewing dark blue-grey, much bluer and darker than in the typical form. The marking in the ♂ indistinct to obsolescence. Hindwings in the ♂ whitish, in the ♀ blue-black." S. Tyrol, Klobenstein.

[ab. *caerulescens*, Dnhl., *Ent. Zeits.*, XXXIX, 160 (1926).

Orig. Descrip.—The author called the " dark examples " taken about the middle heights of the mountains of the South Tyrol by this name, and it appears to be a duplication of the above form.]

r. *diluta*, Hrtg., *Studi. Trentini*, VI, 6 (1926) [Drdt.-Stz., *Supp.*, III, 144].

Descrip.—Drdt., " Is a very clear white local race in which the markings are delicate pale grey, and only the X-shape mark posterior to the claviform stigma is deep black. Hindwings pure silvery-white." N and Central Italy.

r. *marsicana*, Dnhl., *Mittl. Münch*, XIX, 112 (1929).

Orig. Descrip.—" The marking is wholly in a delicate pale grey. Only the X-shaped streak under the cell is quite black-grey, as are usually the two small streak-like marks in the outer transverse lines on vein III (1) and III (2). The fringes of the forewings white, wholly checquered by quite fine pale grey rings. The hindwing pure silvery-white. ♀, darker hindwings, a waved whitish band extends from the inner angle to the middle of the costa." Abruzzi.

Draudt treats this as the *diluta*, Hrtg.

Polia, Ochs. & Tr. (1816-25), most authors. [*Antitype*, Hb. (1821). Hamps., Warr-Stz., Drdt.-Stz.] *nigrocincta*, Tr. (1825), *xanthomista*, Hb. (1818-22).

Tutt, *Brit. Noct.*, III, 44 (1892): Meyr., *Hand.*, 54 (1895): Barr., *Lep. Br. Is.*, IV, 300, plt. 168, 2 (1897): Stdgr., *Cat.*, IIIed., 179 (1901): Splr., *Schm. Eur.*, I, 202, plt. 38, 21 (1905): Lep., *Phal.*, VI, 369 (1906): South, *Moths Br. Is.*, I, 287, plt. 140, 2-3 (1907): Warr.-Stz., *Pal. Noct.*, III, 137, plt. 33h, i (1910): Culot, *N. et G.*, I (1), 187, plt. 34, f. 9-10 (1913): Meyr., *Rev. Hand.*, 134 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 144, plt. 18e (1934).

Hb., *Samml. Noct.*, 647 (1818-22), gave an excellent figure. Fig. 640, *xanthocyanea*, Hb., *l.c.*, has been cited for this species, but it is a *Harmodia* species. (See Warr.-Stz.)

Tr., *Schm.*, V, 31 (1825). Treit. discussed this species under the name *nigrocincta* (1825) at length and compared it with *polyzona*, Esp., *polymita*, Linn., *monocroma*, Esp., etc., and figures in Ernst & Engram.

Freyer, *Beitr.*, III, 139, plt. 137, 1-2 (1830), gave a good figure of *nigrocincta* ♂, on the light side, and ♀ smaller and with dark, almost black, hindwings. He considered the figures of *xanthocyanea*, Hb., 640, 641, as ♂ and ♀ of this species in addition to 647 *xanthomista*.

Freyer, *Neu. Beitr.*, II, 70, 243 (1839), gave a fairly good figure of *nigrocincta*, but the hindwings are much too dark. He considered the *xanthomista* and *xanthocyanea* of Hb. as this species.

Dup., *Hist. Nat. Supp.*, III, 257, plt. 24, 4 (1836), gave a very dark figure of a ♀, but said it was a ♂, as *nigrocincta*, with *xanthomista*, Hb., as a var. (*Cat.*, 1844).

H.-S., *Sys. Bearb.*, II, 260, f. 482 (1850), gave a good figure of *nigrocincta*. He said that Hb., fig. 647, had forewings too broad and stumpy, the figures in Frr., *Beitr.*, plt. 137, 2, were too rough.

Guen., *Hist. Nat.*, VI, 37 (1852), took *xanthomista* as a var. of this species.

Barrett, *l.c.*, plt. 168, gave two figures described as "pale grey, almost lustrous or mottled with bluish-grey," which they are not. Both figures are yellowish-green, grey, black, red, brown, etc., mottling and markings.

Stdgr., *Cat.*, IIIed., 179 (1901), treated *nigrocincta*, Dup., as a syn. (valde flavo conspersis), and dealt with the forms *nigrocincta*, Tr., and *nivescens*, Stdgr. = *nigrocincta*, H.-S. (multo pallidior, al. ant. albicant. nigro-flagoque irroratis, forma terrae calcar.).

Splr., *Schm. Eur.*, I, 202, plt. 38, 21 (1905), gave a good figure, but rather too yellow.

South, *M.B.I.*, I, plt. 140, f. 2-3 (1907), gave two excellent figures of the British form *nigrocincta*.

Warr.-Stz., *Pal. Noct.*, III, 137 (1910), gave seven good figs., plt. 33h, i, ♂ and ♀ *xanthomista*, Hb., ♂ and ♀ *nigrocincta*, Tr., *nivescens*, Stdgr., and ♂ and ♀ *statices*, Greg.

Hofm. says, *Schm. Stierm.*, II, 432, "I am not in error, when I assert, all the *canescens*, Dup., which are found in the Staudinger collection and those of Stiermark origin (Speyer, II, 140), are no other than our *xanthomista styriaca*."

Culot, N. et G., I (1), 187, plt. 4, f. 9-10 (1913), gave two excellent figures, the typical form, and ab. *nigrocincta*, the dark more uniformly grey form. He dealt also with the Swiss form *nivescens*, Stdgr.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 144 (1934), included two more forms, *styriaca*, Hoffm., from Styria, and ab. *nivea*, Dnhl., from the Abruzzi (plt. 18e).

Barrett described the Variation:

Usually only very slightly variable in the depth of colour of the dark grey mottling and orange-yellow dots or shading.

He reported one specimen "in which the shading is developed into strong orange lines and suffusion."

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. Turner, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—Eds.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr Hy. J. Turner, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris,* and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham. 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Duplicates.—Foreign Lepidoptera, e.g. Papilios, *cloanthus, aeacus, sarpedon, protenor, agetes, alcinous, demetrius, polyctor, mayo, bianor, paris.* Full list sent. *Wanted.*—Palaearctic *H. phlaeas* (with data) particularly from N. America, Scandinavia, Asia, China, India, Madeira, Africa; also other species of Chrysophanids.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

Book Wanted.—Barret, *British Lepidoptera*, Vol. 3.—*L. E. Savage, 65 Cranmer Avenue, Hove 4, Sussex.*

Books Wanted.—Culot, *Noctuae and Geometrae.—A. J. Wightman, "Aurago," Pulborough, Sx.*

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. Thursdays, August 12; September 8; 6 for 6.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Communications Promised:—H. A. Leeds, E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, Dr Kettlewell (plates), P. M. B. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, Rev. Desmond Murray (plate), H. Donisthorpe, Prof. J. W. Harrison, etc.

All Communications should be addressed to the Acting Editor, Hy. J. TURNER, "Latemar," 25 West Drive, Cheam.

Printed by T. Buncle & Co., Ltd., Arbroath.

Vol. LV.

No. 9.

SEPTEMBER 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

SUBSTITUTE FOOD-PLANTS.

(With a Table of Preference-Groups.)

By E. P. Wiltshire, F.R.E.S.

Previous contributions to the *Entomologist's Record* under this title have appeared in 1942 (Vol. liv) on pp. 63, 107, 122, and 1943 (Vol. lv) on p. 1. It appears, however, desirable, at this point in this interesting discussion, to review the phenomenon, from the systematic and ecological point of view, more broadly, first deciding what is the point at issue. The drawing of conclusions from the completed review will not mean, however, that the last word will thereby have been said.

The subject of these discussions has been consistently described as "substitute food-plants"; but some disagreement has arisen in explaining the phenomenon referred to by this rather ambiguous expression. In answer to the implied question: "Why do larvae have substitute food-plants?" two explanations have been offered: (a) "The common associated evolution of insect and plant"; (b) "Chemotropism is involved: probably all the species of plant within a family (not merely a genus) have a scent which contains a common element."

The propounder of the second of these explanations has also introduced the theory of the existence of intra-specific races or strains preferring one or another of the alternative food-plants. This makes it clear that he is more interested in the question: "Why do individual larvae of a species prefer one or another of the alternative food-plants of its species?" than in the question: "Why do the larvae of a species prefer a certain group of food-plants to the exclusion of other food-plants?" on which the theory of specializing strains has no bearing. If debaters are trying to answer different questions, disagreement in their replies is not to be wondered at.

To avoid any further confusion, therefore, it must at the outset be stated that the problem here discussed is, when formulated as a question: "Why do non-polyphagous larvae prefer certain groups of food-plants to the exclusion of others?" and that the recorded food-plants of the species as a whole over its entire range are under consideration rather than the observed food-plants of an individual larva or strain in one locality.

Our subject thus defined, there need be no further place in this article for the irrelevant theory of intra-specific specializing strains referred to above, except to remark that it incidentally provides an attractive hypothesis of the way in which a new species might evolve, e.g., *Cucullia scrophulariae*, Cap., evolving from the ancestor of *Cucullia verbasci*, L., owing to a racial specialization, in one habitat, on *scrophularia*. (If the records of *scrophulariae* feeding occasionally on *verbascum* are correct, this would be a not unnatural reversion to ancestral type, perhaps due to stress of circumstances.)

While there are polyphagous larvae at one end of the scale and strictly monophagous larvae at the other, our present review is only concerned with an intermediate class of larva closer to monophagy than polyphagy, for which the term "oligophagous" may be coined. We can exclude from this review the polyphagous larvae because they show comparatively little preference, and a tabulation of their recorded food-plants would require a life-time's research and a volume of close print;

and we can also exclude the strictly monophagous larvae, because there is no question, in their case, of any "substitute food-plant." It will, however, later appear that the excluded monophagous larvae shed no little collateral light on our subject. It is doubtful whether a satisfactory boundary-line can be drawn between polyphagous and other larvae, for there seem to be all degrees of transition to polyphagy; nevertheless, for the present purpose it is necessary to select an oligaphagous class of larvae, although in other contexts this selection may have little reason for existence.

This selection has been made from the British Macro-Lepidoptera list, plus some other Palaearctic Lepidoptera with which I have become acquainted in the Middle East. Most of this multitude of species fails to qualify as oligophagous. For the determination of their food-plants, reference has been made to South, Blaschke, and my own records.

If we now tabulate the food-plants of these larvae, we find that they fall into well-defined groups of plant-genera. These groups, moreover, in most cases correspond with systematic groups.

TABLE OF GROUPS OF FOOD-PLANT GENERA PREFERRED* BY OLIGOPHAGOUS LARVAE.

A. *GROUPS CORRESPONDING WITH BOTANICAL SYSTEMATIC AFFINITIES.*

I. *PRUNUS* GROUP.

ROSACEAE: 1, *Prunus*; 2, *Amygdalus*; 3, *Pyrus*; 4, *Crataegus*.
Eriogaster amygdali, Wilts., 1, 2, 4; *Cilix glaucata*, 1, 4; *Diloba caeruleocephala*, 1, 2, 3, 4; *Meganephria oxyacanthae*, 1, 4; *Meganephria renalis*, Wilts., 1, 2, 4; *Epitherina rhodopoleos*, Wehrli, 1, 2, 4; *Nychiodes* genus, 1, 2, 4.

II. *BETULA* GROUP.

BETULACEAE: 5, *Betula*; 6, *Alnus*; 7, *Corylus*.
Notodonta dromedarius, 5, 6, 7.

III. *POPULUS* GROUP.

SALICACEAE: 8, *Populus*; 9, *Salix*.
Dicranura vinula; *Cerura syra*; *Pygaera pigra*; *Marumba populi*; *Eusphecia pimptaeformis*, Ob.; *Trochilium crabroniformis*; *Catocala nupta*, *elocata*, *puerpera* and *lesbia*; all on 8 and 9.

IV. *PISTACCIA* GROUP.

ANACARDIACEAE: 10, *Rhus*; 11, *Pistaccia*.
Anua tirhaca; *Eutelia adulatrix*; both on 10 and 11.

V. *NERIUM* GROUP.

APOCYNACEAE: 12, *Vinca*; 13, *Nerium*.
Deilephila nerii, 12, 13.

VI. *VERBASCUM* GROUP.

SCROPHULARIACEAE: 14, *Verbascum*; 15, *Scrophularia*.
Melitaea trivia; *Cucullia verbasci*; both on 14 and 15.

VII. *GENISTA* GROUP.

PAPILIONACEAE: 16, *Cytisus*; 17, *Genista*; 18, *Spartium*; 19, *Ulex*; 20, *Sarothamnus*; 21, *Glycyrrhiza*; 22, Other *Papilionaceae*; 23, *Laburnum*.
Many *Lycaenidae* on 22; *Apopestes spectrum*, 18, 21; *Dasycorsa modesta* 18, 22; *Pseudoterpna pruinata*, 16, 17, 19, 23; *Fidonia limbaria*, 16, 17, 20; *Chesias spartiata*, 16, 20; *Chesias rufata*, 16, 17, 20.

VIII. *SOLANUM* GROUP.

SOLANACEAE: 24, *Solanum*; 25, *Lycium*; 26, *Datura*.
Acherontia atropos, 24, 25, 26; also recorded as eating 72.

*"Preferred" here means "Chosen to the exclusion of other plants."

IX. *PINUS* GROUP.

PINACEAE: 27, *Pinus*; 28, *Cedrus*; 29, *Abies*.
Sphinx pinastri, 27, 28; *Dendrolimus pini*, 27, 28, 29; *Thera variata* (=*obeliscata* ?), 27, 28, 29.

X. *BORAGE* GROUP.

BORAGINACEAE: 30, *Echium*; 31, *Asperugo*.
Ethmia pusiella, Roem.

XI. *CHRYSANTHEMUM* GROUP.

COMPOSITAE (This group can be split into well-defined sub-groups): 32, *Crepis*; 33, *Lactuca*; 34, *Leontodon*; 35, *Sonchus*; 36, *Hieracium*; 37, *Onopordon*; 38, *Cichorium*; 39, *Eupatorium*.

Polia serena, 32, 33, 35, 36, 39; *Cucullia umbratica*, 33, 35, 37, 38; *Polia chrysozona*, 32, 33, 34, 44.

40, *Aster*; 41, *Solidago*; 42, *Senecio*; 43, *Tussilago*.
Cucullia asteris, 40, 41; *Hipocrita jacobaeae*, 42, 43.

44, *Artemisia*; 45, *Tanacetum*; 46, *Achillea*.
Eupithecia subfulvata, 45, 46; *Eupithecia succenturiata*, 44, 45, 46.

47, *Anthemis*; 48, *Pyrethrum*; 49, *Matricaria*; 50, *Calendula*; 51, *Chrysanthemum*.
Cucullia chamomillae, 47, 48, 49; *Cucullia wredowi*, 47, 50; *Cucullia judaeorum*, 48, 50, 51.

XII. *ERICA* GROUP.

ERICACEAE: 52, *Erica*; 53, *Calluna*.
Anaria myrtilli, *Eupithecia nanata* and *goossensiata*, *Scodiona fagaria*, all on 52 and 53.

XIII. *LAMIUM* GROUP.

LABIATAE: 54, *Lamium*; 55, *Stachys*; 56, *Galeopsis*; 57, *Teucrium*; 58, *Mentha*.
Venilia maculata, 54, 55, 56, 57, 58.

XIV. *CUPRESSUS* GROUP.

CUPRESSACEAE: 59, *Cupressus*; 60, *Juniperus*.
Lithophane lapidea, 59, 60.

XV. *SILENE* GROUP.

CARYOPHYLLACEAE: 61, *Silene*; 62, *Lychnis*; 63, *Dianthus*.
Dianthoecia (*Harmodia*) genus, many sps., 61, 62, 63; *Perizoma flavofasciata*, 61, 62.

XVI. *DELPHINIUM* GROUP.

RANUNCULACEAE: 64, *Delphinium*; 65, *Aconitum*.
Plusia delphinii, 64, 65.

XVII. *ASCLEPIAS* GROUP.

ASCLEPIADACEAE: 66, *Asclepias*; 67, *Calotropis*.
Danaus chrysippus, 66, 67.

B. *GROUPS ALMOST CORRESPONDING WITH BOTANICAL SYSTEMATIC AFFINITIES.*

I. *FRAXINUS* GROUP.

OLEACEAE: 68, *Fraxinus*; 69, *Ligustrum*; 70, *Lonicera*; 71, *Syringa*; 72, *Symphoricarpus*.

Melitaea aurinia, 70, 75; *Haemorrhagia fuciformis*, 70, 72, 74, 75; *Limenitis camilla*, 69, 70; *Lobophora polycommata*, 68, 69, 70; *Hygrochroa syringaria*, 69, 70, 71, 72.

DIPSACEAE: 73, *Dipsacus*; 74, *Knautia*; 75, *Scabiosa*.
(I have excluded from this group, although it has been recorded on most of its species, *Sphinx ligustri*, on the score of its peculiar polyphagy, see Warnecke:—"Ueber die Anpassung der Raupe von *Sphinx ligustri*, L., an fremdlaendische Futterpflanzen" (*Ent. Jahrb.*, 1932).)

II. *ATRIPLEX* GROUP.

CHENOPODIACEAE: 76, *Atriplex*; 77, *Chenopodium*.

POLYGONACEAE : 78, *Rumex*.
Scotogramma trifolii, 76, 77; *Pelurga comitata*, 76, 77, 78; *Eupithecia subnotata*, 76, 77, 78.

III. *TYPHA* GROUP.

CYPERACEAE : 79, *Scirpus*; 80, *Cladium*.

SPARGANIACEAE : 81, *Sparganium*.

TYPHACEAE : 82, *Typha*.

IRIDACEAE : 83, *Iris*.
Archanara algae (*cannae*), 79, 82; *Archanara sparganii*, 79, 81, 82, 83; *Plusia festucae*, 81, 83. (This group may have to be excluded as an ecological or biotope group, see below.)

IV. *MALVA* GROUP.

MALVACEAE : 84, *Malva*; 85, *Lavatera*; 86, *Althaea*; 87, *Gossypium*.

CAESALPINEACEAE : 88, *Ceratonia*.
Earias insulana, 86, 87, 88; *Acontia malvae*, 84, 85, 86; *Acontia graellsii*, 85, 87. (These substitute food-plants have economic importance, their guests being apt to become pests on cotton, 87.)

V. *ANGELICA* GROUP.

UMBELLIFERAE : 89, *Angelica*; 90, *Cicuta*; 91, *Heracleum*; 92, *Laserpitium*; 93, *Peucedanum*; 94, *Pimpinella*; 95, *Daucus*; 96, *Anethum*; 97, *Carum*; 98, *Torilis*.

CAPRIFOLIACEAE : 99, *Sambucus*.

RUTACEAE : 100, *Ruta*; 101, *Citrus*.
Papilio machaon, 94, 95, 96, 97, 98, 100, 101; *Eupithecia albipunctata*, 89, 90, 91, 92, 93, 94, 99.

VI. *BRASSICA* GROUP.

CRUCIFERAE : 102, *Brassica*; 103, *Erysimum*; 104, *Raphanus*; 105, *Nasturtium*; 106, *Barbaraea*; 107, *Cardamine*; 108, *Sisymbrium*; 109, *Turritis*.

RESEDACEAE : 110, *Reseda*.
Pieris rapae, 102, 103, 104, 105, 110; *Pieris brassicae*, 102, 104; *Euchloë cardamines*, 105, 106, 107, 109; *Lithostege griseata*, 103, 108.

C. *GROUPS RUNNING COUNTER TO BOTANICAL SYSTEMATIC AFFINITIES.*

I. *VITIS-GALIUM* GROUP.

AMPELIDACEAE : 111, *Vitis*; 112, *Ampelopsis*.

ONAGRACEAE : 113, *Epilobium*; 114, *Fuchsia*; 115, *Circaea*.

RUBIACEAE : 116, *Galium*; 117, *Rubia*.
Celerio galii, 113, 114, 116, 117; *Hippotion celerio*, 111, 112, 114; *Pergesa elpenor*, 111, 113, 116; *Pergesa porcellus*, 113, 116; *Macroglossum stellatarum*, 116, 117; *Cidaria salicata*, 116, 117; *Cidaria basochesiata*, 116, 117; *Eustroma silaceata*, 113, 115.

II. *VIOLA* GROUP.

VIOLACEAE : 118, *Viola*.

ROSACEAE : 119, *Fragaria*.
Brenthis euphrosyne, 118, 119

III. *QUERCUS-BETULA* GROUP.

BETULACEAE : 5, *Betula*.

FAGACEAE : 120, *Quercus*.
Ephyra porata.

IV. *QUERCUS-PRUNUS* GROUP.

ROSACEAE : 1, *Prunus*.

FAGACEAE : 120, *Quercus*.
Bapta distinctata (*pictaria*).

(It will be noted that the last three groups, C. II, III, and IV, are erected on the strength of the preferences of a single species only for

each. And perhaps C. IV is incorrect, since I find no other confirmation for Blaschke's record of oak as a food-plant for the "Sloe Carpet Moth." It will also be noted that the species responsible for the systematic diversity of Group C. I are all *Sphingidae*, a systematic group of moths; they appear to display a peculiar intermediate stage of polyphagy and oligophagy.)

It may be asked why the food-plant of *Agrotis ripae* (viz., *Salsola*, *Atriplex*, *Rumex maritimus*, *Cakile*, and *Eryngium maritimum*), which are drawn from four different families, have not been included as a fifth group under C. The reason is that this group of plant species is an ecological group of halophytic character, and that *ripae* is attached to the saline biotope rather than generically to the plants (see, in this connection, Boursin: "Contribution a l'Étude des Agrotidae-Trifinae, xxi": *L'Amateur de Papillons*, 1937 or 1938). The fact that in captivity the larva will thrive on sliced carrot, especially if sprinkled with salt water, is an additional sign that, apart from its halophytic requirements, this larva is basically polyphagous.

Other examples can be given of polyphagous larvae which, by their close attachment to a certain biotope, appear to unite into a preference-group the plants typical of that biotope; we must, in the present context beware of being misled by this appearance, though these cases can be of considerable interest in themselves, and indeed the case of *ripae* is relevant to the "chemotropism" side of this discussion. Six examples of such ecological groups of food-plants are given:—

(a) Halophytic biotope (see above).
(b) Moorland biotope (*Salix*, *Vaccinium*, *Erica*, *Calluna*, *Betula*, *Genista*, etc.).
(c) European woodland biotope (*Quercus*, *Corylus*, *Ulmus*, *Crataegus*, *Prunus*, *Betula*, *Salix*, *Rubus*, etc.).
(d) Peak biotope (*Astragalus*, *Zygophyllum*, *Silene*, *Rumex*, etc.).
(e) Marsh biotope (*Carex*, *Cladium*, various *Gramineae*, *Sparganium* *Phragmites*, *Lysimachia*, *Spiraea*, *Lythrum*, *Inula*). (Group B. III above may come under this heading, and if rightly so should be removed from the table of true preference-groups.)
(f) Iraqi oasis biotope (*Tamarix*, *Populus*, *Punica*, *Prosopis*, *Zizyphus*, etc.).

Before finally proceeding to consider what light the above table sheds on the main question under discussion, there remain one or two minor incidental remarks to be made, arising out of the review now completed.

The genera *Ulmus*, *Tamarix*, *Rhamnus*, and, with the two exceptions, C. III and IV above, *Quercus*, prove to have no substitute food-plant acceptable to non-polyphagous larvae, though numbers of monophagous larvae are strictly attached to each of them. There are other similar cases of trees and plants with fewer closely attached guest-insects each.

On the main issue, does the evidence of the table support the theory that these preference-groups are primarily due to the associated evolution of plant and insect? (If so, it would not necessarily exclude an explanation in terms of scents and enzymes; for there is much truth in some of Mr Allan's remarks, and indeed I recall having heard tell of

an entomologist breeding a poplar-feeding caterpillar to maturity during the winter in London on cabbage painted with populin-solution!)

In the table, not only do the preference-groups of plants correspond closely, on the whole, to the systematic, i.e. phylogenetic, classification of plants; but the guest-insects show an answering tendency to fall also into groups corresponding to the systematic, i.e. phylogenetic classification of insects.

The latter tendency would be even more apparent had the monophagous larvae not been omitted, among whom examples of systematically closely related larvae feeding on systematically closely related plants are numerous and well-known; it is enough to mention here the *Bryophila* genus (Lichens and Algae), the *Clytie* genus (*Tamarix*) and the *Argynnis* genus (*Viola*). But even in the table the examples of a *Cucullia* group feeding on a *Chrysanthemum* group (A. X.), of a *Dianthoecia* group feeding on a *Silene group* (A. XIV.) and a *Sphingid* group feeding on the *Vitis-Galium group* (C. I.) will probably already have struck the reader as typifying this tendency.

Some species may have been omitted from the table by oversight, but their inclusion would confirm rather than affect the above tendencies revealed by the table.

A tendency of systematically related larvae to have corresponding food-plants also exists in polyphagous species (e.g. *Arctia*, *Agrotis*, etc.).

Mr Donisthorpe's example of the attachment of the *Cionus* beetle-genus to *Verbascum* and *Scrophularia* is quoted by Mr Allan as disproving the theory of "associated evolution of plant and insect "because" beetles preceded . . . flowering plants by some two hundred million years." But does it disprove it?

That beetles in general preceded flowering plants by that period may be so; but it does not necessarily follow that the genus *Cionus* preceded the genera *Verbascum* and *Scrophularia* by that period, unless Coleoptera were fully evolved in their present-day proliferation of species at the end of the Mesozoic Age and underwent no further developments during the Cainozoic. This seems improbable, but is what Mr Allan implies, if his argument is to be taken seriously. The following questions may then be asked about the implied pre-Tertiary history of the genus *Cionus*: To what plants and what ecological routine were they attached? How did they eventually adapt themselves to their present host-plants, so different from their previous hosts, without themselves evolving and changing their identity? What palaeontological evidence is there of this genus preceding the Tertiary Age by "some two hundred million years"? Will some Coleopterist or Palaeontologist give his opinion on the possibility of species and genera of beetle, now attached to flowering-plants, preceding those same plants by "some two hundred million years"?

But even if the possibility is admitted, and the evidence forthcoming, that *Cionus* existed before the origin and evolution of *Verbascum* and *Scrophularia*, does this mean that they have, only a few years ago, become attached to these plants? Can we not, on the contrary, justifiably postulate that they attached themselves to the ancestral type of these plant genera, and maintained the attachment throughout the subsequent evolution of these plants?

Mr Donisthorpe's example, therefore, supports the rest of evidence of the table in favour of the supposition that the associated evolution of plant and insect is the primary cause of the phenomenon of substitute food-plants.

The study of the mechanism whereby inherited organs and instincts operate will, of course, complicate the simple principle of inheritance. But I doubt whether the study of, say, enzymes, has led any biochemist to doubt the theory of evolution, though at times he may become so engrossed in them as not to see the wood for the trees! This, at least, appears to be the case with Mr Allan, and his upper and lower parenchymata.

I conclude by quoting part of a foot-note by Dr Amsel, which appeared in his "Grundsaetzliche Bemerkungen zur Frage der Faunenelemente" (*Zool. Jahrb. Syst. Oekolog. & Geog. Tiere Abteilung*, Band 72, Heft 1/2, Jena, 1939):—"If the larvae of *Xanthospilapteryx syringella*, F., feed on *Syringa*, *Ligustrum*, *Fraxinus*, etc., that is, on plants whose relationship to one another the systematist expresses by including them in one family, the *Oleaceae*, the caterpillars of the above Leaf-mining Moth, prove to us that a true relationship in fact exists. . . . Systematics therefore are not a working hypothesis whose aim is merely the utilitarian aim of bringing order to the study of phenomena, but, on the contrary, their purpose is to recognize and give nomenclatorial expression to actually existing relationships."

Ancestral inheritance is the only reasonable explanation of the characteristics, whether structural or ecological, common to species systematically grouped together.

Food-plant preferences, then, being merely one facet of a species' ecology, have evolved with the rest of the species' peculiarities, and when shared by related species of insect and directed towards related species and genera of plant are a sign of their common associated evolution.

TEPHRITIS SEPARATA, RDI., AN ADDITIONAL BRITISH SPECIES ALLIED TO T. CONJUNCTA, LW. (DIPTERA, TRYPETIDAE.)

By J. E. Collin, F.R.E.S.

Tephritis conjuncta, Lw., stood in Verrall's *List of British Diptera* under the genus *Euaresta*, Lw., a genus acknowledged by Loew himself to be an artificial group based solely upon the presence of radiating arms from the dark patch near tip of wing. The type of this genus was the N. American *T. festiva*, Lw., which differs from typical species of *Tephritis* not only in having the radial vein with small bristles along its upper (as well as its under) side, but also in having additional "arms" to those present in *conjuncta*, radiating to costa *before* tip of wing. Our British *conjuncta* agrees with the characters of *Tephritis* and not with this new definition of *Euaresta*, and must remain in the former genus.

In describing *conjuncta* in 1844 Loew especially mentioned the darker femora of the male compared with female and the dark hairs on anterior half of abdominal tergites. He elaborated this description in 1862, including a statement that the black ovipositor of female had pale hairs about base, and *for the first time* mentioned a variety in which the

male had entirely pale legs, and pale haired abdomen. Under these circumstances it is difficult to understand why Rondani in 1871 gave the new name *decipiens* to typical *conjuncta*, Lw., and transferred the name *conjuncta* to Loew's variety of 1862, at the same time describing two new varieties (*separata* and *divisa*) of this *conjuncta* on the strength of minor differences in wing markings. It is also surprising that Hendel in Lindner's " Die Fliegen " followed Rondani in the case of the name *conjuncta*, Lw. This application of the name cannot possibly be justified by the facts, and must be abandoned. The name *conjuncta* will have to be used for Loew's original species of 1844 and his variety of 1862 may well be known as *separata*, Rdi.

Hendel further maintained that *decipiens*, Rdi. (i.e., true *conjuncta*, Lw.) must be known as *neesii*, Mg. (which he incorrectly spelt " *Nesii* "). *T. neesii* was a MS. name under which Wiedemann sent a single specimen to Meigen, who considered it to be a variety of *leontodontis* (v. *Syst. Beschr.*, vi, p. 382). Hendel does not seem to have seen this specimen, but Becker reported in 1902 that he had examined it and found it to be *fallax*, Lw.: moreover, Becker in the same year found two more specimens of *fallax*, Lw., under the name **nesii* in v. Roser's Collection, and stated that they agreed with Loew's description and figure of *fallax*. Becker was therefore well aware of the distinctions between these two species, *conjuncta* and *fallax*, and it seems so improbable that he was incorrect in his identification of Wiedemann's specimen, that the name *neesii* should not be used in place of *conjuncta*, Lw., without further proof.

We have two closely allied but distinct species in Britain, one of which is Loew's original *conjuncta*, having abdominal pubescence in the male often partly brownish or even blackish, especially when viewed from the side or behind, while the femora (especially front pair) and often some tibiae and the third antennal segment of male are darkened. The more yellow-legged females are distinguished by having the entirely black ovipositor with coarse whitish hairs about base.

In the second species (*separata*, Rdi.), the head, antennae and femora of male are yellow, and abdominal pubescence all whitish, only the bristles on hind margin of last tergite being black, while hairs on female ovipositor (which has narrow tawny-brown side margins) are shorter, finer, and more numerous than in *conjuncta*, and those about base and basal side-margins even if pale are not *coarse* and whitish. These females (except for wing markings resembling those of *conjuncta*) are more like *leontodontis* females except that in this latter species the ovipositor is much more extensively tawny at sides, and its pubescence *not so dense*. In the wings there is a distinct tendency for a dark patch to be developed at end of anal vein.

At present I have seen only two British pairs of *T. separata* taken by myself at Barton Mills (Suffolk) in September 1937 and 1938. It may be more common in the South. These four specimens, together with a number of *conjuncta* and a very few *leontodontis*, were swept from Bracken. I had not previously seen *leontodontis* from England, but in wing markings and the extensively tawny female ovipositor these Barton Mills specimens resemble Scottish *leontodontis*, and to that extent differ

*Though spelt with only one "e" by v. Roser, the name was evidently intended to represent Meigen's species.

from both *conjuncta* and *separata*, for though *separata* wing markings show some approach towards those of *leontodontis* they are appreciably more like those of *conjuncta*.

It is well known that wing pattern in many Trypetidae is by no means always constant in every detail for a particular species. It is therefore always very helpful towards attaining a knowledge of the limits of variation to be able to study a long series bred from the same foodplant from one locality. I have been able to do so in the case of *T. conjuncta*, Lw., thanks to Mr Harry Britten, jun., who recently sent me a large number of flower heads of *Chrysanthemum leucanthemum* gathered near Old Coulsdon (Surrey), from which over a hundred *T. conjuncta*, and no other species, emerged. It is interesting to note that so long ago as 1888 the breeding of this species from flower heads of the same plant was recorded by Tief (*Neunzehnte Jahrsschr. des K.K. Staats-Gymnas. in Villach*, p. xxxvi).

The following notes represent a summary of the facts to be deduced from an examination of the above long series of bred specimens:—An important feature in all the specimens is that, of the dark markings hanging on to that part of postical vein forming lower margin of discal cell, none, except occasionally that nearest base, extends below the slight fold in wing surface between postical and anal veins; thus, except for the dark patch on base of anal vein, the anal angle of wing, from the above mentioned fold to margin, is quite clear. The next feature of note is that only about 3% of specimens resemble Loew's figure in having only one hyaline spot below the two hyaline patches at middle of costa immediately beyond stigma; all others have a second hyaline spot, varying in size, nearer base of wing than the single spot in Loew's figure; *very rarely* there is a third very small spot in front (i.e. nearer wing tip) of these two spots. The normal four spots of above patch of hyaline markings all vary in size but the hind margin of the basal (larger) costal spot always slopes from costa *outwards*, and this spot is nearly always in connection with the more apical (and larger) of the two spots below it, never distinctly separated from it as in Loew's figure of *pulchra*. When the spots of this costal patch are large there may (rarely) be a small hyaline spot behind upper end of middle cross vein, and (still more rarely) another in front of upper end, and even a small spot on each side of lower end of this cross vein; this is an approach towards similar hyaline spots always present in *leontodontis* and other species. The hyaline costal spot immediately before end of radial vein may be absent or present but the costal spot just beyond end of this vein is always present. In middle of wing there is always a round hyaline spot beyond middle cross vein, immediately above outer cross vein at end of discal cell, and a smaller one (sometimes however absent) about the same distance behind (or before) middle cross vein; there may, however, sometimes be other round spots in each of these cells (first basal and subapical cells). As usual in the genus the upper surface of radial vein is normally without the small bristles present on underside; *very rarely* there may be a small bristle on upper side of radio-cubital node, and still more rarely (and perhaps on one wing only) one or two small bristles on upper side of radial vein between this node and middle cross vein: this is an interesting indication of an approach towards the normal condition in typical species of *Euaresta*. The legs of males are invariably

more or less darkened, but while the legs of females are normally very much paler, specimens very rarely occur in which the legs are as dark as in normal dark males; these females do not differ in wing markings from the usual type in males. Rondani appears to have considered such specimens as the only females of his *decipiens* (=true *conjuncta*, Lw.). The colour of abdominal pubescence in male is variable but the small hairs towards end (and especially on hind margin) of last tergite appear to be always dark. The female ovipositor is always entirely black and always with coarse whitish hairs about base.

In Loew's 1862 redescription of *conjuncta*, writing of the (in his figure of the wing) single hyaline spot beneath the two spots on middle of costa, he added that it " selten einen zweiten, der Flügelspitze näher liegenden neben sich hat, noch seltener ganz fehlt." As already pointed out a second spot is usually present in British specimens, but is on the side nearer *base* of wing. I believe this was a *lapsus* on Loew's part, because the second spot, which is present in both the " sec. typ." specimens in Kowarz's Collection mentioned below, is in the same position as in British specimens. I have not seen a specimen *without* a hyaline spot beneath the two spots on middle of costa.

My British *conjuncta* agree with the above mentioned two specimens of *conjuncta*, Lw., in Kowarz's Continental Collection labelled " sec. typ. Loewii " (one with an additional label " typ. v. Loew "); and my specimens of *leontodontis* from Scotland agree with Continental specimens in Kowarz's Collection, and others given to me by Dr Hering of Berlin, all bred from *Leontodon autumnalis*.

SIDEMIA ZOLLIKOFERI, FREYER.

By E. A. Cockayne, D.M., F.R.C.P., F.R.E.S.

The capture of a specimen of *Sidemia zollikoferi* at sugar on 15th August 1939, mistaken at the time for *Nonagria typhae*, brings the number of British examples up to thirteen. It was taken by A. Kennedy in his garden at Kirkstall in the suburbs of Leeds and was recorded in the *Amateur Entomologist* of July 1943.

In the *Entomologist*, 1935, **68**, 73, I published a list of British and German specimens, and the following are records which I overlooked or which have been published subsequently:—

1904. Bathen, Kurland, Latvia. 16.ix. 1 ♂, 1 ♀. At sugar in the pastor's garden. (Slevogt., *Soc. Ent.*, 1905, **19**, 177.)
1906. Chemnitz, Saxony. ♂. 10.x. (P. Meyer, *Iris.*, 1922, **36**, 67.)
1907. Stevns, I. of Sealand, Denmark. vii. (S. Hoffmeyer, *Entomol.*, 1939, **72**, 102.)
1910. Fjugesta, Knista, Närke, Sweden. ♂. 14.ix. In the garden of the hotel. (Frithiof Nordström, *Ent. Tidskrift*, 1932, **53**, 114.)
1912. Pillau, North of the Frische Haff, E. Prussia. ♀. 14.viii. (Cited by Nordström on the authority of Warnecke.)
1933. Arensburg, Estland (Esthonia). 23.ix. (*Ent. Rundschau.*, 1936-7, **54**, 471.)

1934. Dueodde, I. of Bornholm, Denmark. ♂. ab. *pallida*. 12.ix. (*Ent. Rundschau.*, 1936, **53**, 376: Pedersen and Wolff., *Ent. Medd.*, 1935, **19**, 5.)

1935. Liptauer Bergen, Czechoslovakia. ♀. ab. *internigrata*. 28.vi. Taken at 3000 ft. P. Pekarsky thinks it had hibernated as an imago. Presumably this is the specimen recorded as having been caught in June at Liptow. (*Seitz. Suppl. Palaearctic Noctuidae.*) III, 260. (*Ent. Rundschau.*, 1936, **53**, 327; Josef Michel.)

1938. Skaering, North of Aarhus, Jutland, Denmark. ♀. Taken by A. Möller. (S. Hoffmeyer, *Entomol.*, 1939, **72**, 102.)

1938. Knudskov, I. of Sealand, Denmark, 150 kilometres from Skaering, ♂. 4.ix. At sugar. (*Ibid.*: *Lambillionea*, 1939, **39**, 20.)

Nordström also mentions a specimen taken at Brünn, Czechoslovakia, and Vorbrodt gives a doubtful record of one taken at Chur, E. Switzerland. (*Schmett. Schweiz.*, 1911, **1**, 313.)

Baron de Worms thinks he saw a specimen at sugar, Wye, Kent, 1.ix.1934. (*Entomol.*, 1937, **70**, 91.)

These additional records afford further evidence of the course taken by *S. zollikoferi* migrating to this country. Apparently they travel from Russia through Esthonia and Latvia to Southern Sweden, Denmark, or East Prussia and across the North Sea. As I pointed out in my previous note, most of the places where they have been taken are on the eastern side of Great Britain, extending from Inverurie, E. Aberdeenshire, to Deal and Dungeness in Kent. How *zollikoferi* passes the winter appears to be unknown, though Pekarsky thinks it hibernates as an imago.

NEW FORMS OF BRITISH NOCTUAE.

By Hy J. Turner, F.R.E.S., F.R.H.S.

Euplexia lucipara, ssp. brittanica, nov., and its ab. conspicua, nov.

In my Notes on the Variation in the British Noctuae I have examined a large number of examples of the British form and a few Continental examples of *Euplexia lucipara*. Those of Continental origin were all distinctly darker than those of British origin. I then examined the illustrations in as many Continental authors to which I had access and consulted as many descriptions as was possible. The result was that I was convinced that our British form should be designated as a racial one, and I propose to call it ssp. **brittanica**, nov.

The general coloration and marking are lighter and more varied than in the normal typical forms on the Continent. The reniform is white with only a faint tinge or marking in brown. The marginal area of the forewing is lighter than any other, especially the inner half, which may be a glossy light brown in part suggesting white infusion, and may unite or almost unite with the reniform. A thin brown waved line can generally be seen running down the centre of this lighter half from costa to inner margin. The dark central fascia is somewhat varied in depth of colour and the contained orbicular may be slightly more visible. The outer half of the subterminal area is subject to much variation, and alteration in the incidence of light often tones its dark appearance to a

light glossy brown. This half contains the subterminal line if present (it may be reduced to dots).

I have to thank Capt. C. Q. Parsons of Torquay for a very beautiful example of *lucipara*. There is a dark blackish red-brown line bordered on the outside by a fine light brown in the outer half of the subterminal area. This specimen is remarkable in the upper costal portions of the lighter area for the three very clear white spots; it also has a large conspicuously light reniform. In strong daylight the three white spots have a pearly appearance. This form might perhaps best be designated by the name **conspicua**, nov. ab.

MISELIA OXYACANTHAE, AB. SUB-CAPUCINA, NOV.

I have to thank my correspondent, Rev. Walter L. Freer of Chute, Surrey, for calling my attention to an uncommon form of the *capucina* aberration of *Miselia oxyacanthae*. He described it as " a dark chocolate form very similar to the illustration in South's Vol. i, f. 3." He further says " it does not seem to be so dark a form of *capucina* as I used to come across in the Midlands." Upon looking over my long series (160+) from many localities I have one example taken at Mucking, in Essex, of the dark chocolate ground without any but the merest traces of the usual black or black-brown marking. I suggest that this form might well be called ab. **sub-capucina**, nov.

COLLECTING NOTES.

DREPANA BINARIA, HUFN. (HAMULA, ESP.) IN NORTH WALES.—Since one usually associates this species with the South of England it may be of interest to record that on 16th May I found a freshly emerged female (the wings were still " soft ") about six miles from Newton, Montgomeryshire.—P. B. M. ALLAN.

HELIOZELA RESPLENDELLA, STAINT.—Meyrick, in his *Revised Handbook of British Lepidoptera*, states that the larva of *Heliozela resplendella* feeds in the midribs of leaves of alder from July to September and gives June as the date of the appearance of the imago.

The larva mines up the midrib of a leaf until it is past the centre; it then mines up a lateral rib for a short distance after which it crosses over to the midrib or to another lateral rib making a visible track between the ribs; then from a point, which may be above, but is usually below the track; it makes a short broad mine terminating in a blotch from which it cuts out an oval case and descends to the ground. The blotch stage only lasts for a few hours. The mining of the larva gives a curious twist to the top of the leaf and when searching for mines I have often noticed this twist before observing the mine.

I have found the mines of this species as early as the first week of June and these produced imagines in the early part of July, but about one-third of the larvae produced imagines in the following May. It appears therefore that *H. resplendella* is partially double-brooded, at any rate in the south of England, imagines appearing in May and July, the former producing larvae in June and the latter in late July and August.—LEONARD T. FORD, St Michael's, Bexley.

Some Middlesex Coleoptera.—Supplement, I.—Carabidae—*Amara ovata*, F., and *A. similata*, Gyll., by sweeping herbage, Boston Manor. Dytiscidae—*Acilius sulcatus*, L., ♀ in artificial pond in garden, Heston. Staphylinidae—*Quedius cruentus*, Ol., several by beating hawthorn blossoms, Lampton; *Oxyporus rufus*, L., in fungus in stump, Boston Manor. Phalacridae—*Stilbus testaceus*, Panz., common on ragwort, Lampton. Cerambycidae—*Grammoptera holomelina*, Pool, by beating hawthorn blossom and sweeping umbels, Lampton. Bruchidae—*Bruchus atomarius*, L., sweeping *Lepidium*, Boston Manor. Chrysomelidae—*Phyllotreta ochripes*, Curt., sweeping *Nasturtium amphybium*, Boston Manor. Oedmeridae—*Nacerdes melanura*, L., on pavement in 1937, again in 1943, Heston. Mordellidae—*Anaspis subtestacea*, Steph., beating elderberry blossom, Boston Manor.—H. Donisthorpe.

Nymphalis polychloros Prepares to Hibernate on 31st July.—The only references to this insect in this country for the last ten years are by Charles Nicholson in 1936-7, so I now mention it. This morning in brilliant sunshine I found one very much asleep under the eaves outside my garage. It was on the north side, shaded by overhanging trees. I took it between finger and thumb expecting the struggle of a peacock, but was much surprised to find no resistance and an almost perfect "large tortoiseshell." Just around the corner is a large *Buddleia* in the sun, well patronized day and night by *Callimorpha hera* (*quadripunctaria*).

When thinking of a heading for this note I intended the reference to hibernation to be humorous, but, reading Frohawk's *Butterflies* before writing it, I see it's probably rather a sad truth.. When a boy I saw one in August 1909 near Hunstanton and several hibernated specimens in the New Forest in 1910, none of which I caught.—(Capt.) C. Q. Parsons, Torquay.

Oeonistis quadra Larva on Elm.—Lichens on trees are given as the food plant of *O. quadra* in the text-books, oak being the only tree I can find mentioned by name. I beat a larva out of elm in May in a district where oak is scarce; it was then under a quarter of an inch long and grew slowly on various unidentified lichens. I then gave it alga off wych elm and the locust tree, on which it flourished. A male hatched to-day, 31st July.—(Capt.) C. Q. Parsons, Torquay.

Food Plant of Ochria ochracea.—I don't know if *Senecio jacobaea* is a usual food plant for *O. ochracea*. On 13th July out of thousands of Ragwort and hundreds of Marsh Thistle growing in a wood near here I saw two Ragwort withered with frass caught in the leaf axils; one contained a larva which I subsequently hatched into a ♀ *ochracea*. I split many of the *C. palustris* and found only fat dipterous larvae at the bottom of the hollowed stems, there being no signs of *O. ochracea* in any of the thistles, and the Ragwort in which I found the larva was nowhere near the *C. palustris* and separated by several yards from any other Ragwort plants. I see no mention of Ragwort as a food plant of this moth, though several authors add etc. to their list of usual ones.—Capt. Robert D. R. Troup, "Hountwell," Henley, Alton Pancras, Dorchester.

Rhyacia simulans in Wilts.—Reading of your correspondent's capture of *Rhyacia simulans* in Somerset on 28th June last, it may be of interest to record that on the same day I found a perfect specimen of this insect at rest on a window frame within a mile of the Somerset-Wiltshire border, but on the Wiltshire side. My one other encounter with *R. simulans* in the South West was within the city boundary of Bristol, some three miles from the Somerset border, and recorded by the Entomological Section of the Bristol Naturalists' Society. My records are not available, but I believe this was in 1934 or 1935.—E. Barton White.

Eidophasia messingiella, Fisch. v. Rösl.—The larva of *Eidophasia messingiella* is reputed to feed between spun leaves or amongst spun blossom of *Cardamine amara*, an uncommon plant. A few years ago I came across imagines of *E. messingiella* in some numbers on some rough ground at Faversham, where the only Cruciferous plant growing in any quantity was *Lepidium draba*. This year I had an opportunity of searching for the larva and found it, as I expected to do so, feeding on the leaves of this plant.

The larva feeds on the underside of the leaves of *Lepidium draba* in a manner similar to the larva of *Plutella maculipennis*, Curt., except that it eats the whole of the leaf substance and not merely the parenchyma on the underside. It readily drops to the ground when disturbed. I could find no sign of spinning nor could I find a larva feeding on the blossom, in fact I spent a long time looking for spun leaves or spun blossom before I accidentally found a larva on the underside of a leaf.—Leonard T. Ford, St Michael's, Bexley.

Dispersal of Odezia atrata, L.—On 17th June as I walked along the foot of a wooded hill a black moth flew up from a small patch of *Conopodium denudatum*, Koch (formerly called *Bunium flexuosum*, With.). After some gymnastics I caught and identified it as *Odezia atrata*, L. (*chaerophyllata*, L.). The spot where this occurred is on the 400 foot ordnance map contour. On 2nd July, on the bleak treeless moorland at a height of 1300 feet above sea-level and six miles from the wooded hill, I found a few plants of *Conopodium* growing beside a stone wall. As I stooped to examine the plants two specimens of this moth flew up from it. I caught one, and watched the other, whirled up by the strong wind which sweeps for ever across these hills, carried out of sight.

Bentham & Hooker state that *Conopodium* is found in Britain "in woods and pastures." Here in Montgomeryshire it is fairly common in and beside woodlands, but one comes across it only in small patches, usually little more than a square yard in extent. Up on the moors I have not seen it previously nor since, though looked for. The other recorded foodplants of *Odezia atrata*, namely, *Chaerophyllum temulum*, L., and *Chaerophyllum anthriscus*, Crantz, I have not yet noticed though probably both are present. A long tramp across these moors in search of the former (which, *teste* B. & H., grows in the Scottish highlands) was fruitless. This little moth has a considerable power of flight and, aided by the wind, dispersal must be easy. But if chemotropism is the only means by which a wandering female can find the larval foodplant in a land where that foodplant is so scanty, then, as the French say, "it gives one furiously to think."—P. B. M. Allan.

Leucania impudens: A Query.—In 1938 I took a few *L. impudens* at light and sugar in a rather damp spot on Bovey Heath in S. Devon. Some of the text-books mention grasses as well as reeds as its food-plant. The following year I tried to find traces of the caterpillar, but with no success. The only likely grass in the locality appeared to be *Molinia coerulea*, which was abundant. Reeds and *Phalaris arundinacea* grow three miles away from that part of the heath and likewise *Aira caespitosa* one and a half miles. I have not seen the insect in either of these last-mentioned localities and *L. impudens* is unrecorded around Newton Abbot. Will someone please enlighten me on what grasses its larva feeds? Mr Parkinson Curtis in his list of the Lepidoptera of Dorset says *L. impudens* is " sufficiently common to be a nuisance " in Morden Bog. If anyone is acquainted with this locality perhaps they remember if reeds grow there and if they are not there what are the grasses?—(Capt.) C. Q. Parsons, Torquay.

CURRENT NOTES.

Annual Exhibition.—The well-known Annual Exhibition of the South London Entomological and Natural History Society will be held on the afternoon of Saturday, 9th October 1943, and will take the form of a Conversazione at the rooms of the Society, The Chapter House, St Thomas's Street, London, S.E.1 (close to London Bridge, S.). There will be displayed not only " varieties," but interesting specimens and collections of fauna and flora brought for exhibition by members and friends. Everyone interested in any branch of Natural History is cordially invited to attend.

Members inactive in the field are asked to review their collections and bring along specimens, series or groups of general interest. Active workers will of course show the best of their year's captures. Living specimens are particularly wanted. All friends are asked not only to come, but to bring similar exhibits and so contribute to making the meeting a success.

The Society's collections and library will be open for inspection, but it is impossible to bring the Bright Collection from Oxford for the occasion.

Exhibits may be handed in at any time from 11 a.m. onwards. The meeting will be formally opened by the President at 2.30 p.m. Exhibits should not be removed before 4 p.m.

Tea and buns are being provided. Bring your own sugar.

Foreign Localities.—I am not acquainted with collecting abroad but I have many specimens from various areas. With the few books at present at my disposal I am unable to locate some of the places that are on the data labels. I would be grateful if any readers can give me the Latitude and Longitude of the following places from these data labels:—Bortelapp: Castilien: Eckerthol: Binn: Gonde: Moux: Janos, Hungaria: Karwendelgeb, Tirol: Onex: Shawbridge, Q. (N. America): Bilek: Librat, Y-Slavia: Lödderitz (this name has the letters " Forst " following it): Hertford, U.S.A.: Stratford, Ontario: Zerga (Transjor-

dania): Tabgha (Palestine): Kulu (N. India). Some of the labels are so badly written that I cannot be sure of the spelling, but many of the above must be well-known collecting areas and I should be glad to know exactly where they are.—P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.

OBITUARY.

Professor Sir Beckwith Whitehouse, M.S., F.R.C.S., F.R.C.O.G. —Sir Beckwith Whitehouse died suddenly on Wednesday, 28th July 1943, on his way to Euston after he had attended the Annual Meeting of the British Medical Association, at which he was nominated President for a second year. He was born in October 1882, and gained an entrance scholarship at St Thomas's Hospital, London, where he won the William Tite Scholarship. In 1908 he took the M.S. with honours, qualifying for the gold medal in Surgery, and the Fellowship of the Royal College of Surgeons, England. He became a Foundation Fellow of the Royal College of Obstetricians and Gynaecologists, when it was incorporated in 1929. Birmingham conferred on him the honorary degree of Ch.M., and among other honours, he received the honorary Fellowship of the American College of Surgeons.

He rose to great eminence in his profession and was one of the leading gynaecologists of the day. He served on the General Hospital and the Queen Elizabeth Hospital, Birmingham, as honorary gynaecological surgeon, and held many other appointments in and around Birmingham. His contributions to research, his great gifts as a clinical teacher, and his lucidity as a lecturer were recognized by his appointment to the Chair of Midwifery and Diseases of Women at Birmingham University.

His large consulting practice, his duties to the hospitals for which he worked, and his medical publications prevented him from contributing largely to entomological literature, but he was an enthusiastic collector and breeder of Macrolepidoptera. His most memorable captures were five *Sidemia zollikoferi* in three nights at Dungeness, and in the same neighbourhood he took *Conistra erythrocephala* and *Graptolitha furcifera*, while in S. Devon he caught several *Leucania unipuncta*.

Although he purchased little at Stevens's Auction Rooms, he bought on a large scale after the outbreak of war and acquired many of the choicest aberrations in the Bright Collection, including the white and the black *Melanargia galathea*.

He was a very energetic member and for a time was President of the Entomological Section of the Birmingham Natural History and Philosophical Society, and often exhibited his captures at its meetings. After all the collections, library, and instruments of this Society were destroyed by enemy action, he made plans to revive it and extend its activities as soon as peace was declared. Until recently he was also a Fellow of the Royal Entomological Society and a member of the South London Entomological and Natural History Society.

Quite unspoilt by success he was a simple, kind-hearted, and generous man. The many who enjoyed his hospitality will always remember him as a genial and delightful host. His tragic death at the height of his career is a severe loss to medicine, and he will be greatly missed by his many friends.—*E. A. C.*

Another " in which the orange dots are large and conspicuous all along the transverse lines and around the stigmata."

Another " is much suffused with very dark grey, so that all the markings are obscured."

Abroad many examples have the forewings of a very bright white with only the central bar darker; or on the other hand are very dark and much spotted with yellow, or wholly devoid of it.

The Names and Forms to be considered:
xanthomista, Hb. (1818-22), *Samml. Noct.*, 647.
f. *nigrocincta*, Tr. (1825), *Schmett*, V, 31.
ab. *nivescens*, Stdgr. (1861), *Cat.*, Ied., 42.
ab. *statices*, Greg. (1869), *E.M.M.*, VI, 65.
f. *styriaca*, Hoffm. (1911), *Ent. Rund.*, XXVIII, 190.
ab. *nivea*, Dnhl. (1929), *Mitt. Munch.*, XIX, 111.

Tutt dealt with (1) typical *xanthomista*, Hb.; (2) the *nigrocincta*, Tr.; (3) the much paler *nivescens*, Stdgr.; and (4) *statices*, Greg., with dark central shade strongly developed.

ab. *styriaca*, Hoffm., *Ent. Rund.*, XXVIII, 190 (1911).

Orig. Descrip.—" ♂ forewings light grey with the middle of the discal area black-grey, which runs into the light grey ground colour at the edges. The edges of the reniform are also dark in part. The stigmata are the colour of the ground, light grey. The lightest portion is the white-grey at the base of the wing. The hindwing is white with black discal dot, grey powdered veins, slightly darkened margin and blacker attached marginal line. Many examples also have a dark obsolescent curved line on the hindwing, comparable with that of *P. chi*."

" ♀ forewings somewhat, hindwings distinctly darker than in the ♂. They are grey-black with a trace of brownish, with very indistinct, often wanting, dark discal dot and without the curved lines. Fringes as in the ♂ white."

" In both sexes all yellow scaling is absent even when examined with a lens." Stiermark.

ab. *nivea*, Dnhl., *Mitt. Münch.*, XIX, 111 (1929).

Orig. Descrip.—" Smaller, narrower winged, the forewings of pure white ground colour; all yellow absent, as in the palest *xanthomista* form (*nivescens*, Stdgr.). There remain only the blue-grey and blackish marking elements. There remain for the characteristic *xanthomista*, only the clear black ziczag transverse across the darker middle area. This appears spongy and not sharp in *nivea*. The hindwings are glossy, silvery white, the veins but litttle marked, a slight powdering of the outer margin only here and there apparent. Marginal line fine, the cell spot appears often well marked. In the ♀ the black-grey scaling becomes thicker, the stigmata almost always clear, little darkly powdered." Montagna Grande.

Polia, Tr. (1625), most authors. [*Antitype*, Hb. (1822), Hamps., Warr.-Stz., Drdt.-Stz.] *flavicincta*, Fab. (1787) ? *flavicincta*, Schiff. (1775). (*flavicineta* in error.)

Tutt, *Brit. Noct.*, III, 47 (1892): Meyr., *Handb.*, 54 (1895): Barr., *Lep. Br. Is.*, IV, 297, plt. 169 (1897): Stdgr., *Cat.*, IIIed., 179 (1901): Splr., *Schm. Eur.*, I, 201, plt. 38, 18 (1905): Hamp., *Lep. Phal.*, VI, 361 (1906): South, *M.B.I.*, I, 281, plt. 138, 6-7 (1907): Warr.-Stz., *Pal. Noct.*, III, 136, plt. 33c, d (1910): Culot, *N. et G.*, I, 1, p. 182, plt. 33, f. 13-17 (1913): Meyr., *Rev. Hand.*, 133 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 143, plt. 18a (1934).

Schiff., *Verz.*, 72, H. 2 (1775), was the first to use the name *flavicincta* for the larva of a moth found on the common cherry. But this was only an indication, not a description.

Illiger, *Ausg. Verz.*, I, 206 (1801), stated that Esp., *Abbild. Noct.*, plt. 153, 2-3, figured this species under the name *flavicincta-major*.

Götze, *Beitr.*, III (3), p. 204 (1781), in going through Kleemann's Supp., Vol. v (2) (*Beitr. Nat. Ins.-geschich.*) Rösel's *Belust.* found two very similar Noctuae unnamed. From p. 281 and from plt. 54 he described and named *aurantio maculata*, and from p. 283 and f. 55 he described and named *undulata*. These descriptions were very short and very incomplete, dealing with the larva mainly. No author considered them. Both represented *flavicincta*.

Ernst & Engram., *Pap. d'Eur.*, VI, 112, f. 349, a-h (1788), gave figures of various forms of a Noctua attached to the cherry tree, which is the *flavicincta* of the *Verz.* The figures are all much too variegated and the colours too emphasized and dark.

D. Vill., *Ent. Linn.*, II, 280 (1789), described *flavicincta* under the name *discolor* and gave as a reference Rösel, *Belust.*, II, plt. 55, which depicted the larva, etc., of *flavicincta*. In *l.c.*, IV, p. 488, he described *flavicincta* and gave the same reference. Wernbg. determined both as the latter species.

Esper, *Abbild. Noct.*, IV (1), 507, plt. 153, 1-3 and f. 4, gave two very rough figures hardly recognizable, f. 1-3 very dark, rough, f. 4 somewhat better, the former as *flavicincta-major* and the latter under the name *dysodea* (nec Schiff. nec Hb.).

Ernst & Engr., *Pap. d'Eur.*, VI, 112, f. 349, a-h (1788), gave a series of varieties, all very variegated.

Bork., *Naturg.*, IV, 258 (1793), pointed out that *aurantio maculata*, Götze, was *flavicincta*, that *discolor*, D. Vill., was corrected in Vol. iv to *flavicincta*, and that it was first described by Fab., *Mantissa*, II, 178 (1787).

Illiger, *N. Ausg. Verz.*, I, 207, said that *flavicincta-major*, Esp., was *flavicincta*, Schiff.

Hb., *Samml. Noct.*, 46 (1802), gave a much too dark figure as *flavicincta*, which much resembled the variegated figures in Ernst & Engram. Hb., *Text*, p. 170, referred to the *Verz.*, Schiff. H.-S., *Bearb.*, II, 259, said of this figure " much too variegated " (bunt).

Haw., *Lep. Brit.*, 182 (1809), recognized *tricolor*, Vill., as a syn. of *flavicincta*.

Treit., *Schmett*, V (2), 27 (1825), included among his synonyms, etc., *dysodea*, Esp., *flavicincta-major*, Esp., *discolor*, D. Vill., *aurantio maculata*, Götze, and *undulata*, Götze.

Dup., *Hist. Nat.*, VI, 401, plt. 98, 1 (1826), gave a very good figure of *flavicincta*.

Guen., *Hist. Nat.*, VI, 39 (1852), said this was the *dysodea*, Esp., plt. 153. He referred to Engram., 349c, d, e. He dealt with this species at great length, and included two forms, *meridionalis*, Bdv., very dark on account of the increase of dark scales; and *calvescens*, Bdv., which he doubted as being scarcely distinct from the type. Tutt described it "paler than the type."

Milliére, *Icon.*, 12, VII, 1866, gave an excellent figure of the *meridionalis* form, plt. 80, 1-2.

Barrett, *l.c.*, IV, 297, plt. 169, gave six figures of varying intensity of marking; 1b, is a very dark Huddersfield form with scarcely a trace of yellow and most of the marking suppressed in the blackish-brown; 1e, in which the grey has totally disappeared both markings and ground being shades of yellow with submarginal line, etc., of an orange tinge.

Stdgr., *Cat.*, IIIed., 179 (1901), treated *flavicincta-major*, Esp., and *dysodea*, Esp., as synonyms, and recognized the forms *meridionalis*, Bdv., and *calvescens*, Bdv. a, multo obscurior; b, multo dilutior, al. ant. cinerascenti-albidis.

Splr., *Schmett Eur.*, I, 201, plt. 38, 18 (1905), gave a good figure of one of the very dark variegated continental forms.

Hamps., *Lep. Phal.*, VI, 361 (1906), used the prior authority, *Verz.*, Schiff., which neither Warr. nor Drdt. recognized in Stz.

South, *M.B.I.*, I, 286, plt. 138, 6-7 (1907), gave two very good figures.

Warr.-Stz., *Pal. Noct.*, III, 136 (1910), gave five good figures, plt. 33c, d, *flavicincta*, Fb., ♂ and ♀, ab. *meridionalis*, Bdv., ab. *calvescens*, Bdv., and a newly described form, ab. *albescens*, Warr. The synonyms given were *flavicincta-major*, Esp., and *dysodea*, Esp. (nec Hb.).

Culot, *N. et G.*, I (1), 182, plt. 33, f. 13-17 (1913), gave five excellent figures of forms of this species: 13, typical; 14, *calvescens*, a paler form; 15, *meridionalis*, an obscure form; 16, *enceladaea* from Mt. Etna area; and 17, *sublutea*, an Algerian yellowish-tinged form.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 143, plt. 18a (1934), added ab. *infuscata*, Porritt, *enceladaea*, Trti., *sublutea*, Trti., and gave a good figure of the last, a very pale ochreous-yellow form.

Barrett described the Variation thus:

Variable in the ground colour and also in the depth of the markings, the central portion sometimes being of far deeper tone than the rest; the yellow colouring also is uncertain—partial or even absent. In Norfolk there appears to be a tendency towards extreme whiteness in the ground colour, the markings becoming also far paler, even in rare instances to pale pearly-grey.

He reports one "almost white."

Others "darkened with smoky suffusion." This darkening is much intensified in Yorkshire and replaces the usual pale forms almost entirely so that many specimens are as dark as *A. megacephala*.

Another "forewings wholly suffused with smoky-black, with the exception of the four pale transverse lines and the pale dashes in the cilia, all of which are of a clear yellowish-white."

There is also much variation in the depth or absence of colour in the hindwings, and they do not by any means follow the forewings in this respect.

The Names and Forms to be considered:
flavicincta, Schiff. (1775), considered ined. by some authors.
undulata, Goze (1781), *Beitr.*, III (3), 204, Syn.
aurantio maculata (1781), *l.c.*, Syn.
flavicincta, Fab. (1787), *Mant.*, II, 178.
discolor, D. Vill. (1789), *Linn. Ent.*, II, 280, Syn.
flavicincta-major, Esp. (1789+?), *Schm. Abbild.*, IV (1), 507, plt. 153, 1-3, Syn.
dysodea, Esp. (1789+?), *l.c.*, f. 4-6, Syn.
ab. *meridionalis*, Bdv. (1840), *Ind. Moths*, 127.
f. *calvescens*, Bdv. (1840), *l.c.*
f. *sublutea*, Trti. (1909), *Nat. Sic.*, XXI, 91, plt. 5, 13-14.
f. *enceladasa*, Trti. (1909), *l.c.*, plt. 5, f. 15-16.
ab. *albescens*, Warr.-Stz. (1910), *Pal. Noct.*, III, 136, plt. 33c, d.
r. *infuscata*, Porritt (1923), *E.M.M.*, LIX, 88 (Barr., IV, plt. 169, 1b).

Tutt dealt with: (1) The typical pale greyish mottled with yellow; (2) the much darker form *meridionalis*; (3) a much paler form *calvescens*.

f. *enceladaea*, Trti., *Nat. Sic.*, XXI (Extract) 91 (1909).

FIG.—*l.c.*, plt. 5, 13-14.

DESCRIP.—Draudt in Seitz, *Pal. Noct. Supp.*, III, 143 (1934), summarized the rambling description, "Is about half-way (between *meridionalis* and *infuscata*); it is a fairly dark grey-black form with very restricted orange coloration, while in *meridionalis* there are liberal orange scales. In *enceladaea* hindwings are much darker grey-black." Around Mt. Etna, Sicily.

f. *sublutea*, Trti., *lc.*

FIG.—*l.c.*, plt. 5, 15-16 (Seitz, *l.c.*, plt. 18a).

DESCRIP.—Drdt. in Seitz, *l.c.*, "Is a form that exceeds *calvescens* in paleness. Ground colour is a pale ochreous-yellow very faintly dusted with grey and with boldly developed orange markings. Transverse lines and surround to stigmata pale grey-brown." Algeria.

ab. *albescens*, Warr.-Stz., *Pal. Noct.*, III, 136 (1910).

FIG.—*l.c.*, 33d.

ORIG. DESCRIP.—"Is dull white, without grey dusting, except in the median area, the upper stigmata also whitish; hindwing paler."

ab. *infuscata*, Prtt., *E.M.M.*, LIX, 88 (1923).

FIG.—Barr., *Lep. Br. Is.*, IV, plt. 169, 1b.

ORIG. DESCRIP.—"This is an extreme melanic development of the dark variety *meridionalis*, Bdv., from which it differs in the complete absence of the orange freckling and the colour of the forewings, being entirely black, except that the usual whitish lines show out distinctly. Hindwings smoky-black, but the curved central and the marginal pale stripes still show clearly." Huddersfield district, Yorkshire.

Dasypolia, Gn. (1852), all modern authors: *templi*, Thnbg. (1792).

Tutt, *Brit. Noct.*, III, 49 (1892): Meyr., *Handb.*, 55 (1895): Barr., *Lep. Brit. Is.*, IV, 291, plt. 168, 1 (1897): Stdgr., *Cat.*, IIIed., 181

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. Turner, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—Eds.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr Hy. J. Turner, "Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris*, and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Lycaena (Heodes) phlaeas from all regions including British Isles. Also wanted other species of Chrysophanids from all areas. Exchange or purchase considered. *Duplicates.*—Foreign Lepidoptera, e.g., Satyrids, Charaxes, Papilios, and others; full lists sent.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

Book Wanted.—Barret, *British Lepidoptera*, Vol. 3.—*L. E. Savage, 65 Cranmer Avenue, Hove 4, Sussex.*

Books Wanted.—Culot, *Noctuae and Geometrae.*—*A. J. Wightman, "Aurago," Pulborough, Sx.*

Communications Promised :—E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, P. B. M. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, H. Donisthorpe, Prof. J. W. Harrison, L. Ford, etc.

All Communications should be addressed to the Acting Editor, Hy. J. TURNER, "Latemar," 25 West Drive, Cheam.

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. October 9, Annual Exhibition; 2 p.m. for 2.30 p.m.

Printed by T. Buncle & Co., Ltd., Arbroath.

Vol. LV.

No. 10.

OCTOBER 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

ALDER v. BIRCH.

By P. B. M. Allan.

Is alder one of nature's substitutes for birch, so far as lepidoptera are concerned? That is a question which I have been asking myself more and more often of late. For alder is one of my disappointments in life. I *ought* to find all manner of good things feeding on its rather ugly leaves; it is meet that I should disinter *furcifera* in scores, each August, from the earth and debris at its roots. But I never do. For years and years I have searched alder, from Essex to Cardigan Bay, and never yet have I found anything pleasant upon it but the ubiquitous *papilionaria* and *dromedarius*, and a few small geometers. The textbooks inform me that practically every lepidopterous larva which is worth finding is to be found on alder, and who am I that I should cast doubt upon their assertions? Why, then, do the *optima bona*, the entomological gems of " purest ray serene," avoid me? 'Tis true I once found (dear me, how many years ago it was! May 19th, so my diaries say) the alder stumps in Pamber Forest well tenanted by *spheciformis*; but that was only the exception which serves to emphasize my belief. Perhaps rows of houses cover those stumps to-day, even as they do the stubble field whereon I shot my first partridge. Maybe it is this boyhood recollection that induces me to go on searching alder year after year. But never again have I found *spheciformis*, and ever my quest for *bicuspis* continues unavailing.

In the north of England and in Scotland, my friends tell me, the case is otherwise; alder is one of the most fertile of trees to the lepidopterist. If this be so, why should some species eschew, in the South, a foodplant which they cleave to in the North? I am coming more and more to the conclusion that, so far as the South and Midlands are concerned, alder is gradually being given up, as a foodplant, by many species which formerly used it freely. For with the exceptions of *bicuspis* and *furcifera* and one or two of the geometers which I have never taken, I have found on birch almost every species which the textbooks list as alder-eaters. I will even go so far as to say that I have never yet found on alder a species which I could not have taken more commonly and more profusely on birch.

The pedigrees of these two plants are interesting. Birch is much the older. It seems to have appeared in this country during the *preboreal* period, during which the climate gradually changed from arctic to subarctic, and the vegetation, at first tundra (I quote Dr Leach), gradually passed over into birch forest, with abundant willows, and pines appeared. This period was succeeded by the *boreal*, in which the climate was continental in character, being warm and dry, and our island was dominated by forests of pine and birch. It was during this period that alder put in an appearance. Hazel also came on the scene at this time, and hazel is a reputed foodplant of both *papilionaria* and *dromedarius*; indeed, the vegetation of our island during the first half of the boreal period seems to have been characterized " by the extensive occurrence of dense, more or less pure, hazel forest " (Leach, 1933). In its turn the hazel forest rapidly degenerated, probably owing to climatic changes. Then, as the climate altered to the warm moist

oceanic type of the *Atlantic* period, the alder became predominant, and oak forest largely replaced the pine and birch.

I have never found either *papilionaria* or *dromedarius* on hazel, though both moths and all three foodplants are plentiful in Montgomeryshire and I have searched hazel industriously these last three years. Often it grows alongside the birch and alder on which I find these two moths. Possibly hazel—in this district—is evolving on lines that are gradually rendering it unsuitable as a foodplant for these species. It is of interest to note in passing that in spite of the long list of macro-lepidoptera reputed to feed on hazel, the only species which I have found on it here in Wales are *Orgyia antiqua* L. and *Calocasia* (*Demas*) *coryli*, L.

Is it possible that birch was the original foodplant of most, if not all, Lepidoptera whose larvae are to be found on alder to-day? Quite possible, I should say; but such a premise is of no value. Recent research has shown that many larvae can adapt themselves to a new foodplant very quickly indeed, sometimes in the course of a mere generation or two. (See Imms: *Recent Advances*, 1937, Chap. XI.) So long ago as 1911 Pictet found that when larvae of *Lasiocampa quercus* were given pine only, a percentage of them adopted the new food and that in the next generation (bred from these adventurers) the larvae preferred pine to all other food. Moreover, " there is considerable evidence in favour of the contention that . . . polyphagy is phylogenetically the older habit, oligophagy and monophagy being more recent developments " (Imms, *ibid.*, p. 298). Perhaps *papilionaria* and *dromedarius* had an even wider range of foodplants in days gone by—there are records of *papilionaria* being found on beech and broom—and are becoming more selective. In the case of those other species which, the textbooks tell me, I ought to find on alder but do not, I can only conclude that so far as their southern and perhaps midland races are concerned they are now " out of tune " with alder physiologically.

Those pioneers which lay their eggs on alder, though come of a birch-eating race, may beget an alder-eating race. R. N. Chapman (1931) has suggested that there may be, thereafter, a selective action *of the environment* in eliminating all the progeny which have a tendency to choose other host plants than those upon which they hatch, and this would lead to the progeny choosing again the same host plant. Thorpe (1929) concluded from biological and genetic evidence that there may be two or more biological races within a single species, each race selecting a particular foodplant. My own observations *in the field* tend to confirm this so far as *papilionaria* and *dromedarius* are concerned. Here in Wales I find the former only on alder in the valleys of the Severn and its tributaries, and only on birch on the hillsides and higher ground, though there is plenty of alder on the hillsides, while birch often grows alongside alder in the valleys. *Dromedarius* shows the same " local preferences," though I have found one exception. Yet my larva cages afford no confirmation; for it has been my experience, so far, that these alder-eating *papilionaria* and *dromedarius*, if given no alder, will complete their growth upon birch, and vice versa. Not yet have I come across a larva, of either species, which will starve rather than adopt the alternative foodplant.

A moth is said to recognize by scent the correct plant for oviposition, so perhaps chemotropism is here concerned; it may be a matter of the size of the molecules of the scent, natural selection weeding out individuals whose receptors can appreciate the scent of *both* birch and alder, allowing only those whose receptors are the more selective (*i.e.*, appreciative only of birch) to survive. For it is likely that a moth's perception of scents is limited to those concerned with (*a*) food, (*b*) mating, (*c*) ovipositing; all the evidence goes to show that an insect can appreciate only those scents and sounds which are necessary to, or inimical to, or in some way affect, its well-being. There is no reason why a moth should be able to appreciate all the scents and sounds of the countryside (and town) which are discernible by us. Anthropomorphism is a treacherous bog where insects are concerned. On the other hand, for the life of me I cannot suggest any reason why selection should operate in favour of birch in a southern latitude only unless it be, as I have suggested, that here in the South and Midlands alder is gradually becoming less suitable physiologically.

Is it true that *furcifera* has been found feeding on birch as well as alder? Of the textbooks to which I have access in my war-time abode St John alone gives birch as a foodplant of this species, quoting Newman as his authority. But those who visit Glamorganshire annually for this species should be able to enlighten me. And has nobody ever found on birch the larvae of two geometers which, these same authorities tell me, feed on alder alone—to wit *Hydriomena coerulata*, Fab. (*impluviata*, Hb.) and *Euchoeca nebulata*, Scop. (*obliterata*, Hufn.)? Yet if no record of these species on birch were forthcoming it would not upset me; for I should suggest that the original birch-eating race had died out.

Aberhafesp, Newtown, Mont.

ON THE TRAIL OF MELITAEA ARCESIA.

By E. P. Wiltshire, F.R.E.S.

(I find my previous contributions to the *Entomologist's Record* have been, some rather dry and others rather turgid. To make amends, if I can, to long-suffering readers, I offer the following extract from my diary of my six-weeks' holiday in the Kashmir in May-June 1942. It is hoped that the full account of this expedition will eventually appear in the *Journal of the Bombay Natural History Society*, but this must await the complete determination of the material collected.)

Next morning, 17th June, we walked down to Taobat and then turned right, up the wide torrent which there enters the Kishenganga. Not only was this walk the furthest point from Srinagar to which we penetrated on our trek, but it was, to me, at least, the climax. Coming from Persia, of which country the pretty and puzzling Fritillary butterflies of the genus *Melitaea* are the crowning glory, I had kept a special look-out for them in Kashmir; *arcesia*, Bremer was the only species recorded from here, but, being only known from Central Asia, was a great prize. The only clue I had to its habitat was Colonel Home's laconic record from, I think, Sonamarg: "one only, 8000 ft., May." It was now mid-June and my hopes of finding *arcesia* were very low, especially since I fancied I was at too low an altitude for it. But to

my surprise and joy, as we followed the torrent up to a place where it divided, or, rather, where two torrents met to form one, I netted a perfect male *arcesia* as it flitted by on the narrow path. A little further on another male was spied by my wife settled on a buttercup beside the torrent under some giant poplars. A few steps further on we discovered their breeding-place, and took a small series of both sexes in absolutely fresh condition. The rich colouring of the females, with their dark suffusion, was particularly admirable, and the males, with their lighter, fiery red, were also fairly variable, the variation consisting in the completeness of the inner chevron; a minority had it reduced to a series of dots. Doubtless this was sub-sp. *balbita*, Moore, which Home recorded from Sonamarg.

Since the habitat of *arcesia* has never, to my knowledge, been described and differs strikingly from that of its congeners in the Middle East, except that of *arduinna*, I here describe it in greater detail. Its breeding place was a swampy meadow, hardly half an acre in size, protected from cattle by a stout wooden fence, and full of grass and flowers growing shin-high (a rare sight in the Kashmir!). The little field was full of marsh orchis (*Orchis latifolia*), *Geranium rectum*, buttercups, plantain, and, in places, yellow violets (*Viola biflora*). I did not ascertain the foodplant, as an approaching thunderstorm drove us from the spot, and the hatch seemed so fresh that I doubt whether egg-laying had begun yet. Besides buttercup, the males visited the beautiful *Geranium* so common in the Kashmir. I could not help wondering what would happen to this colony of *M. arcesia* if the owner should choose to take down his fence and permit herds of cattle to munch and trample all over his half-acre!

On our way back we were suddenly startled by howls and screams from the opposite side of the torrent, which was precipitous and wooded. The cries were taken up and echoed by men and women working in the fields we were passing, and all began running towards the torrent, or down-stream. A man appeared on the further bank, having slid down a most headlong piece of ground from the path, hidden among the fir-trees above; he beat his head and his breast and bellowed. Those on our side did likewise. We thought that at least his son, or old father, had slipped down and been killed; but it transpired that the lamentations were on account of a pony that had fallen off the path into the torrent. So rapid was the stream that the unfortunate animal was carried down and out into the big river without any chance of rescue or salvage. The men and women of Taobat continued wailing and beating the breast for some time, only interrupting their laments to inform us briefly, but with a smile, that it was only a pony that had been lost!

We decided to spend a third night at Taobat, partly in order to ascertain whether *arcesia* was really as stenoecous as appeared from a first visit. Subsequent search showed it to breed in one or two other similar places but to be very local. We discovered it in two other swampy spots close to the original locality, and, on the way back on 19th June a third a mile or two below Bagtor (7500 ft.). Besides the flowers already mentioned, it was seen sipping at *Caltha palustris*, f. *alba* and white clover. All the females seen were indulging in this pastime instead of performing their domestic duties. The foodplant may be plantain, but this is no more than a guess.

Our two last evenings in the woods at Taobat were both fine and clear, but were far less productive in moths than had been our first, which had started with a drizzle. Perhaps this was because a clear night is colder than a cloudy night. On the 16th, 33 individuals had been taken, mostly with the net; on the 17th, 10 were taken, of which 8 came to the sheet; and on the 18th, when I illuminated the sheet only for one hour, 8 came. All this was on exactly the same ground.

We returned to Kanzalwan on 19th June and camped this time on the flowery shelf behind the upper village (at about 8000 ft.). It is not often, I think, that meadowsweet, edelweiss, and forget-me-not (*Myosotis arvensis*) may be found growing together, but there they were, at the tent's front door, the latter making a blue carpet all around us, variegated by the bright yellow of buttercups. We took a couple more Bee-Hawks at *Nepeta* just before tea; after tea we strolled over some rough ground below the spring, and there, amid the white marsh marigolds and the purple Marsh Orchis, was our friend *arcesia* again! I think it was not yet out on our previous visit here.

A cloudless evening and a quiet night; this time the moths were abundant—in fact, for the first time since our trek began we saw more than we could catch, and the evening compared with my best evenings in England or the Middle East. Many were taken with the net, approaching or avoiding the lamp; others were boxed in a drugged condition on the sticky yellow flowers of an Umbellifer with pinnate leaves.

. . . (Later: Koragbal; 8750 ft.)

On a craggy slope behind Koragbal, covered with thyme and the yellow-flowered Umbellifer mentioned at Kanzalwan, and only traversed by a tiny trickle of water, several *Melitaea arcesia*, including one female, were taken. In this situation they were more lively and harder to catch than on their earlier-observed habitats. In the torrent, which issued from under colossal snow-beds just above Koragbal, we observed a brown bird completely submerging itself in the rushing waters, and presumed this to be the Brown Dipper; we also saw the White-breasted Dipper (*Cinclus cinclus*, ssp. *kashmiriensis*). Koragbal was now besieged by huge flocks of cattle and sheep which had recently crossed over the pass; according to our information many of the steers that we saw were proceeding to Gilgit.

BRUCHUS LOTI, PANZ., AB. ATRICORNIS, AB. N., AN ABERRATION OF A SPECIES OF BRUCHUS (COL. BRUCHIDAE) NEW TO SCIENCE.

By Horace Donisthorpe, F.G.S., F.R.E.S., etc.

On 15th May last I swept two specimens of a *Bruchus* off *Lepidium campestre* (Field Pepperwort) at Boston Manor, Middlesex. One proved to be a typical *Bruchus loti*, Panzer; the antennae of the other were entirely black, otherwise it was a typical *loti*. As this form has not been described before, I propose to call it ab. **atricornis,** ab. n.

On 22nd May I swept a specimen of *Bruchus atomarius*, L., off the same patch of *Lepidium* at Boston Manor. This is a new record for my Middlesex list.—Entomological Department, British Museum (Nat. Hist.), 14.ix.43.

COLLECTING NOTES.

Colias croceus, Frcry.—Amongst a few imagines that emerged from ova deposited by a ♀ of the *helice* type in June last, I bred a curious mixed gynandromorphous form. The upperside forewings combine the ground colour of type and var. *helice*; the black borders are of male form except for a small yellow spot on the left side. The right-hand wing is predominantly of *croceus* colouring except for a small area on the inner margin, which is of *helice* colouring. The left hindwing is nearly all of *helice* form except for a small area of *croceus* colouring on the upper margin. The body appears to be male. The insect is on the small side.—S. G. Castle Russell, " Springetts," Highcliffe, Hants.

Aberration of Maniola tithonus, L.—On Monday, 26th July, I was fortunate enough to net a freshly-emerged female example of the ab. *mincki*, Seebold. The creamy-yellow ground colour and the greyish borders which replace the usual dark brown ones give the insect a particularly beautiful appearance. I have seen a number of examples in well-known collections but never a really fresh specimen, and I should imagine that the delicate colouring soon fades and the pristine beauty lost after the insect has been on the wing a short time. Some five years ago I caught a worn example of a similar form in the same locality (a Common in this district), where apparently the strain exists, but until this season I have not had an opportunity to visit the place at the proper time. The aberration is very rare and the white form, ab. *albida*, Russell, figured in South, plate 119, f. 6, is equally scarce.—S. G. Castle Russell, " Springetts," Highcliffe, Hants.

Melanic Aberrations of Limenitis camilla, L.—As long ago as 1896 the late J. W. Tutt pointed out in the *Entomologist's Record* (Vol. 8, p. 183) that when working out variations of this species for his work on *British Butterflies* he found that the specimens which we know collectively as " the black variety " of *L. camilla* were on the Continent, divided into three distinct aberrational groups as follows:—

The narrow banded form is ab. *angustata*, Stgr.

The form in which the band is reduced to spots is ab. *stenotaenia*, Honr.

The wholly black form is ab. *nigrina*, Weym.

These terms were used in subsequent years, yet in the works published by Richard South and F. W. Frohawk long after 1896 the terms were altered to ab. *nigrina* and ab. *semi-nigrina*. I can only assume that the two authors in question were ignorant of the fact that the melanic forms had been previously named, and I can find no reference to the name *nigrina*. If aberrations are worth naming, should not the Law of Priority apply?—S. G. Castle Russell, " Springetts," Highcliffe, Hants.

[These three aberrational names were published in 1887, 1891 and 1884 respectively (see Stdgr. *Catalog.*, IIIed., 1901). Tutt's small volume, *British Butterflies*, was published in 1896. Thus there seems but little excuse for errors such as these to be made.—Hy. J. T.]

Foodplant of Leucania impudens.—In the September *Record*, Captain C. Q. Parsons asks as to the foodplant of *L. impudens*. I think it

feeds on many kinds of grass, rush and reed. I have taken it in a boggy part of Reigate Heath among *Juncus communis*, in a wood near Pulborough among *Luzula pilosa*, and most plentifully of all in a series of very wet fields near Pulborough among *Molinia coerulea*, *Carex pulicaris*, and *Arundo phragmites*, all of which it will eat. It is a rather difficult larva to find unless it is realized that it does not mount its foodplants to feed but lies prone on the surface of the marshy ground and merely raises its front segments to feed, much as does the larva of *Satyrus semele*, to which larva it bears a striking superficial resemblance. The larva of *impudens* is, in fact, very like that of *L. lithargyria* but much larger and more obese. The surface of the ground on which I find it in quantity is a mat of grasses through which various plants are growing and beneath which there is deep wet mud.

The larvae of *impudens* lie concealed in this dense mass by day but at night they crawl through, and, lying prone on the vegetation mat, feed on *Carex*, *Molinia*, *Arundo*, etc.

It is useless to throw the light well ahead when searching, as the larva, often only partly exposed and never up the stems, is hard to see, unless one looks down directly upon it, when, with a little experience, it becomes easy to locate. Full-fed 1st week in May, feeds well on *Phalaris* and *Arundo* in captivity. Cocoon among litter on moss on surface of the marsh. Imago emerges at dusk.—A. J. Wightman, Pulborough, Sussex.

The Emergence of the Limacodidae from their Cocoons.—Hampson, in *The Fauna of British India—Moths*, writes regarding the *Limacodidae*, "Cocoon . . . . with a lid for the escape of the imago prepared by the larva," but I have never read an account of the actual process of emergence.

I recently bred a considerable number of the Limacodid *Altha melanopsis*, Strand., and was fortunate in being able to watch the process of emergence of several of them. First a minute crack appeared a little way from one end of the cocoon and this was steadily enlarged by pressure from within until the cap was hanging by a narrow hinge only. The whole business takes a considerable time, an hour or more elapsing between the appearance of the initial crack and the protrusion of the pupa. The initial crack always appeared on the side opposite to the final hinge, this latter being placed over the dorsum of the pupa. The pressure appears to be exerted by repeated blows from the head and prothorax of the pupa, and at no time did there appear to be any sort of rotary movement. After the lid had been pushed fully open and was hanging by the hinge, the pupa rested half out of the cocoon for some fifteen minutes before splitting and disclosing the imago.

Dipterous parasites emerging from these cocoons made use of the prepared lid, but the Hymenopterous ones made a small hole for themselves.

In the species that spin a cocoon with a pale inner surface, such as the present species and *Parasa lepida*, Cr., the lid is clearly discernible as a round dark patch at one end, if the cocoon is cut open. Those species that spin cocoons with a dark inner surface do not show this differentiated patch, but a little pressure from inside with the end of a pencil soon reveals which end it is. I know of no species where the lid is

discernible from outside.—D. G. Sevastopulo, F.R.E.S., Calcutta, 10.vi.43.

Is Notodonta dromedarius, L., Single-brooded?—On 22nd July 1941 I collected from birch 20 ova of *N. dromedarius* and 6 larvae of this species in the second instar. These larvae, and the larvae which hatched from the ova, fed up irregularly and pupated between 15th August and 14th September. The following year imagos from the 26 pupae emerged on 26th June, 30th June, 4th July, and 7th July—four in all, the remaining 22 "lying over."

In 1943 imagos emerged on 28th April, 15th May, 30th May (3), 7th June, 9th June, 10th June (2), 11th June, 15th June (2), 18th June (2), 19th June, 21st June, 28th June, and 15th July—eighteen in all. The remaining four pupae are alive at the time of writing.

On 11th June, this year, I found the first *dromedarius* ovum of the year. The larva emerged on 22nd June and pupated on 8th August. Throughout July I noted, on birch, a good many larvae in all instars. On 9th August I found, on an alder, two larvae: one in its second stadium, the other in its fourth.

I have bred this species and observed it in the wild for the last eight years. The earliest date when I have found or bred the imago is 28th April, the latest 21st July (with the exception of one which, in 1938, emerged on 4th November). I have found ova in the wild from 11th June, throughout July, to 14th August; larvae in the wild from 12th June, throughout that month and July and August and September, in all instars, until 25th September. These larvae have pupated from 14th July to 10th October.

South's statement (*The Moths of the British Isles*, 1933, First Series, page 72), "In some seasons, and localities, the moth appears twice in the year: the caterpillar may then be found in September and October" seems to imply two separate broods. My records, as given above, do not seem to bear this out. Have other observers recorded their experiences of this species?—P. B. M. Allan.

CORRECTION.

On p. 89 the correct spelling of the ssp. of *lucipara* is **britannica** and not **brittanica.**

CURRENT NOTES.

Foreign Localities.—If Mr P. Siviter Smith can obtain access to the last (1930) edition of the *Encyclopaedia Britannica*, I think he will find many, if not all, the localities he is interested in are mentioned with lat. and long. in volume 24, containing Index and Maps for the whole encyclopaedia. Hertford (U.S.A.) and Tabgha, the two samples I chose at random, are in Index and their position discoverable in Maps. I would take this opportunity of thanking Mr Smith for his very interesting notes on colour reproductions of natural history objects.—Wheeler, Ph.D., Grantchester, Chyngton Road, Seaford.

Note.—Matter urgently wanted, especially Notes (Collecting and Current).

(1901): Splr., *Schm. Eur.*, I, 203, plt. 47, 20 (1905): Hamp., *Lep. Phal.*, VI, 424 (1906): South, *M.B.I.*, I, 285, plt. 138, 1 (1907): Warr.-Stz., *Pal. Noct.*, III, 122, plt. 29i (1910): Culot, *N. et G.*, I (1), 190, plt. 34, 17-18 (1913): Meyr., *Rev. Handb.*, 125 (1928): Drdt.-Seitz, *Pal. Noct. Supp.*, III, 135, plt. 17a (1934).

This species is very variable in ground colour, the emphasis of the transverse lines, the amount and shade of the yellow, brown, black and grey in all the marking but the layout of the marking in its main features are relatively stable in position.

Hüb., *Samml. Noct.*, f. 373 (1803-8), gave fig. so extraordinary that H.-S. said it was " unrecognizable," and I agree.

Treit., *Schm. Eur.*, V (2), 23 (1825), knew little of *templi* which had only been found in Germany a short time and to him seemed to be related somewhat to *cassinia* and *nubeculosa*. It originally came from Sweden.

Dup., *Hist. Nat.*, VI, 43, plt. 75, 1 (1826), gave a good dark figure of *templi*. He placed it with *exigua* near the *Caradina* species *blanda*, etc.

Freyer, *N. beitr.*, VI, 544 (1848), gave a poor figure of a light ground form.

H.-S., *Sys. Bearb.*, II, 265, f. 454 (1850), gave a long discussion of the species and its position and a good figure but with all the transverse marking unduly prominent and precise; the surface being without the usual " fluffiness."

Mill., *Iconog. Ann. Soc. Lin. Lyon* (1867), 23, plt. 87, figs. 3-7, gave an excellent account of the life-history with a fine plate of good figures. Imago, larva, pupa, and burrow.

Barrett, *l.c.*, plt. 168, gave four figures: 1, of varying shades of ochreous brown; 1c, being much darker than the others.

Stdgr., *Cat.*, IIIed., 181 (1901), recognized the form *alpina*, Rghfr., with its synonyms *caflischi*, Ruhl., and *ferdinandi*, Ruhl. (*grisescens*) as synonyms of it (ab. *diluta*, al. post. *unicolor*).

Splr., *Schmet. Eur.*, I, 203, plt. 47, 20 (1905), gave a good figure.

Hamp., *Lep. Phal.*, VI, 424, fig. 147 (1906), included *alpina*, Rghfr., as a form and *caflischi*, Ruhl., as a synonym.

South, *M.B.I.*, I, 285, plt. 138, 1 (1907), gave a figure of the dull ochreous brown British form of this species with hardly any well defined markings and not comparable with the Continental form which has very definite emphasized markings.

Warr.-Stz., *Pal. Noct.*, III, 122, plt. 29i (1910), gave three good figures. Typical ♂ and ♀, ab. *alpina*, Rghfr. (*caflischi*, Ruhl.) and treated *ferdinandi*, Ruhl., plt. 29i, as a good species.

Culot, *N. et G.*, I (1), 190, plt. 34, f. 18-19 (1913), gave two very good figures. 18, the typical more or less grey-black marked form, and the form *variegata*, Trti., dark with well expressed blackish marking. He referred to the form *alpina*, Rgh.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 135 (1934), referred to the form *alpina* as a large dark form and added form *variegata*, Trti., somewhat bluer-grey, lines quite black without the yellow tinge of the typical form, f. 17e.

Barrett wrote of the Variation:

Variation in this species is almost confined to paler and darker shades of colouring and to the greater or less indistinctness of the markings; it moreover seems to be local or climatal, since the tendency in inland rocky localities seems to be in the direction of yellower colour and more obscure markings, that on the coast to larger size, greater distinctness of the markings, and sometimes to deeper colour; yet this is by no means invariable!

The Names and Species to be considered:
templi, Thnb. (1792), *Diss. Ent. Ins. Swed.*, IV, 56.
alpina, Rghfr. (1866), *Wien z.-b.*, V, 99.
ochracea, Tutt (1892), *Brit. Noct.*, III, 50.
suffusa, Tutt (1892), *l.c.*
caflischi, Ruhl. (1892), *Soc. Ent.*, IV, 175, Syn.?
variegata, Trti. (1909), *Nat. Sic.*, XXI, 95, plt. 5, f. 6-7.

Tutt dealt with: (1) the typical form; (2) the *ochracea* form, and (3) the *suffusa* form.

ab. *alpina*, Rghfr., *Verh. z.-b. Wien*, 999 (1866).

Orig. Descrip.—" The specimen, a female in quite good condition, had hibernated and therefore was of a paler colour than the English examples; it also differs from the northern examples in other characters. The size is somewhat less, the hairing of the thorax is paler grey than in English examples. The scaling of the forewing is interspersed with much paler hairs and is glossy, the colour more bluish-grey almost as in *H. platinea*. The stigmata appears creamy-white, the second transverse line and the wavy line only slightly apparent and much less toothed, fringes more distinctly yellowish chequered, the outer curved line of the hindwing more emphasized; underside less pale than in the typical form, the discal marks on all wings stronger, the curved line more obsolescent."

f. *ferdinandi*, Ruhl., *Soc. Ent.*, VI, 170 (1892), said by Warr.-Stz. to be a good species and to differ from *templi* only " by the absence of yellow scaling." Switzerland. Smaller.

Fig.—Stz., III, 29i. This is considered a good species by some authors.

f. *caflischi*, Ruhl., *Soc. Ent.*, VI, 170 (1892), an alpine form determined by Warr.-Stz. to be the same as *alpina*, Rghfr. Switzerland. Smaller. Probably a synonym.

Fig.—Stz., III, 29i.

ab. *variegata*, Trti., *Nat. Sic.*, XXI, 95 (1909).

Figs.—*l.c.*, plt. 5, figs. 6-7.

Orig. Descrip.—" Lineis undulatis non luteis sed intense nigrosignatis," followed by a long description on habits, variation, etc.

ab. *variegata*, Trti. [Drdt.-Stz., *Pal. Noct. Supp.*, III, 135 (1934)].

Descrip.—[" Inclined to blue-grey. The transverse lines are quite black without the yellow tinge of the typical form. The stigmata are more distinct and whitish." Riga.]

Bombycia, Steph. (1827), most authors [*Polia*, Och. & Treit. (1816-25): *Cleoceris*, Bdv. (1840), Barr.: Meyr., Meyr.: *Epunda*, Gn., 1852 (Dup. 1846)] *viminalis*, Fb. 1777).

Tutt, *Brit. Noct.*, III, 50 (1892): Meyr., *Handb.*, 53 (1895): Stdgr., *Cat.*, IIIed., 164 (1901): Splr., *Schmet. Europas*, I, 180, plt. 46, 5 (1905): Hamp., *Lep. Phal.*, VI, 219, fig. (1906): South, *M.B.I.*, I, 263, plt. 125, 5-6: Warr.-Stz., *Pal. Noct.*, III, 122, plt. 29ik, 30a (1910): Culot, *N. et G.*, I (1), 120, plt. 21, 9-13 (1912): Meyr., *Rev. Hand.*, 124 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 135, plt. 17c (1934).

Rosel., *Belust.*, II, plt. 11, 1-2, 3-4, and Ernst & Engr., *Pap. d'Europe*, VI, 240, 352, gave figures which doubtfully represent this species.

Esper, *Abbild.*, III (cont.), p. 30, plt. 84, f. 5, gave a fair figure of *stricta*, the ashy-grey form with reddish costa. Werneburg, *Beitr.*, II, 33, determined in detail Esp., *l.c.*, 75, 2, *opaca*, as a form of *viminalis*, but no other author agreed. Wrnbg. cited *placida*, IV, plt. 166, b, as this species and not *serena* with which it is placed, fig. 4-5, *l.c.*, IV (2). But there is much uncertainty about the identification of these early figures with indefinite marking.

Bork., *Naturg.*, IV, 630 (1792), dealt with this species under the name *saliceti*, which he associated closely with *coryli*. In his synonymy he said it was the *fabricii*, Fb. (*Gen. Ins.*, p. 284; the *viminalis*, Fb., *Sp. Ins.*; D. Vill., *Linn. Ent.*, *viminalis*, etc., but he was uncertain as he knew but little of the species in nature. (See Werneburg, *Beitr.*, II.)

Hb., *Samml. Noct.*, 50 (1800-3), gave a good figure of a form of *viminalis* which in his *Text*, p. 182, he called *saliceti*, Bork., and said that *viminalis*, Fb., was a synonym.

Haw., *Lep. Brit.*, 213 (1809), described this species under the name *scripta*, Hb., and referred to figs. 10 and 50 in Hb.'s *Samml.* [f. 10 is *megacephala* ?].

Treit., *Schmet.*, V (1), 104 (1825), treated of the species under the name *saliceti*, Bork., and said it was *viminalis*, Fb., of D. Vill., and of Götze, and the *stricta*, Esp., and the *scripta*, Hb.

Dup., *Hist. Nat.*, VI, 177, plt. 84, f. 4, gave a figure of a dark form and commented on Fab. reference to the figures of Rosel as having but little appearance of this species.

H.-S., *Sys. Bearb.*, II, 282 (1850), dealt with this species under the name *saliceti*, Bork. He said that Hb. f. 50 was good but too much suffused with rust-yellow. It was *viminalis*, Fb., and *stricta*, Esp.

Guen., *Hist. Nat.*, *VI*, 48 (1852), said that this species is *stricta*, Esp., plt. 84, *saliceti*, Bork., *scripta*, Hb. 50.

Barrett, *l.c.*, plt. 171, gave six figures. The "pale silvery-grey" general colour is not well shown. 2b, has an extremely wide median very dark band extending almost from the base of the forewing to the reniform; in 2c, the dark band is preceded by a largish whitish blotch on the costa at the base, and extends to the outer margin, but the silvery-grey marginal line is very conspicuous; 2d, is a very dark form with only the marginal line conspicuous; 2e, is an extreme uniformly black-brown form; in all these the normal marking are more or less suppressed.

Stdgr., *Cat.*, IIIed., 164 (1901), treated *saliceti*, Bork., *stricta*, Esp., and *scripta*, Hb., as synonyms. He recognized *obscura*, Stdgr., with *scripta*, Haw., as synonyms.

(Multo obscurior, al. ant. fere unicolor-obscure griseis vel nigricantibus.)

Splr., *Schmet. Eur.*, I, 180, plt. 46, 5 (1905), gave a very good figure of the typical form, and dealt with *stricta*, Esp., *obscura*, Stdgr., and *unicolor*, Tutt.

Hamp., *Cat. Lep. Ph.*, VI, 220 (1906). Stroud named Hamp., *Cat. Lep. Ph.*, VI, 220 (1906), " Forewing with the basal half suffused with red-brown," ab. *fabricii*, *Arch. Nat.*, LXXXI, A. 12, 147 (1915).

South, *M.B.I.*, I, 263, plt. 125, 5-6, 7-8 (1907), gave four figures 5 and 6 typical ♂ and ♀ ; 8, ab. *obscura*, Stdgr., and 7 an intermediate form; all good figures not too formal.

Warr.-Stz., *Pal. Noct.*, III, 122 (1910), gave 12 figs., plts. 29ik, 30a, ♂ and ♀ *viminalis*, Fb., ♂ and ♀ *saliceti*, Brk., *stricta*, Esp., ab. *rufescens*, Warr., ♂ and ♀ ab. *obscura*, Stdgr., ♂ and ♀ ab. *scripta*, Hb., ab. *suffusa*, Warr. (a new form), and f. *uralensis*, Bart. In addition they treated of the forms ab. *rufescens*, Warr. (a new form), *unicolor*, Tutt, and *asiatica*, B.-Haas.

[ab. *uralensis*, (Bart.). I can find no reference, hence I take Warr.-Stz. as the

Orig. Descrip.—*l.c.*, " A small grey form with some rufous along both folds, and has the hindwing whitish, with a faint outer line and grey speckling." Urals. [*l.c.*, p. 122, plt. 30a (1910)].]

Culot, *N. et G.*, I (1), 120, plt. 21, f. 9-13 (1912), gave five very good figures. 9, a light form; 10, a darker form; 11, a Bohemian form; 12, ab. *seminigra*; 13, ab. *obscura*. He referred to *unicolor*, Tutt, a blackish form.

Draudt-Stz., *Pal. Noct. Supp.*, III, 135 (1934), dealt with *fabricii*, Strand (Hamps.) and determined *seminigra*, Culot, as the *semifusca*, Petersen. They determined the *chretieni*, Roths., from Algeria, as the same as *emir*, Obthr., from the same area, plt. 17e is *chretieni*, and a good species.

Barrett described the Variation :

Variation in the southern districts is very slight, though in the fens there is a tendency to greater whiteness of ground colour with a flush of purple or pink; elsewhere rather more tendency toward slate-grey; and in rare instances the basal half of the forewings is dark smoky-grey or slate-grey, while the outer half remains of the normal colour.

He reported a specimen " having the two colours very sharply divided in the middle of the wings."

A general suffusion of dark grey or purplish-slate colour appears in more northern districts and with it a form in which the forewings are wholly dark purple-brown, purple-black, or slate-black, usually with the stigmata equally suffused or also the reniform is a shade paler. These dark forms are common in S. Yorkshire.

A specimen is reported " ground colour of the forewings is deep slate-grey, but the base, the stigmata, and a broad subterminal stripe are soft whitish-grey."

Another " is rich dark purple-grey with a black central stripe, and another black stripe near the base, both very straight and the stigmata edged with pale grey."

Shetland examples are " pale in the ground colour, but large, and with the markings intensified."

The Names and Species to be considered:

viminalis, Fb. (1777), *Gen. Insect.*, 284.
stricta, Esp. (1787+?), *Abbild. Noct.*, III, 30, plt. 86, f. 5.
saliceti, Bork. (1792), *Naturg.*, IV, 630.
scripta, Hb. (1800-3), *Samml. Noct.*, f. 50. *Text*, p. 182.
obscura, Stdgr. (1871), *Cat.*, Hed., 116; *l.c.*, Hed., 164 (1901).
intermedia, Tutt (1892), *Brit. Noct.*, III, 51.
unicolor, Tutt (1892), *l.c.*
arctica, Splr. (1900), *Trans. Mus. Aar.*, XXIII, 187. (I can find no recent reference.)
semifusca, Petersen (1902), *Beitr. Kunde. Est.*, 76.
fabricii, Hamps. (1906), *Lep. Phal.*; VI, 123 (see below).
rufescens, Warr.-Stz. (1910), *Phal. Noct.*, III, 122, plt. 29k.
suffusa, Warr.-Stz. (1910), *l.c.*, plt. 30a.
asiatica, [Bang-Haas] (1910) [*Iris*, XX, ined.] Warr.-Stz., *Pal. Noct.*, III, 122, f. in *Iris*.
uralensis, [Bart.] (1910) [Warr.-Stz., *l.c.*, plt. 30a].
seminigra, Culot (1912), *N. et G.*, I (1), 121, plt. 21, f. 12 (=*semifusca*, Peters.) Syn.
fabricii, Strand (1915) from Hamps., *Arch. Nat.*, LXXXI, A. 12, p. 147.
emir, Obthr. (1918), Obthr., *Lep. Comp.*, XVI, 146, f. 4122. Algeria, a species, and
chretieni, Roths. (1920), *Nov. Zool.*, XXVII, 54, the same species.

Tutt dealt with: (1) the typical form, base brownish, outer half grey; (2) *stricta*, silvery-grey with red costa; (3) *scripta*, bright silvery-grey; (4) *intermedia*, ground colour suffused, markings distinct; (5) *obscura*, black, with distinct markings; (6) *unicolor*, unicolorous black.

f. *saliceti*, Bork., *Naturg.*, IV, 630 (1792).

Fig.—Warr.-Stz., *Pal. Noct.*, III, plt. 29k.

Orig. Descrip.—" The half of the forewing from the base up to the middle is dark brown, but the other half is clear grey as in *B. coryli*. The two areas are separated from one another below the grey reniform by an unbroken orange-yellow-blackish streak. The orbicular which lies on the brown ground is somewhat lighter than the ground, and in front of it one sees a feeble orange coloured, blackish margined transverse line. The reniform, which is light grey, also lies clearly in the brown area, but the two colours of the dividing streak and the lower part of the stigma are not clearly separable, so well do they fade into the light grey area. The brown colour appears on the costa beyond the reniform into the grey area and in this ground on the costa not far from the apex there lie a few whitish dots. A whitish line stretches on the inner edge of the costa to the inner angle, and the grey fringes are separated from the marginal area by a line forming a black streak. The hindwings are ashy-grey gradually becoming lighter towards the base with whitish

fringes. The palpi and head are ochre-yellow; the antennae rust coloured."

ab. *semifusca*, Ptrsn., *Lep. Fn. v. Est.*, p. 76 (1902).
ORIG. DESCRIP.—" Al. ant. dimidio basali, usque lineam transversum posteriorem et maculam reniformem totis fuscis."
" The whole basal half of the forewings, up to the inner transverse line and the reniform, is sharply cut off blackish." Estland.

Hamp., *Cat. Lep. Phal.*, VI, 220 (1906), gave the following description of a form.
ORIG. DESCRIPTION.—" Forewing with the basal half suffused with red-brown." This Strand, *Arch. Nat.*, LXXXI, A. 12, 147 (1915), redescribed and named *fabricii*.

ab. *rufescens*, Warr.-Stz., *Pal. Noct.*, III, 122 (1910).
FIG.—*l.c.*, plt. 29k.
ORIG. DESCRIP.—" Has the whole forewing and underside of both wings suffused with rufous."

ab. *suffusa*, Warr.-Stz., *l.c.* (1910).
FIG.—*l.c.*, plt. 30a.
ORIG. DESCRIP.—" With the white forewing suffused with smoky-brown obliterating the lines, and having only the stigmata with their black outlines visible."

ab. *asiatica*, (Bang-Haas) Warr.-Stz., *Pal. Noct.*, III, 122 (1910). [Bang-Haas figured this form in *Iris*, vol. 20, without description.]
ORIG. DESCRIP.—" Grey and fuscous without any brown tinge," W.-Stz. Siberia.

r. *uralensis*, Bart. [Warr.-Stz., *Pal. Noct.*, III, 122 (1910)].
FIG.—[*l.c.*, plt. 30a].
DESCRIP.—[" A small grey form, with some rufous along both folds, has the hindwings whitish with a faint outer line and grey speckling." The Urals.]

ab. *seminigra*, Culot, *N. et G.*, I (1), p. 121 (1912).
FIG.—*l.c.*, plt. 21, f. 12.
ORIG. DESCRIP.—" The first half of the forewing is almost black." This is the *semifusca*, Petersen.

ab. *fabricii*, Strand, *Arch. f. Naturg.* (1915), A. 12, p. 147.
ORIG. DESCRIP.—" The basal half of the forewings is tinted with red-brown." Provence.

var. *emir*, Obthr., *Lep. Comp.*, XVI, 146 (1918).
FIG.—*l.c.*, 496, f. 4122.
ORIG. DESCRIP.—" The Algerian form is of a somewhat dull silvery-grey." " The ♂ hindwings are pure white. The ♀ is always more obscure."

var. *chretieni*, Roths., *Nov. Zool.*, XXVII, 54 (1920).
Roth. said a doubtful species but not *viminalis*.
These two are one species and now considered to be a good species *emir*, Obthr., and not *viminalis*.

Eumichtis, Dup. (1821), Warr., Hamp., Drdt. [*Polia*, Och. & Tr. (1816-25), H.-S., Meyr., Meyr., Frr., Dup., etc.: *Epunda*, Dup. (1844), South, Culot, Gn., Stdgr, etc.] *lichenea*, Hb. (1809-13).

Tutt, *Brit. Noct.*, III, 52 (1892): Meyr., *Hand.*, 53 (1895): Barr., *Lep. Br. Is.*, IV, 287, plt. 167, 2 (1897): Stdgr., *Cat. Lep.*, IIIed., 179 (1901): Splr., *Schm. Eur.*, I, 200, plt. 38, 15 (1905): Hamps., *Lep. Phal.*, VI, 321, fig. 105 (1906): South, *M.B.I.*, I, 265, plt. 137, 5-6 (1907): Warr.-Stz., *Pal. Noct.*, III, 120, plt. 32a (1910): Culot, *N. et G.*, I (1), p. 180. plt. 33, f. 8-10 (1913): Meyr., *Rev. Hand.*, 137 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 138, plt. 17a (1934).

Hb., *Samml. Noct.*, 562-3 (1809-13), gave two good figures but with the submarginal band too emphasized. Fig. 797, *l.c.*, Hb.-Gey., gave a good figure of ab. *tephra*, without the red band.

Dup., *Hist. Nat.*, VI, 420 (1826), was the first to describe this species which was figured by Hb., *Samml. Noct.*, 562-3. He figured it on plt. xcix, 2, a banded figure with dark ground and markings, comparable with lichens on trees.

Frr., *Neu. Beitr.*, I, 39, plt. 21, 2 (1833), gave a very fair figure of a grey, banded form, a worn specimen from which the beautiful green marking had vanished (teste a letter from Treit.). See *l.c.*, p. 176.

Treit., *Schmett.*, X, 51 (1835), described the *lichenea*, Hb., *Samml.*, figs. 562 and 563, in his genus *Miselia*. "Alis anticis viridi, fusco-flavoque marmoratis, maculis ordinariis fasciaque externa dilutioribus purpureo micantibus; posticis dilute cinereis," and cited Bdv., *Ind. Meth.*, 70 (1829).

In *l.c.*, p. 55, he dealt with *viridicincta*, Frr., which he placed in the genus *Polia*, but made no mention of *lichenea* in this connection.

H.-S., *Sys. Beatb.*, II, 256 (1850), criticized the figures of Hb. rather strongly. "Recognizable, especially the ♂. Wing too short, in the ♀ costa of forewing too bulging; in both, especially the ♀, the colour is too varied, the hindwing too little marked, the fringes too yellow. Most examples are paler."

H.-S., *l.c.*, v. *viridicincta*, Frr. He discussed this form at considerable length, and figured it. Fig. 415, with the submarginal band green and not red as in the typical form.

Guen., *Hist. Nat.*, VI, 48 (1852), said that *viridicincta*, Frr., was a form of *lichenea*.

Barrett, *l.c.*, on plt. 167, gave four figures: 2a, a ♂ with very uniformly coloured yellow ground; 2c, a dark blackish-brown ♀; in 2 and 2b there are white markings which are unusual I believe.

Stdgr., *Cat.*, IIIed., 179 (1901), recognized one form, *viridicincta*, Frr., and its syn. *tephra*, Hb.-G.

Splr., *Schmett. Eur.*, I, 200, plt. 38, 15 (1905), said that the forewing in his figure was too blunt and the outer margin too bowed. The olive-green colour and the orange-red markings are normal for the typical form. He only gave one variety, *viridicincta*.

South, *M.B.I.*, I, 285, plt. 137, 5-6, figured the Portland and Plymouth forms, the former greyish in tone, the latter greenish and larger. Both figures are dark and heavy in appearance.

Hamp., *Lep. Phal.*, VI, 322, f. 105 (1906), gave a good b. and w. figure and noted the ab. *tephra*, Hb.-Geyr., only. He placed the form *viridicincta* as a synonym.

Warr.-Stz., *Pal. Noct.*, III, 130 (1910), gave two very good figures, plt. 32a, *lichenea*, Hb., and ab. *viridicincta*, Frr. They dealt with two other forms, *aetnea*, Trti., and *tephra*, Hb.-G.

Culot, *N. et G.*, I (1), 180, plt. 33, f. 8-10 (1913), gave three excellent figures of a species difficult to reproduce satisfactorily. Fig. 8, typical green lichen-like insect; 9 is *viridicincta*, a very pale N. African and Sicilian form; and 10, a very dark obscure form *aetnea*, Trti., from Sicily.

Of the Variation Barrett said:

Rather liable to local variation, Devon specimens being rather large and more suffused with green, those from South Wales and other western districts smaller and with more of the purple tints, and the green darker; those from the Isle of Portland pale grey and with but little green marbling, and the pale markings all white or pinkish-white, an exceedingly pretty form—but all these shades of variation are connected by intermediates.

In Mr S. J. Capper's collection are specimens of a peculiar *dull* grey with the marking very obscure except that the black wedges near the hind margin are distinct and sharply defined and the row completed.

The Forms and Names to be considered:

lichenea, Hb., *Samml. Noct.*, 562-3 (1809-13).
ab. *tephra*, Hb.-Gey., *l.c.*, 797 (1828-32).
f. *viridicincta*, Frr., *Neu. Beitr.*, I, 39, plt. 21, 2 (1833), cf. *l.c.*, p. 176.
f. *aetnea*, Trti., *Nat. Sic.*, XX, Extr. p. 31, plt. vi, 25-27 (1907).
r. *apennina*, Dnhl., *Mitt. Münch.*, XX, 115 (1929).
ab. *albipunctata*, Siv. Smith, *Ent. Record*, LIV, 94 (1942).
ab. *coerulescens*, Siv. Smith, *l.c.*, 95 (1942).
ab. *pallido-fasciata*, Siv. Smith, *l.c.*
ab. *nigrolineata*, Siv. Smith, *l.c.*
ab. *intermedia*, Siv. Smith, *l.c.*
ab. *evalensis*, Siv. Smith, *l.c.*
ab. *atlantica*, Siv. Smith, *l.c.*, 96.
ab. *ochracea*, Siv. Smith, *l.c.*
ab. *flavescens*, Siv. Smith, *l.c.*
ab. *simulans*, Siv. Smith, *l.c.*
ab. *albin-ochracea*, Siv. Smith, *l.c.*, 97.
ab. *splendida*, Siv. Smith, *l.c.*

Tutt dealt with: (1) the typical form, olive-green with red markings; (2) f. *viridicincta*, a pale greenish-grey form, with scarcely any trace of red marking.

ab. *tephra*, Geyer-Hb., *Samml. Noct.*, f. 797 (1828-32). The figure is quite good.

DESCRIP.—" Paler and greyer without the olive shades," Hamp., *Cat. Lep. Ph.*, VI, 322 (1906).

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to HY. J. TURNER, " Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—EDS.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr HY. J. TURNER, " Latemar," West Drive, Cheam.

Desiderata—British *dominula* varieties with full data other than var. *lutescens* and var. *lineata*. Other vars. acceptable. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris*, and *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Lycaena (Heodes) phlaeas from all regions including British Isles. Also wanted other species of Chrysophanids from all areas. Exchange or purchase considered. *Duplicates.*—Foreign Lepidoptera, e.g., Satyrids, Charaxes, Papilios, and others; full lists sent.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

Book Wanted.—Barret, *British Lepidoptera*, Vol. 3.—*L. E. Savage, 65 Cranmer Avenue, Hove 4, Sussex.*

Books Wanted.—" Draug-Seitz Suppt., Vol. III (Noctuae)," English preferred.—*A. J. Wightman, " Aurago," Pulborough, Sussex.*

Exchange.—For disposal, all families of Coleoptera in exchange for British Hydradephaga and Hydrophilidae.—*R. Kaufmann, Todrell Hall, Holmes Chapel, Cheshire.*

Communications Promised :—E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, P. B. M. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, H. Donisthorpe, Prof. J. W. Harrison, L. Ford, etc.

All Communications should be addressed to the Acting Editor, HY. J. TURNER, " Latemar," 25 West Drive, Cheam.

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m. on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. November 13; December 11; 2 p.m. for 2.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Printed by T. Buncle & Co., Ltd., Arbroath.

Vol. LV.

No. 11.

NOVEMBER 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

NEW FOREST RHOPALOCERA IN 1943.

By Colonel V. R. Burkhardt, D.S.O., O.B.E.

In the absence of petrol for pleasure the entomologist is reduced to more primitive means of locomotion in the pursuit of his hobby. The New Forest is a large area, and not particularly well covered by the bus service, which, in any case, is overcrowded in the summer months. Accommodation in centres accessible to the best enclosures, such as Lyndhurst and Brockenhurst, is not easy to obtain. Highcliffe is eccentric, being over three miles from the southern edge of the Forest, but most of the desired ground can be covered by rail and a bicycle. A good local train service deposits the collector at Brockenhurst, Beaulieu Road, or Lyndhurst Road in time to reach the Forest on foot by 11 a.m. (double summer time), before which hour the butterflies are disinclined to enter into the spirit of the game. From these stations, Park Hill, Rannor, Pignal, Perry Wood, Frame Heath, Wood Fidley, Iron Hills, Buskets Lawn, and Church Place can be covered without undue exertion. The bicycle is necessary for the Burley and Ringwood areas, which are eight and eleven miles respectively. As many of the roads to be traversed are surfaced with flinty gravel, good tyres are most desirable. A new set will do 2600 miles without a puncture, or two seasons' continuous work. The southern group of inclosures, Holmesley, Wilverley, Wootton, Broadley and Set Thorns seem to have fallen on lean years, and are almost deserted by insects formerly abundant. *B. euphrosyne* was very scarce this season and *B. selene* non-existent. *A. cydippe* had left its usual haunts in Wilverley, and *L. camilla* was exceedingly short in numbers. A single specimen of *N. polychloros* ♂, in good condition, was taken on the banks of the Avon water on 28th March, and several were seen about that time near Lyndhurst. An extremely mild winter, with abnormal incidence of sunshine, brought out the hibernators at least a month before their usual appearance. *N. io* was on the wing on 29th January and, with *V. urticae*, was to be seen regularly on any fine day after 19th February. *G. rhamni* was more sceptical about the English climate and, after an appearance on that date, was not seen on the wing for a month. *P. c-album* was first noted on 15th March. *P. rapae* ♂ was out on 18th March, *P. brassicae* ♀ and *P. aegeria* ♂ on 27th, when *rapae* was in fair numbers. *L. camilla* larvae were emerging from hibernation at the end of the month. *E. cardamines* was seen on the edge of the Forest on 3rd April and *H. (L.) phlaeas* on the 5th. *S. malvae* appeared on 13th April with *N. tages* five days later. The first *B. euphrosyne* ♂ was noted at Ossemsley Manor on the 21st April and the insect was well out in the Forest a fortnight later. The brood was not a strong one, about a third of the previous year's when they were by no means numerous. Excessive felling of timber has undoubtedly been inimical to butterfly life. A large number of *paphia* ova must have been destroyed on the trees, and the haulage through the undergrowth and along the rides cannot have been beneficial to the larvae of *euphrosyne* and *selene*. The rides themselves have suffered. Their grassy surface has been churned into an uneven sea of clay, boggy in the spring and iron hard in dry weather. Every vestige of bugle and bramble has disappeared from many of the rides, and in some cases gravel roads have taken the place of the familiar glades. Undoubtedly

the clearance of many of the thick fir copses will ultimately have a beneficial effect on butterfly life by letting in more sunlight, but it is to be hoped that the utility craze will not convert one of the best nature preserves in the country into a Black Forest. *B. euphrosyne* did not vary to any startling extent though some banded forms and minor aberrations were taken in the middle fortnight of May. Colour varieties were scarcer than last year. *P. megera* was fairly plentiful and a ♂ with rudimentary apical spots was taken in Wood Fidley on 4th May. *L. camilla* larvae were then not difficult to find, the majority being green. An hour's search rewarded two collectors with a good number. *B. selene* has been steadily getting scarcer in the Forest. This year hardly any colony exceeded 20, and no aberration was reported. The first emergences were about 23rd May. *A. cydippe* appeared on 11th June, but was very short in numbers. Only 30 were counted over a mile in one locality which swarmed with them in previous years. One nice melanic aberration was taken (E. E. Johnson) on 16th July. On the 11th June the first *L. camilla* and *A. paphia* ♂♂ were seen. On the same day *C. croceus* was seen flying rapidly and the first of the summer brood of *A. urticae*. On the 12th *C. croceus* ♀ and ab. *helice* were taken for breeding.

The black variety of *L. camilla* was a distinct rarity this year. Four were certainly seen, and two taken in widely separated parts of the Forest. *A. paphia* was a disappointment. ♂♂ were well out on 26th June, but the ♀♀ failed to materialise. In one enclosure ab. *valezina* was, if anything, in excess of the normal ♀, whereas in another well-known locality it was conspicuous by its absence. Aberrations were excessively rare and captures were confined to a few white-spotted ♂♂ and two ab. *infra-confluens* (hindwings only). *A. hyperantus* was short in numbers and showed no tendency to vary. The summer brood of *P. c-album* was very poor in the Forest and *T. quercus* almost non-existent. *M. jurtina* was in fair numbers.

P. argus (*aegon*) is usually very abundant on the heather in many localities, but this year seemed to have suffered the fate of most of the other species. No good aberrations were recorded. It was full out in the first week in July. *A. paphia* were going over by the middle of the month; but to the end the ♂♂ seemed to predominate. The weather was generally adverse, high wind, cloud, and rain monopolizing the best collecting hours, and the sun only emerging when the discouraged entomologist had retired from the fray. Two violent thunder-storms broke over the district on 6th July, but failed to cause any variation in the emerging *paphia*.

The first *M. tithonus* were seen on 1st July, but they were not fully out till the end of the month. Ab. *mincki* (primrose-yellow) and ab. *albida* (cream), both freshly emerged ♀♀, were taken about two miles south of the Forest boundary.

It used to be said that a "Green Christmas fattened the Churchyard." If the present season is a criterion a mild winter is fatal to Rhopalocera, but the entomologist's cabinet is not their mausoleum.

Walkford Hotel, Highcliffe-on-Sea, Hants.

COLLECTING NOTES.

Colias croceus, Frcry., in Gloucestershire, and Other Autumn Species.—I was fortunate enough to be able to spend a further three days, 16th-19th September, in Gloucestershire, when I could get up to Chedworth Woods, near Cheltenham. On the 17th I saw in the distance a single *C. croceus*, but was unable to get anywhere near it. There was a stubble field containing a lot of clover at the edge of the Woods, but although I looked carefully while I was there I did not see any further specimens.

I saw three very fine *Polygonia c-album*, L., in the Woods, haunting their respective corners as is their habit, and there were a number of *Aglais urticae*, L., and a few *Vanessa atalanta*, L. Several examples of *Pararge aegeria*, L., were seen, past their best condition, and all the examples of *Coenonympha pamphilus*, L., seen were worn. Two male *Polyommatus icarus*, Rott., one a very small one indeed, rather purple in tone, complete the list of butterflies seen except for a few *Pieris rapae*, L., on the outskirts of the Woods near a farm, and a few *Heodes* (*Lycaena*) *phlaeas*, L.

There were two quite fresh males of *L. phlaeas* by the bank of the River Colne, one quite fresh male and a slightly worn male in the Woods. These were quite unsuffused with darker scales and may have represented a third brood, although I should not have thought the weather this summer has favoured the production of such a third brood. They may have been late examples of the mid-summer brood except that the lack of suffusion is against this. Furthermore, a very tattered male was observed in the Woods which, as far as I could judge considering its condition, was of the usual summer suffused form and referable to var. *initia*, Tutt. The question of the general existence of a third brood in Britain is not entirely clear, I think, and I would not like to be certain one way or the other about the fresh males that I saw. More observations up and down the country are required to get a clearer picture of this point.

I did not see many moths, apart from a male " Vapourer " that flew merrily past me in the sunshine, and two *Anaitis plagiata*, L., one quite fresh and one worn. Once again I saw a single *Catocala nupta* resting on a telegraph pole, facing due south and in quite hot sunshine. I disturbed it and it flew down the road and settled on a wooden post fencing the railway, again in the full sunshine and facing south as before. It remained there from the morning until the late afternoon as I saw it still there on my return from the Woods. For a previous series of notes on this species resting in full sunshine the references are: *Ent. Record*, 1935, p. 13, p. 38, p. 52, p. 66, p. 78, p. 130, p. 137; 1936, p. 23; 1942, p. 31. Those notes relate to *C. nupta* flying in sunshine, resting in the day-time in full sunshine, resting on coloured doors, etc. It is evidently a species that does not object to being exposed to hot sun.

The only larvae I saw were three *Macrothylacia rubi* on grasses outside the Woods.—P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.

Some Observations on the Season 1943.—I wish to add my records to others who have already done so for early appearances in this exceptionally early season.

On 18th March I found 52 *Arctia villica* larvae near Pytch Hill, most of which were nearly full-grown. On the same day I observed, but did not actually catch, two specimens of *E. atomaria* in an extremely hot heathery hollow at the same place. On 27th March I observed some hundreds of *Panaxia dominula* larvae near Ringwood, a few of which were practically full-grown. On 4th April I saw the first male *Euchloë cardamines*, and on the 18th of the month males of *S. paronia* were assembling freely in my garden.

I did not actually observe any *Celerio livornica* in May or June, but from a description of a moth flying over Honeysuckle, near Cranleigh, at dusk I should think it was most likely this species. *Plusia* gamma was abundant in June, and odd specimens of *Colias croceus* were seen in Cranleigh.

From 7th-12th July my wife and I spent five days near Padstow in North Cornwall looking for *livornica* larvae. We examined large areas of Bedstraw, but merely succeeded in finding large numbers of larvae in all instars of *M. stellatarum*, including some of the form with a black ground colour.

Larvae of *H. peltigera* were common on one small patch of *Ononis*, and acres of this plant produced no other larvae of this species. I took one larva of *H. dipsacea* on this same food plant.

Soon after my return on 31st July I was called out to see a caterpillar which had been found by a farmer in a mangold-wurzel field near Cranleigh. It proved to be a full-grown larva of *C. livornica*. A minute examination of this field revealed no evidence of eating, although large patches of Goosegrass and Toadflax (the three species) were examined. The former plant, however, was found to have numerous full-grown larvae of *M. stellatarum* feeding on it. The following day, on observing the record for 1870 of a larva of *livornica* being found in a mangold-wurzel field near Exeter, and the same year others having been found feeding on Dock, I returned to the field and found that most of the isolated Dock plants had been eaten to the ground, and surrounding them were traces of the unmistakably large and corrugated frass. I, therefore, have little doubt that there must have been several other larvae of this species in the field, but that they, like mine, had wandered immediately prior to pupation. Large quantities of Antirrhinums were examined by me in the district: no larvae were found, so it appears, having in mind the records up to date of larvae found this year, that, unlike the 1931 migration, this food plant was not the plant of choice this year. My larva was bred to an imago which hatched on 31st August. It was a female and I attempted to assemble with it for three nights without success.

On the evening of 23rd August I caught a fresh and very large female *livornica* flying over Petunias near my garden at early dusk. I observed no other specimens of this species although a watch has been kept every night up to 20th September.

On 13th September I had brought to me a female *S. convolvuli* which had been found in Cranleigh.—H. B. D. Kettlewell, F.R.E.S., Cranleigh, Surrey.

Further Observations on Non-Specific Assembling Scents in Macro-Lepidoptera.—In the *Entomologist's Record* for May 1942, page 62, Vol. liv, under the heading "The Assembling Scents of *Arctia villica* and *Parasemia plantaginis*," I recorded that in the previous year I had observed the males of *villica* being attracted freely to female *plantaginis*. These facts were again repeated in 1942, but in this case by introducing the female *plantaginis* into a large perforated zinc assembling trap which I had built. Large numbers of male *villica* were attracted and caught in the trap in July.

I wish now to record the attraction of male *P. fuliginosa* to female *P. dominula*.

During the course of experimenting with *P. dominula* I obtained imagines of this species early in April. In the process of attempting pairings *inter se*, cages containing male and female *dominula* were placed in warm parts of the garden. On the afternoon of the 15th of April I observed a male *fuliginosa*, a species I had hitherto not had in my garden, flying among the cages. The following day I saw another male *fuliginosa* attempting to enter the muslin cages containing *dominula*. From its behaviour there is no doubt in my mind that the insect was in a state of sex-excitement. On the 18th of April, on examining my cages late in the evening I found a further male *fuliginosa* which had come to rest under the muslin of the *dominula* cage. It, therefore, appears there may be some factor common to the scents of these two species.

I wish to record further, but in this case with the greatest reservations in regard to drawing too hasty conclusions, that on two occasions in July this year I found in my assembling trap a male of *O. limitata* during a period when my trap contained a female *Arctia caia* only. On both occasions the particular *caia* females were virgins at least a week old, and had outrun their assembling powers of attracting male *caia* which had come so abundantly during the first few days of their virgin life. At the same time I find it hard to believe that the complications which exist in their entering this trap could on two occasions have been overcome by this Geometer if it were only looking for a suitable resting place. I, therefore, record this as a pious observation awaiting further evidence of proof.—H. B. D. Kettlewell, F.R.E.S., Cranleigh, Surrey.

N. polychloros.—I was surprised to read Captain Parsons' statement that no references to this insect in this country exist for the last ten years except by C. Nicholson in 1936-7 and his own in your issue for September 1943. The *Sussex County Magazine** for August 1943 reports captures by Mr Smail at Worthing, 15th July 1942, and Mr Arnold at Eastbourne, 6th March 1943. My recollection is that other appearances of this admittedly rare butterfly have been reported in this admirable county magazine in previous years, too.—L. Richmond Wheeler, Ph.D., Grantchester, Chyngton Road, Seaford.

*A local magazine is not the proper place for scientific records of general interest.—Hy. J. T.

A Note on Gonepteryx rhamni.—For 1943 my first sight of this species was on 11th April when three males were met with on Bookham Common, but I did not see any ova until 16th May when six were found on the upper surfaces of leaves, five of them being together in a cluster on one small leaf. I got four more on under surfaces on 5th June. From these ten the larvae were all reared. I did not search for larvae, but I took most of those that I happened to see, thirty-two coming from *Rhamnus frangula* and one from *R. catharticus*. When both species of food plant were offered the larvae only ate the former. Seventeen half-grown larvae were found together on one small bush and were taken and all duly pupated, though as we had seen an Ichneumon pupa on the bush we had expected that some of the larvae might be parasitized. However, the species seemed to be very free from this pest as out of forty-three larvae I had only one that was attacked.

Of the thirty-three larvae found twenty-nine were on the upper surfaces of leaves and four on the under, but as most of them were half-grown when found they had left their youthful location for the position taken up in the later stages of larval life. Counts taken from time to time as to the positions in daylight of the larvae in the breeding cages showed 40% on the upper surface of leaves, 36% on the under, 16% on the sides of the cages, and 8% on the twigs, thus giving a different proportion to that observed in the open when the larvae very rarely seem to rest on the twigs. They remained quiescent during daylight and as a rule only moved and fed during the night.

The first imagines, five females, emerged on 12th July and the last on 6th August, also a female As stated above, one larva was parasitized while one pupa failed to emerge, turning soft and mushy inside, and two others were accidentally crushed. The females were in the proportion of three to one, which seems to be unduly high since, as a rule, males are much more often seen than females. Most of my specimens were placed out of doors on the under surfaces of leaves of *R. frangula*. Adjoining this tree is a young lime, *Tilia vulgaris*, and the butterflies crawled along to take up positions on the under surfaces of the larger leaves of this tree, where they got a better foothold and more protection from the weather, and also a greater degree of protective coloration. Some of the females remained for three days under a leaf before they flew off, even though the days were sunny and bright. Males would stay for about twenty to twenty-four hours, the most sluggish taking wing late in the afternoon of the second day.—H. J. Burkill, 14th October 1943.

Immigrant Lepidoptera in the Inner and Outer Hebrides.—This year has been rendered noteworthy in the Hebrides by the excessive abundance of *Vanessa cardui* in the Outer Isles. On South Uist, in August, the larvae were in thousands, every thistle (and they swarm) carrying its stock of tenants. In the Inner Group *V. cardui* appeared on Loch Scresort, Isle of Rhum, in small numbers on 29th May, but, although widespread, the larvae were very scarce in August except in Glen Duian. *V. atalanta*, on the other hand, appeared on Rhum at the same time, but both there and on the Outer Group larvae were scarce. The imago was noted on the Isle of Muck on 8th September. *Pieris brassicae* put in an appearance on Rhum, coming in from the

sea from the west, on 3rd June. Its numbers increased rapidly until 5th June; over a hundred were noted at Rhododendron flowers at Kinloch. The Large White was not uncommon in the Isle of South Uist as larvae, but its distribution was irregular. At Stoneybridge in the centre of the island there were obviously two distinct immigratory groups represented, one series on 26th August being full-grown and the other barely a week old. A noteworthy fact about this insect is that on South Uist it was defoliating turnips as well as cabbages. *Plusia gamma* turned up in both groups of islands in May and August, but only in limited series. The Humming Bird Hawk (*Macroglossum stellatarum*) appeared in single examples on Hallival slopes, Rhum, 1st June, and on the Allt Volagir in South Uist on 22nd August. *Nomophila noctuella*, also, was widely dispersed on Rhum and South Uist, although in no great quantity.—J. W. Heslop Harrison, Department of Botany, King's College, University of Durham, Newcastle upon Tyne.

Wasps on the Isle of Rhum.—Wasps in the Western Isles are rare enough for it to be recorded that we saw nests of three species there in August. *Vespa rufa* and *V. vulgaris* were nesting on the bank sides of the Kinloch Burn, whilst *V. sylvestris* had its hanging nests in shrubs in the woods at the head of Loch Scresort.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne.

Cidaria fulvata on Rosa spinosissima on the Isle of Rhum.—On 5th June, during a survey of the possibilities of Loch Scresort as a source of Chondrus, I examined and listed the vegetation of the cliffs around Rudha na Roinne, when I was surprised to find that the Burnet Rose was being attacked by larvae of *Cidaria fulvata*. Later in the year, on 17th August, in a little hazel copse along the Kinloch Valley, the insect was common enough amongst the same species of rose as well as on *R. Sherardi*.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne.

The Mating of the Green-veined White (Pieris napi).—On 5th August, as I was returning from my examination of the Carrageen growing on the rocks in the west of the Isle of South Uist, I observed the curious gyrations of two whites on a reed-grown lochan to the east of Loch Kildonan. These two whites circled around each other and the reeds for what seemed an endless time, only, in the end, for no apparent reason, to dash into the base of a clump of rushes almost at my feet. The female came to rest, head upward, first, and in a twinkling, without further delay, they were paired.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne.

The Genus Plusia on the Isle of Rhum.—Owing to "black-out" conditions, it is quite impossible to work anywhere on Rhum after dusk except near Kinloch. Thus we are unable to say much about the Plusias existing elsewhere. However, in that station, many of the British species are far from uncommon. On the moors, on the slopes of Barkeval, *Plusia interrogationis* is common enough, as is also *P. gamma*, when there happens to be an immigration. However, in the woods and grounds around Kinloch, *Plusia bractea*, *P. iota*, *P. pul-*

chrina and *P. chrysitis* are very far from rare in July and August. Of the species named, I have collected pupae of *P. interrogationis* on heather in May and larvae of all the rest except *P. gamma* on nettle in May and June.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne.

Abundance of Eupithecia linariata at Birtley, Co. Durham.—As I have pointed out before, Robson, in his *Catalogue of the Lepidoptera of Northumberland and Durham*, treats this species as an extreme rarity. This has always puzzled me as its foodplant, the Common Toadflax, abounds on railway bank sides, slag heaps, etc., but until recently I had no opportunities for investigating the matter. It can now be said that the insect is quite plentiful wherever masses of the Toadflax exist. For instance, on an old slag heap, near Birtley, along which passes an old fence, I saw exactly 20 females on the afternoon of 10th July. One of these was a remarkable specimen, for it bore a general smoky suffusion whilst the central band was exceedingly heavily marked, appearing as an intense black on an otherwise smoky ground.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne.

The Chalk Carpet (Ortholitha bipunctaria) and the Thyme Plume (Pterophorus tetradactylus) in Inland Localities in Durham.—In Robson's List, the above two species, except for casual captures, some of which are without recent confirmation, are reported as being restricted to the Magnesian Limestone in coastal areas. Even then, very few localities are mentioned. This season I conducted an excursion of the Northern Naturalists' Union to Cassop Vale in central Durham. The day was fine and sport good. As a result very interesting captures were made, more especially on a dry, hot limestone bank near Old Cassop Colliery. The most conspicuous of these were *Ortholitha bipunctaria* and *Pterophorus tetradactyla*, both of which, especially the latter, abounded. It should be noted that on these slopes, and on others near by, *Phothodes captiuncula* (the Least Minor) may be taken freely. However, these, especially the Quarrington Hill stations, I have recorded before; their importance, as being inland localities, however, requires emphasis.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne.

Thera variata Schiff. and T. obeliscata Hb. on the Scottish Western Isles.—My son, Dr George Heslop Harrison, has already reported the first-named insect from the Isle of Canna, west of Rhum, whilst I have captured *T. variata* on Raasay and *T. obeliscata* on Raasay, South Rona and Scalpay, all lying to the north-east of Skye. Now both are noted from the Isle of Rhum, where Mr William Campion and myself have taken both larvae and imagines. Perhaps it is worthy of note that *T. cognata* and *T. juniperata* occur on the same island on *Juniperus siberica*.—J. W. Heslop Harrison, King's College, Newcastle upon Tyne.

Plenitude of Eumenis semele, L.—The "Grayling" butterfly has been unusually plentiful here this season. Previously I have seen only an odd specimen or two, always on bare stony hillsides, usually above the 1000 foot contour. But this year the species has occurred "all over the

place," even in parks and meadows.—P. B. M. Allan, Newtown, Montgomeryshire.

Early Notes from East Tyrone.—The months of February and March were mild and spring like; after the middle of April the weather turned very cold with frosts at night. *Nymphalis io* was on the wing in a sheltered spot on 3rd February; *Pararge aegeria* appeared on 11th April, together with *Euchloë cardamines* and *Pieris napi*; *Pieris brassicae* ♂, 22nd April; *Pararge megera*, 1st May.—Thomas Greer, Sandholes, Cookstown, N. Ireland.

Vanessa cardui, L., in North Wales.—On 13th June a small moth which I was attempting to box dived into the densely matted dead bracken among scattered oaks on a hillside. I removed the tangle of decaying vegetation piecemeal (it must have been seven or eight inches thick), and as I pulled aside the lowest layer, to my astonishment a female *Vanessa cardui*, L., crawled up on to my hand. She was a fine large specimen, a little faded but otherwise intact. There had been a gale the previous day. On 15th June *The Times* recorded the immigration of "a great number" of this butterfly into Cornwall on 4th June. During the succeeding week several were seen on the hillsides here, some of them ovipositing on *Onopordon acanthium*, L.—P. B. M. Allan, Newtown, Montgomeryshire.

Nymphalis polychloros.—This species appears to be on the increase in this district. For several years it has been reported to me as "seen" in the Spring in a number of widely separated places, and this year a young collector took 4 ♀ in late March with the net.—L. Richmond Wheeler, Ph.D., Grantchester, Chyngton Road, Seaford.

Maniola tithonus, L.—Since recording the capture of a lemon-yellow female of the above species (ab. *mincki*, Seebold) Colonel V. R. Burkhardt caught a freshly-emerged example of ab. *pallida*, Russell, the cream-white form, in the same locality.—S. G. Castle Russell, "Springetts," Highcliffe, Hants.

CURRENT NOTES.

Owing to failure of opportunity for revision of the text in the description, *ante*, p. 90, Chute was placed in Surrey and should be in "Wilts" (line 12), and "plt. 141" should have been inserted (line 14).

Another batch of separates have recently come to hand from the pen of Capt. Kenneth J. Hayward of the Argentine. His investigation of the *Hesperiidae* of S. America still goes on. Two separates deal with Brazilian species: "Notes on *Hesperiidae* in the Collection of the Museo National do Brazil" and "New Species of Brazilian Hesperiidae." A considerable number of species have been sent to Capt. Hayward and he is dealing with them "in small lots." A more pretentious work is a "First List of Insect Pests of Tucuman." It is more than a List, for it is annotated throughout its 110 large pages. Tucuman lies at a considerable distance up the country, approaching

the Andes. Two considerable pamphlets, well illustrated, deal with Pests of the Sugar-cane; one treats of the Lepidopteron *Elasmopalpus lignosellus*, Zeller, and the other deals with the depredations of the moth *Diatraea saccharalis*, Fab. Another pamphlet deals with the pest *Alabama argillacea*, Hb. The Coleopterous species which attacks the sugar-cane, *Strategus validus*, a " rhinoceros " beetle, is described in a well-illustrated pamphlet. In all these economic pamphlets the life-history is very well displayed and illustrated, so that the agriculturist can recognize the pest in all its stages and apply the appropriate control at the correct period.

The Annual Exhibition of the S. London Entomological and Nat. Hist. Socy. held, as announced, on 9th October, was a very successful gathering; many old friends and members made their yearly contacts and even a good sprinkling of the younger generation in uniform were able to enjoy the gathering. The weather, too, was kind, and the light was good, so that exhibits could be seen in the large hall especially prepared for their reception. The Society is to be congratulated on its long and continued success in catering for those whose love of Nature is an outstanding hobby.

The *Insecta* section of the *Zoological Record* was issued about the usual time of year. Of course, it does not contain the amount normally expected as so many areas are precluded from communicating the necessary items. Yet we have a separate of over 200 pages of Records, comprising 1594 titles of works and articles, none of which were written entirely from an economic point of view. Papers of the latter purport are dealt with in the *Review of Applied Entomology*, an entirely separate publication. For the *Insecta* portion of the *Record* the Imperial Institute of Entomology is responsible to the Zoological Society of London, under whose auspices the *Zool. Record* as a whole is published each year. The *Zool. Record* is one of those miscellaneous publications which should be easily available for research purposes in the central public libraries throughout the country.

The absence of the usually abundant wasps in the autumn this year has been a matter of public observation, and there have been comments in many papers. Even where they have been plentiful their appearance was considerably later than their usual time of appearance. Can any of our readers suggest a reason for such scarcity? Some reports speak of abundance, even " almost a plague of wasps." It does not appear that the absence is general but is locally so in many areas usually over-run with them in the autumn. One writer refers to the absence of queen wasps in the Spring. In this case possibly the field mice did not suffer much destruction in the winter period of last season owing to the mildness and the female wasps suffered in consequence. This supposition would apply more especially to the southern part of the country. The collective observations from many areas might be classified, especially if notes were added of local surroundings and comparisons with former years made, as well as any particular local conditions which may have arisen: Scarcity or abundance of fruits, prevalence of periods of rain or drought at critical times, etc.

The *Revista Soc. Ent. Argentina* has reached the final part of the ninth year of its establishment. The President of the Society is Sr. Alberta Breyer, who for many years has taken great interest in all that appertains to Entomology. This volume is comprised in about 500 pp. and is freely illustrated. The present number contains articles on Diptera, Lepidoptera, Orthoptera, Coleoptera, Hemiptera, Mallophaga. Coccids and Psocids. The List of Members contains the name of our correspondent Capt. Hayward. A feature of the Society is that there is a long list of foreign correspondents, among whom we find Dr B. P. Uvarov, the Orthopterist specialist of the British Museum.

The application of the name *plexippus* has been a " bone of contention " for many years, although Linné was definite enough in stating that the species indicated by it had a white apical fascia " similar to that of *chrysippus*," whereas the American species to which the name has been erroneously applied has only an apical row of orange spots. In the *Trans. Roy. Ent. Soc.* G. Talbot, of the British Museum, has taken up this problem from various points of view and has conclusively shown that this name should not be applied to the American species, but to an Indo-Malay insect which has hitherto generally been called *genutia*, Cram. Talbot has shown that the American species should be called *menippe*, Hb. (1886) and not *archippus*, Fb., which had previously been suggested in place of *plexippus*.—" Revisional Notes of the Genus *Danaus*, Kluk," by G. Talbot in *Trans. Royal Ent. Soc.*, v. Pt. 1, August 1943.

G. V. Hudson, Fellow of the New Zealand Institute, in his pamphlet " On Some Aspects of Modern Methods of Entomology " expressed the opinion that the Trinomial System of Nomenclature is undesirable because the question of naming forms of inferior status to that of the subspecies is bound to arise and finality will be lost. Hudson was right. Such conditions did arise and we found Count Turati, that excellent observer and critical entomologist, was in numerous cases adding several lower status names in the case of species, so that some forms which he described had four, five or even six names; in fact, it was a return to a period before the time of Linné, when all objects of nature were generally referred to by an extended phrase. Count Turati wrote *Zygaena transalpina*, Esp., *boisduvalii*, Costa, *zickerti*, Hffm., *sexmaculata*, Dz. This phrase is only partly complete. We may infer that *boisduvalii*, Costa, is a subspecific name and *sexmaculata* is doubtless an aberration, but what status *zickerti* holds does not appear. Another phrase published is *Zygaena carniolica transalpina hippocrepidis occidentalis vigei* Obthr. and is almost completely naked of information. Many others can be found. It is not that complicated relationships do not occur, but that when they do occur these relationships should be recorded concisely with the names of the authors who first recorded them.

Entomologists seem prone to pick up unnecessary methods. Another fashion has come in recently, viz., to double the specific name of a species when discussing its variation, etc. For example, take *Pieris rapae*; it would in such a case be called *P. rapae rapae*. Nothing is added by the doubling; the calling it *rapae rapae* does not make

P. rapae any more than the *P. rapae* it was before. I have seen it put *P. rapae*, L., *rapae* and *P. rapae rapae*, L., the first expression being only half right, the other completely wrong. Linné was certainly not the authority for the second *rapae*. Was it necessary to mentally divide *rapae*, L., from *rapae*? I presume the authority is ashamed to have his name attached to this absurdity. Leave it out, it is only another stupid innovation. *P. rapae*, L., ssp. *rapae*, auth., would be a reasonable way of expressing what I understand is desired. This brings us to the necessity that all additional names to a species should have one of the indication titles to show their relationship in the specific complex: ssp., r. g.v., g.a., ab., hyb., etc.

Up to some twenty years ago it had been usual to separate specific name and author by a comma as a substitute for the word " of " formerly in use by the old-time naturalists. Our periodicals, if the author's name was added, always used the comma, and the *Ent. Record* has continued it to the present time, when an authority is inserted. The omission of the " comma " was someone's *opinion*. *Opinions* seem to prevail among some people so they start a new idea and place brackets around the author's name, without any positive reason beyond the very lame negative one that the brackets are to indicate that the species is not in the same genus as it was placed when first described, a most invalid reason, for at least 99 out of every hundred species are in that category and must be so with the increase of the intensive knowledge we are gradually acquiring of each individual species. As Hudson said in his pamphlet, " there will be no finality," all is change and must be so. Hence why tie ourselves to these inefficient and only very temporary gadgets; 'tis the dog and the shadow of cheese again.

The *London Naturalist* for 1942 (London N.H. Socy.) has been issued recently. The contents are not so varied as usual. Various activities are apparently partly in abeyance from the conditions of the period. What strikes us most is the Ecological side of Natural History to which a considerable number of members of the Society are enthusiastic devotees. Several original diagrammatic maps have been here reproduced which will be very useful for future work in this interesting branch. The map which is the more particularly useful is that of an area in the outer green circle around London, viz., Bookham Common. When the full records that are in progress are published one will certainly be astonished with their comprehensiveness. Epping Forest is also undergoing this Ecological Research work. A good start has been made with a map of a small section known as the Cuckoo Pits, a small area near Chingford.

Special Note.—Owing to the increase of costs of production, paper and wages, and the need to save paper we are compelled to curtail the size of our magazine for the time being rather than increase our subscription. Instead of 20 pp. per number, which has been for long our usual size, as a rule, we propose to reduce to 16 pp. The charges for Plates, Reprints, small type, etc., are considerably more, but reprints can now be obtained as few as 12 if ordered when manuscript is sent to us.

ab. *aetnea*, Trti., *Natur. Sicil.*, XX, 31 (1907).

Fig.—plt. vi, 25-27. The three figures are very good.

Orig. Descrip.—" Nigricans, fascis et signaturis distinctis."

Appears at first glance to be a good species, from the intensity of the black coloration which emphasizes the hairiness of the fringes, particularly of the hindwing along the abdomen.

Taking only a single example, the greater intensity of colour at first gives no indication whatever to what genus or to what species to place it.

A good series of examples, nevertheless, placed with a sufficiency of typical examples of *Epunda viridicincta*, Frr., from Sicily for comparison, will afford the solution of the problem quite easily where there existed much doubt.

The first point that calls for our attention is the antennae, pectinated and shaped exactly as in typical *epunda*. For the rest, the difference can be stated in a very few lines. When it has been said that the ground colour of the forewings is black with a very light suffusion of greenish, and not clear grey as *viridimixta*, Tur., and when it has been added that the spots and the striae of the forewings represent, with a lighter shade of colour than the ground, the equivalent of those of *viridimixta*, Tur., just as variable, and more or less uneven in each specimen, there is nothing left to add except that the hindwings are somewhat strongly suffused with black.

ab. *apennina*, Dnhl., *Mitt. Münch.*, XIX, 109 (1929).

Orig. Descrip.—" In Central Italy I found an outstanding form that had become so much over-run by black that it had a distinct appearance, while on the other hand the richly orange-red and the dark green tone are present. The hindwings are white in the ♂, only the margin is defined by an unbroken but sharply cut line; the fringes also are distinct. The cell spot and a well curved transverse central line are clearly recognizable. The latter becomes well-marked little dots, which lie on the visible black veins. In the ♀ the hindwings are clouded black-brown."

[P. Siviter Smith has made an intensive study of the variation in this species in its South-Western haunts in England and has recorded the results as follows.]

ab. *albipunctata*, Siv. Smith, *Ent. Record*, LIV, 94 (1942).

Orig. Descrip.—" Some examples are more or less of the typical form except that the ground colour is dark olive-green with more traces of greyish on the forewings and both the reniform and the orbicular are conspicuous whitish, the centre of the reniform also being wholly whitish with little or no trace of pink or ochreous. I would call such examples var. **albipunctata** nov. In the typical form the stigmata are not conspicuous as a rule and they are generally well broken up by and mixed with pink and ochreous with dark or mixed centres, and therefore such examples with clear stigmata are quite distinct."

ab. *coerulescens*, Siv. Smith, *Ent. Record*, LIV, 95 (1942).

Orig. Descrip.—" Very rarely pale bluish tinges are noticeable, particularly near the hind margin of the forewings, and one specimen I bred has this suffusion together with a small pale blue centre to the reniform

stigma. Specimens as this one, with the blue extending to the reniform, I would call var. **coerulescens** nov."

ab. *pallido-fasciata*, Siv. Smith, *l.c.*

ORIG. DESCRIP.—" The angulated band before the subterminal band is sometimes sprinkled with whitish and pale fuscous, the pink suppressed and the dark wedges much reduced; this gives the effect of a prominent, pale, fuscous band, since the subterminal line is followed by the darker green shade. Such specimens, with a prominent paler band of this nature, I would call var. **pallido-fasciata** nov."

ab. *nigro-lineata*, Siv. Smith, *l.c.*

ORIG. DESCRIP.—" One ♀, of rather unicolorous dark tone, with most markings subdued, has a distinct wavy black line running between the stigmata and extending in a curve from the costa to the centre of the inner margin. This well-defined black line contrasts strongly with the indistinctness of the other markings, and I would call it var. **nigro-lineata** nov."

ab. *intermedia*, Siv. Smith, *l.c*

ORIG. DESCRIP.—" I have two examples, a ♂ and a ♀, that form an exact intermediate between the typical form and var. *viridicincta*, Frr. There is the slightest trace of pink, mixed ochreous, the markings are distinct and the green is mixed with greyish, being lighter than typical forms but greener than var. *viridicincta*, Frr. I would call such specimens var. **intermedia** nov."

ab. *evalensis*, Siv. Smith, *l.c.*

ORIG. DESCRIP.—" Four examples, 2 ♂♂ and 2 ♀♀, have the ground colour olive-green (not deep olive-green as typical forms) but they are much suffused with blackish, the dark markings are not clear, the ochreous stigmata are not distinct and the whole of the forewings are well dusted with yellowish (finely dusted, not speckled as form near var. *aetnea* mentioned above). The reniform, itself not very well defined, is the most conspicuous marking and the general appearance is mixed blackish and yellowish with no definite markings. The form may be known as var. **evalensis** nov."

ab. *atlantica*, Siv. Smith, *l.c.*, p. 96.

ORIG. DESCRIP.—" Another dark ♀ example has a slight purple tinge around the central fascia. The whole of the forewing has a strong suffusion of dark vinous grey, particularly the central fascia, and the green colour is almost obliterated. The purplish tinge appears on the hind margin, presumably caused by the vinous grey mixing with some of the bluish scales described in var. *coerulescens*. There are slight traces of ochreous and greenish near the base. The centre of the indistinct reniform is ochreous, surrounded by whitish and pale grey. The markings are very indistinct and the subterminal line is not so waved as usual. (Var. *evalensis* has yellow dusting and no purplish.) Another ♀ belongs to this form but the purplish is a little less pronounced. Both have a dingy, obscure appearance. The form may be known as var. **atlantica** nov."

ab. *ochracea*, Siv. Smith, *l.c.*

Orig. Descrip.—" A number of specimens are of a paler form which may be called var. **ochracea** nov. The darker markings on this variety, though in most cases reasonably distinct, are not so dark and heavy as in the type form. Neither is the ground colour so dark as the type, it appearing as olive-green, not deep olive-green as the type, and is a distinctive colour from it. This olive-green ground is shot and dusted with ochreous-yellow, sometimes quite pronounced, especially in the basal area of the forewings. Red or pink suffusion is always present in greater or lesser degree, sometimes quite strongly. The stigmata are usually wholly but always in part suffused pink and yellowish and are not usually very distinct. One ♀ has the hindwings whitish as the ♂. The definite olive-green colour, with patches of yellowish and pink and the slightly lighter general markings give this variety a much lighter green appearance and at once distinguished it from the typical form which appears more drab and uninteresting beside it."

ab. *flavescens*, Siv. Smith, *l.c.*

Orig. Descrip.—" I have nine ♂♂ which have the general appearance of being a paler, slightly marked, distinctly yellow-green form, quite distinct from var. *ochracea* above (which is the intermediate between this yellowish form and the typical form). The form may be known as var. **flavescens** nov. In this variety the ground colour is an even lighter olive-green than in var. *ochracea*, nôr are the dusky markings so heavy or so dark as in that variety, many of the markings indeed disappearing altogether. All possess slight suffusions of pink but it is not strong in colour nor pronounced in effect. The most distinct feature, however, is a considerable increase in the yellow suffusion over the whole insect. This suffusion is so strong as to make the insects look a very distinct yellow-green, rather than the olive colour of var. *ochracea*. This yellowing extends in varying degrees to the thorax, body and hindwings also. The stigmata are almost wholly yellowish but with pink present also."

ab. *simulans*, Siv. Smith, *l.c.*

Orig. Descrip.—" I have 5 ♂♂ and 3 ♀♀ which in general colouring are as the typical form except for a complete absence of any pink suffusion or scales. The typical form clearly should have this red or pinkish coloration and to be typical any specimen must possess this pink suffusion in addition to the other characteristics. The ochreous scaling is not pronounced. Their general aspect is like the typical form, but lacking the pink coloration makes them look more drab and dull. This form may be known as var. **simulans** nov."

ab. *albin-ochracea*, Siv. Smith, *l.c.*, p. 97.

Orig. Descrip.—" In var. *flavescens* the stigmata are ochreous, with pink mixed; in var. *simulans* the stigmata are largely whitish, with only traces of ochreous. In var. *ochracea* the stigmata are described as usually wholly but always in part suffused pinkish and ochreous; the ochreous colour predominates. One example of var. *ochracea* has the stigmata, particularly the reniform, largely prominent whitish and distinct. I would call it var. **albin-ochracea** nov. It is a parallel variety to var. *albipunctata*, except that the orbicular is not quite as distinct as in that variety."

ab. *splendida*, Siv. Smith, *l.c.*

Orig. Descrip.—" The most handsome form is one in which all the markings are clear, there are suffusions of pink, ochreous, blue-green and warm, vinous blackish, all with a strong sprinkling of clear snow-white, giving a dappled appearance not unlike that possessed by *Antitype flavicincta*, F.

The white spots on the costa are clear white and the line before the orbicular and the one after the reniform are clear white, blackish edged. This richly coloured form is by far the most beautiful one, easily surpassing the typical form. I would include in this form specimens having the two lines edging the central fascia either wholly or largely clear white, with snow-white speckling on the costal and hind marginal areas particularly, and richly coloured and variegated. It may be known as var. **splendida** nov."

Epunda, Dup. (1846), Gn. [*Polia*, H.-S. (1845): *Characas*, Steph. (1829): *Aporophyla*, Gn. (1852), nearly all authors], *lutulenta*, Bork. (1792).

Tutt, *Brit. Noct.*, III, 53 (1892): Meyr., *Hand.*, 58 (1895): Barr., *Lep. Br. Is.*, IV, 274, plt. 166, 1 (1897): Stdgr., *Cat.*, IIIed., 178 (1901): Splr., *Schm. Eur.*, I, 198, plt. 38, 9 (1905): Hamp., *Lep. Phal.*, V, 235, f. 75 (1906): South, *M.B.I.*, I, 282, plt. 137, 9-10 (1907): Warr.-Stz., *Pal. Noct.*, III, 123, plt. 30a, b (1910): Culot, *N. et G.*, I (1), 176, plt. 32, 14-17 (1913): Meyr., *Rev. Hand.*, 119 (1928): Drdt.-Stz., *Pal. Noct. Supp.*, III, 136, plt. 17, f. (1934).

Schiff., *Verz.*, p. 81 (1775), N. 16, was first in using the name *lutulenta* for a Noctua " Braunschwarze, blass-gestrichte Eule," whose larva was unknown.

Haw., *Lep. Brit.*, 119 (1803), described the British form as *fuscus*, and placed it among his Bombyces; but in 1809 he redescribed it as a Noctuid and altered the name to *fusca*. Hence *fuscus* is the prior.

Stephens' *fusca*, *Ill.*, II, p. 109 (1829) = *lutulenta*, Schiff., 81. A syn. He gave two vars., *consimilis* and *orthostigma*.

Duponchel's figs., *Hist. Nat.*, V, plt. 71, 1, 2 (1825), are quite good. That of *sedi*, *l.c.*, *Supp.*, III, plt. 18, 1 (1836), is equally good except that there is a plum-colour suffusion, which may not be quite natural and the antennae are too well ciliated.

Wood, *Ind. Ent.* (1834), p. 33, fig. 122, *fusca*, is a smoky-brown with black central fascia, edged paler on outer side. ♂.

H.-S., *Sys. Bearb.*, II, 269 (1850), gave a series of figures purporting to be forms of *lutulenta*.

Fig. 83, labelled ♀ *lutulenta*, is too brown and not black enough for the typical form. He gave the ground colour exclusive of marking as " iron black " and said that marking was obsolete. Fig. 405, labelled ♂ *lutulenta*, is not recognizable as this species. The figure has a dark double-line outer margin to the hindwings which are ochreous instead of white. Fig. 428, labelled *sedi*, is too dark and agrees more with the form Tutt has called *albidilinea*. Figs. 429 and 430, both labelled ♀ *lutulenta*, are unusually small and one cannot place them except unsatisfactorily as intermediates.

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. TURNER, "Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—EDS.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr Hy. J. TURNER, "Latemar," West Drive, Cheam.

Wanted urgently for experimental purposes, ova or larvae (forced) of *A. caia* which are not going into hibernation.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—British *dominula* varieties with full data other than ab. *lutea* and ab. *bimacula*. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris* ab. *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Lycaena (Heodes) phlaeas from all regions including British Isles. Also wanted other species of Chrysophanids from all areas. Exchange or purchase considered. *Duplicates.*—Foreign Lepidoptera, e.g., Satyrids, Charaxes, Papilios, and others; full lists sent.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

Book Wanted.—Barret, *British Lepidoptera*, Vol. 3.—*L. E. Savage, 65 Cranmer Avenue, Hove 4, Sussex.*

Books Wanted.—"Draug-Seitz Suppt., Vol. III (Noctuae)," English preferred.—*A. J. Wightman, "Aurago," Pulborough, Sussex.*

Book wanted—Frohawk, F. W., "Varieties of British Butterflies" (1938).—*A. F. L. Bacon, The Malt House, Burghclere, Newbury.*

Exchange.—For disposal, all families of Coleoptera in exchange for British Hydradephaga and Hydrophilidae.—*R. Kaufmann, Todrell Hall, Holmes Chapel, Cheshire.*

Communications Promised :—E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, P. B. M. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, H. Donisthorpe, Prof. J. W. Harrison, L. Ford, F. H. Day, Capt. C. Q. Parsons, J. A. Simes, F. H. Lees, H. A. Leeds, Sir A. Maclaurin, etc.

All Communications should be addressed to the Acting Editor, Hy. J. TURNER, "Latemar," 25 West Drive, Cheam.

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m., on the first Wednesdays of the month, February-June; October-December.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1942-3. December 11; 2 p.m. for 2.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Printed by T. Buncle & Co., Ltd., Arbroath.

Vol. LV.

No. 12.

DECEMBER 1943

ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

CONTENTS.

Subscription for Complete Volume, post free,
TEN SHILLINGS,
(Back Volumes (Second Series), XXXVII (1925) to LIV (1942), 12/6 per Volume.)
to *The Hon. Treasurer*, H. W. ANDREWS, F.R.E.S.,
6 Footscray Road, Eltham, S.E.9.

This number, Price ONE SHILLING AND SIXPENCE (net).

P. ORICHALCEA (AURIFERA) AND P. CHALCITES.

THE OCCURRENCE OF TWO FOREIGN *PLUSIA* SPECIES IN S. DEVON.

By Frank H. Lees.

At dusk on 7th September I saw what looked like a small *Plusia chrysitis* flying over the valerian; to make sure, I netted it, and, noticing an unusual distribution of the metallic area, I boxed it on the assumption that it was an ab. of *P. chrysitis* and worth taking. I had given it no further consideration, however, when Mr A. Russell James came over here on 12th September. The evening before his arrival I had netted another stranger flying over the valerian. It looked very like *Plusia moneta*, but I could not remember ever taking a second brood specimen and, hoping it might at any rate serve to establish that fact, I secured it. On closer examination I could see it was certainly not a typical *moneta*, and the following day I submitted the moth, which I had not yet killed, to Mr Russell James for his opinion. He immediately drew my attention to the twin spots and other differences that, he said, definitely ruled out *moneta*. I then showed him my supposed *P. chrysitis* ab., and here again he emphatically disagreed with my diagnosis. As we proceeded to discuss both insects detail by detail and compared them with the *chrysitis* and *moneta* in my cabinet it became evident that in both cases my captures differed from the familiar species I had named so very materially that they must be species of *Plusia* with which we were both unacquainted. Kirby's *European Butterflies and Moths* (1882), the only book I had likely to help us, merely furnished food for speculation rather than identification, so I made drawings of the insects, which, with my descriptions, I hoped would enable anyone familiar with the European Plusias to name them. Mr G. W. Wynn, to whom I first appealed, forwarded my data to Mr W. J. Wightman. I also sought the aid of Mr P. P. Milman, who came over here and saw the insects on the boards on 30th September. His identifications were later confirmed by Mr Wightman's and Mr Wynn's and, to make it absolutely sure (for it did seem incredible), Mr Russell James then submitted my drawings and descriptions to Dr E. A. Cockayne, who compared them with the series of European Plusias in Tring Museum and advised me there was no doubt that I had taken *Plusia chalcites*, Esp., on 11th September and *Plusia orichalcea*, F. (=*aurifera*, Hb.) on 7th September. Both my captures are males, and as cabinet specimens leave much to be desired. To make two such captures, however, in bred condition would be expecting fortune's maximum indeed. The *chalcites* is considerably bleached and worn, otherwise it could hardly have suggested *moneta* to me; its left forewing is slightly chipped and the right underwing rather ragged; the loss of its thoracic crest is the worst damage sustained; the remarkable abdominal plumes (undiscovered till I set it) are fortunately fairly intact. The *orichalcea* (*aurifera*) is in better shape; a little faded and worn perhaps, the only serious defect being a split in the left forewing made worse by a slip of the needle when trying to conceal it when setting; with this regrettable exception it is a nearly perfect speci-

men. Both species have been described as migratory, but apparently neither has been known to establish itself in new territory as *moneta* did. *Chalcites* is common in the south of France and other parts of Southern Europe and North Africa. *Orichalcea* (*aurifera*), on the other hand, occurs only as an immigrant in Spain, Portugal, France, and Germany, inhabiting the Canaries, a large part of Africa, Madagascar, Asia Minor, India, most of South Asia and the East Indies, so there is plenty of scope for the speculative to work out the itinerary of my captures. I am indebted to Dr Cockayne for the following notes on the nomenclature and previous British records:—

Noctua orichalcea, Fabricius, *Syst. Ent.*, 407, 1775. Synonyms—*Chrysitina*, Martyn, *Psyche*, t. 21, 1797; *aurifera*, Hbn., fig. 463. *Orichalcea* is mentioned as British by many old authors. There are the following records:

(1) Taken by the Rev. J. Lyon near Dover. Now in Brit. Mus. (Said by Tutt to be regarded as an ab. of *chrysitis*!)
(2) Taken near London; in the Ingpen collection. Ingpen was born 1796 and died 1854. His sale is recorded in *E.M.M.*, 1889, 25, 246, but it was not in the sale catalogue.
(3) Specimen in the Rev. Charles Burney's collection, formerly in Charles Dale's coll. Dale got it from Dr Abbott's coll. Figured* Humphreys and Westwood, *British Moths*, pl. 52, fig. 5, p. 233. C. W. Dale says his father, Charles Dale, bought the Abbott coll. in 1817, and that the moth must have been foreign, as it is not mentioned in Abbott's manuscripts or in Charles Dale's, which it would have been, if it had been British.

Tutt says (2) and (3) may be the same, but there is no real evidence that this is so.

Meyrick mentions old records from Kent and Middlesex, which must refer to (1) and (2).

Plusia chalcites, Esp., tom. iv, pl. 141, fig. 3, 1789? Most authors misspell the name "*chalcytes.*" Synonyms—*chalsytis*, Hbn., fig. 276; *eriosoma*, Dbldy., 1843 (this is now considered to be a distinct species occurring in the Far East); *verticillata*, Guenée, *Sp. Gen. Noctuél*, 1852, 2, 344, no. 1168; *rogationis*, Gn., *l.c.* (this is the American form); *acuta*, Walker, *B.M. Cat. of Noctuae*, part 12, p. 922, 1858; *bimaculata*, Stephens, *Illustrations Brit. Ent.*, Haust., vol. 3, p. 102.

(1) Stephens says a single specimen was obtained by him from the Marshamian coll., where it was placed as *iota*. Of its locality he was ignorant. This is now in the British Museum. H. T. Stainton, *E.M.M.*, 1891, 27, 207, says that, hearing that the specimen could not be found in the B.M., he searched for it and found it in his

*This reads as if the figure was made from the "Burney Coll." specimen. Mr Humphreys (*Brit. Moths I.*, 231) says that it was made from a specimen in the British Museum.

(1) Stephens (*Ill. Brit. Ent.*, Haust. III, 105) referred to him in 1830 as "the late Rev. J. Lyon," and refers to the Ingpen specimen as "found, I believe, in the vicinity of the Metropolis": but note Stephens' remarks (*l.c.*, p. 93) on the introduction of foreign specimens into English cabinets.

house, where it had been brought with the Stephensian library in 1853, and he returned it to the B.M. This was recorded as *Plusia bimaculata*, Steph.

(2) A specimen in the collection of Edwin Brown, who received it from Carter of Manchester. P. B. Mason (*E.M.M.*, 1891, 27, 163) identified this as *P. bimaculata* = *P. verticillata* = *P. acuta*.

(3) One captured by H. P. Robinson at Tunbridge Wells in May 1870. H. Moore says (*E.M.M.*, 1870, 7, 138) that it came into his drawing-room window attracted by light. Recorded as *P. bimaculata* = *P. verticillata* = *P. acuta*.

"The Gables," Maidencombe, Newton Abbot, S. Devon.

THE CONCLUSION OF THE DISCUSSION ON CUCULLIA SCROPHULARIAE, CAP.

By E. P. Wiltshire, F.R.E.S.

You have now published so much about *Cucullia scrophulariae*, Cap., that it seems desirable that, before the end of the year, the discussion should be complete, especially since it appears from Mr Wightman's article (*Ent. Rec.*, April 1943) that some of your readers cannot refer to the Continental papers or could not understand them if they had access to them.

The following therefore is my translation of Boursin's analytical key of the facies of the *verbasci* group of the genus *Cucullia*; it was published in *Mitt. Münch. Ent. Ges. e. V.*, xxiii, J. 1933, Heft 1.

A.1. Ground Colour of Forewing Brownish (not Grey).

(a) Hindwing with strongly wavy termen, very pointed apex, and underside with nervures strongly contrasting with ground colour: ..... *verbasci*

(b) Hindwing with termen slightly wavy, and rather rounded apex; underside, nervures hardly contrasting with ground colour:

(a.1.) (*C. osthelderi*, a Turkish species)

(b.1.) Submedian part of forewing without whitish suffusion:

(a.2). Orbicular and reniform stigmata clearly lighter than the ground colour and overlapping on to costal border. Span, 42-45 mm. ..... *lychnitis*

(b.2.) Orbicular and reniform stigmata, especially the former, hardly differing from ground colour, and not overlapping costa. Span, 45-48 mm.:

(a.3.) (*C. scrophulariphila*)

(b.3.) Forewing lacks the whitish suffusion distally above the dark tornal streak; hindwing discal spot, not wider than discal cell and less emphasized on the upper side than the lower: ... *scrophulariae*

B.1. Ground Colour more or less Slate-Grey.
(Non-British Species.)

The above analysis of the markings of the three British species seems to me to be more complete than any so far quoted by your correspondents. "The difference is small and only seen in fresh insects by experts," as Mr Wightman says; but it would appear from the above not to be too abstruse for British entomologists!

In the same work Boursin expressly states:—" Let it here be stressed furthermore that in this genus the genitalia of well-known distinguishable species, such as *C. scrophulariae* and *thapsiphaga*, are not markedly different."

Basra.

COLLECTING NOTES.

CYNTHIA HAMPSTEDIENSIS.—In remarking (p. 76) that I " barely seem to have given Mr Hudson sufficient credit," Captain Bacon evidently supposed that Mr Hudson's identification of " Albin's Hampstead Eye " (on p. 49) was the first statement to this effect, whereas, in fact, Mr Hudson had published this opinion over 15 years ago; therefore, it seemed to me unnecessary to remark on its novelty. Further, Mr Hudson was certainly not " the first to point out what ' Albin's Hampstead Eye ' really was." In 1841 (as already noted) Westwood considered that *Cynthia hampstediensis* was " evidently allied to *Cynthia orithya*," and in 1854 he stated (Wood's *Index Ent.* (ed. ii), p. 244, no. 7) that it was " considered by the late E. Doubleday as a variety of the Eastern *Cynthia Outhyia*" [corrected to *orithyia* in Errata]. In 1875 Scudder (perhaps following Kirby's *Synon. Cat.* (1871), which I do not possess) in his " Hist. Sketch Generic Names of Butterflies " (*Proc. Amer. Acad. Arts and Sci.*, Boston, X, p. 152), under the genonym *Cynthia*, stated:—" 1827. Steph., *Ill. Brit. Ent. Haust.*, 47, restricts it to *cardui* and *Villida (hampstediensis)* " [The statement that *villida* = *hampstediensis* is, of course, ascribable to Scudder, not to Stephens]. In May 1928 (*Butt. and Moths of New Zeal.*, pp. 33-34), under the name *Precis velleda*, Mr Hudson said:—" About the year 1830 it was described by Stephens, in his *British Entomology*, under the name of *Cynthia hampstediensis*, on account of its having been taken at Hampstead, the well-known suburb of London. Subsequently it transpired that the specimen in question was no doubt of foreign origin, its ' appearance ' having been due to a practical joke perpetrated on the British Lepidopterists of the day." But in November 1939 in the *Supplement to the Butt. and Moths of New Zealand*, p. 388, after referring to Petiver's figures in Allan's *Moth Hunter's Gossip*, " which unquestionably represent the upper and under sides of *Precis villida*," and to the sporadic occurrence in New Zealand of *villida*, which, he concludes, " clearly shares with *Vanessa cardui* a strong migratory instinct," Mr Hudson went on to say:—" Thus it seems to me quite possible that, over 200 years ago, *P. villida* might have had a more extensive geographical range than now, and it may well be a true record that the butterfly was captured on Hampstead Heath, early in the eighteenth century, as stated by Albin and Petiver. Both are reputed to have been careful and trustworthy observers in their day, and it is evident that Stephens was of this opinion when he named ' The Hampstead Eye ' *Cynthia hampstediensis* in 1828 [1827]." " The above should be substituted for the concluding paragraph on *Precis villida* (pages 33 and 34)."

As to any " *primâ facie* reason, biological or otherwise, why, in the days of sail, it might not have come to London in a package of tulips

in the egg state," I must confess my inability to comprehend Captain Bacon's argument. Granted that " in Albin's time both we and the Dutch were great competitors in these flowers [tulips]," it may be pointed out that tulips are not Australian plants at all, and, even if they were, there is certainly no " *primâ facie* reason, biological or otherwise," why *Precis villida*, with a leaf-feeding larva, should deposit its eggs on underground bulbs. Nor is *P. villida* a " hibernator in any stage "; it has no need to be, seeing that it is an inhabitant of tropical or subtropical areas. In areas subject to prolonged hot and dry spells, as in some parts of the Plains of India, insects, usually in a non-adult stage, may aestivate (*i.e.*, pass through such a spell in an inert condition), but I do not know of any Lepidopteron which aestivates as an imago—and in any case the conditions of damp heat prevalent during a long sea voyage in the Tropics would not permit of aestivation. As for a female *P. villida* laying eggs on shipboard to produce the imago caught at Hampstead, space in ships in those days was far too cramped and crowded to allow for some miniature botanical garden, in which the female butterfly might find a suitable foodplant. I wonder whether Captain Bacon has any idea of the time occupied in those days by a voyage " from (say) the Chagos Is. . . . viâ the Cape " to England. I note that H.M.S. Centurion left the Sunda Straits on 30.xii.1743 and reached the Cape on 11.iii.1744, after a voyage of nine weeks; left the Cape again on 3.iv and reached the mouth of the Channel on 10.vi.1744. Probably a merchant ship, with cargo to discharge and take in at various ports of call, would have taken still longer.

Mr Turner's note is of interest as showing that Albin (as well as Petiver) was definitely associated with Exotic Butterflies, so quite likely to have had some of these which got mixed with his own local captures. —T. Bainbrigge Fletcher, Rodborough, 25.x.43.

Two days at Chedworth, Glos.—For the first time since the war started I was able to go away and take a net with me. I could only spend from the Friday afternoon until the Monday lunch-time, 9th to 12th July. Unfortunately, the whole of Saturday and Sunday were wet and windy, so I did not get even the chances of seeing butterflies that I had hoped for. Notwithstanding, there were some about on the Friday evening and the Monday morning, when the sun broke through a bit, although the high wind remained.

I stayed at Withington, outside Cheltenham, and from there Chedworth Woods are only about a quarter of an hour's walk away. They are extensive woods and are in good condition with well-kept rides. *Apatura iris*, L., is supposed to have occurred there and I took with me a well-seasoned " bait " of meat to see if it would help to prove that it was still there. I put this out on the Monday, but saw no signs of the species, but it may well occur there all the same. I might not have been in the best part of the woods for it, and certain other areas further away at least appeared more suitable. These better areas are on the way to the interesting and well-kept ruins of the Roman Villa at Chedworth, which are well worth a visit.

I went out on the Friday evening after reaching Withington and only reached the edge of the woods. The cold wind kept most things down, but in sheltered corners there were a few *Maniola jurtina*, L.,

about, but rather commoner and in good condition for the most part was *Aphantopus hyperantus*, L., which was freshly emerging. There were a few *Satyrus galathea*, L., but the males were a little worn and only the females were fresh. *Coenonympha pamphilus*, L., was about, and there were two or three Fritillaries dashing around, either *Argynnis aglaia*, L., or *A. cydippe*, L., but I did not catch any of them. There were one or two Burnets sitting on grass-stems, probably *Zygaena lonicerae*, and there were plenty of cocoons about, although the birds had opened many. Are the Burnets, with their black and red colours, inedible for birds or distasteful to them? If they are—as one would guess from their colours—how is it that birds will eat the pupae? Are there any facts on the subject as to whether birds eat the pupae of species that are rejected by them in the imago stage? One would assume such pupae to be equally distasteful.

Further in the woods I saw two male *Argynnis paphia*, L., in perfect condition. I approached one carefully while it was sunning itself and it crawled on to my finger and remained there quite a long time; it is usually such a shy beast.

The Saturday and Sunday were wet and I saw nothing at all except one *Nudaria mundana* on a telegraph pole. I only had the morning available on Monday, but it was fine, so I made a dash to the woods. I was glad I did because I saw plenty of butterflies and the sun was just enough to keep them on the move. I walked up a thinly-wooded valley where there were small oaks, ash, a few birch and conifers, privet bushes, and so on. The bracken was high and the Willow-Herb was well out, making a blaze of colour everywhere. The commonest butterfly was *Aphantopus hyperantus*, L., which was everywhere, but the two wet days had spoilt them and it was not easy to come across a really perfect specimen. The Fritillaries were the next most common and they were dashing all over the place the whole time. I don't remember having seen so many in one area before; in fact, I have always been unlucky with them and never seem to have been at the right times in the haunts where they are common. I was glad to look them over, therefore, and for the most part they were in magnificent condition, both males and females. Selecting them for condition, I caught many but kept eleven of them without very much consideration as to whether they were *Argynnis aglaia*, L., or *A. cydippe*, L. I hardly had time to do that but I find now that seven are *A. aglaia* and four are *A. cydippe*; I suppose this is just about a correct figure for their relative frequency, as *A. cydippe* always seems to be more difficult to come by.

Argynnis paphia, L., was evidently not fully out as I only saw two very perfect males and no females at all. In the same place I saw one *Thecla quercus*, L., flying around a small oak tree and settling on the leaves of an ash in the sun. A single *Aglais urticae*, L., was also flying with the Fritillaries and again there were a number of *Satyrus galathea*, L., and some each of *Maniola jurtina*, L., and *Coenonympha pamphilus*, L. There were a few more *Zygaena lonicerae*, none really fresh, including one female engaged in laying a batch of fifteen to twenty ova on the top of one of the higher leaves of a Willow Herb. At this place also I caught a single perfect male *Lysandra coridon*, Poda, evidently the first to emerge, as I saw no others. The *L. coridon* and *S. galathea* were in a sloping field on the outskirts of the wood. I

saw no moths of any sort in the woods except Micros, but I had only two hours available and so I could not do much towards searching for them. Except for one *C. pamphilus*, L., I caught with a greyish hindwing, none of the butterflies that I caught or saw were unusual as regards colour or marking, although the ground colour of some of the Argynnids are slightly different in shade but to a very small degree.

I did not catch anything of special note, therefore, but it was a great treat after so long to be in real country with plenty of insects about of more or less local occurrence, and it was a most enjoyable morning. I might have done a good deal better if I had been luckier with the weather.—P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.

Spilodes (Botys) verticalis, Schiff. (ruralis, Staud. Cat.) in Cumberland.—When my late friend, G. B. Routledge, compiled his catalogue of Cumberland Lepidoptera for the *Transactions of the Carlisle Natural History Society*, Vols. 1-5, he was unable to include this species in his records. Barrett (Vol. ix, p. 247) says it appears to be unknown in Cumberland and Northumberland although there are records from further north. It can now be added to the Cumberland list as early in June last I found a considerable colony of the larvae spun up in nettle leaves on the outskirts of Carlisle, the moths emerging later in the month.—F. H. Day, F.R.E.S., 26 Currock Road, Carlisle, October 5, 1943.

Botys ferrugalis, Hb., in Cumberland.—In the *Ent. Record*, 1941, p. 32, I recorded this moth from Carlisle, this being the first record for the County of Cumberland. This species, however, appears to have a wide distribution here, as on 13th September last I took a second specimen at Skinburness on the Solway Firth, about 20 miles from Carlisle. This specimen occurred among bramble. I was unable to find any more although searched for very carefully, so the species is apparently something of a rarity here.—F. H. Day, F.R.E.S., 26 Currock Road, Carlisle, October 5, 1943.

Pararge megera.—A few years ago there was some correspondence in the entomological journals about the growing scarcity of Satyrine butterflies in the London district. It is good to note that one species at least is now showing a tendency to increase in numbers. During the last two or three years *Pararge megera* has been distinctly more frequent here, and this year it has been really abundant. A country walk at the beginning of August showed this insect as the dominant species along the hedgerows enclosing the cornfields, the banks being in places quite alive with them. In addition to the normal May-June and July-August emergences there was a partial third emergence at the end of September, and one or two survivors of this were still to be seen on the 17th October. The character and extent of this third emergence are probably indicated by what has occurred in my breeding cages. At the end of July I obtained some 40 eggs from females captured in the garden. Six larvae fed up rapidly, pupated, and produced butterflies at the beginning of October. The rest of the larvae are scarcely half-grown and are hibernating on the grass stems.—J. A. Simes, O.B.E., F.R.E.S., 75 Queen's Road, Loughton, Essex.

THE LARVAL DURATIONS OF THERA VARIATA AND T. FIRMATA.—I can find no record of *T. variata* passing the winter as a larva. South says it is sometimes found in September. A female I took in late September laid eggs on some pine needles. I placed these in a jam-jar kept in a box with a muslin front, which I hung on the N.E. wall outside my house. I happened to look at them in November, when I was surprised to see the newly hatched larvae feeding on the brown and withered pine needles. They fed slowly through the winter in a cool room; a few I succeeded in rearing but many died when quite small. Subsequently I had the same experience, but this time was on the look-out for hatching. Possibly they were *obeliscata* as none survived the winter, and I was not conversant with the difference of the two species.

Meyrick's *Handbook*, 1895, gives for *T. firmata*, months 7 and 9 for the imago and 4, 5, 8, for the larva; this allows one month from ova to imago for the autumn brood. Likewise, Wilson's *Larvae* gives one month, July, for this transition. South seems dubious of its being double brooded.

I took two larvae in May a ¼ in. long and after two changes they were still with me in mid July in their last jacket. I then visited the spot where I got them and found another in its final coat.

In the *Ent. Rec.*, Vol. liii, p. 118, Mr E. Ernest Green says he bred *firmata* in June; this is the earliest instance I can find of it as a moth. Mr J. Arkle of Chester writing in *The Entomologist*, 1905, p. 188, says "*firmata* was common as a small larva in September and October in Delamere Forest, subsequently hibernating." South overlooks this in 1909 and hibernation as a larva is not mentioned by earlier authors.—Capt. C. Q. PARSONS, Torquay.

VOLUCELLA INANIS, L., AND RHINGIA ROSTRATA, L., IN N. KENT.—Both these Syrphids occurred again in Bexley Woods this summer, the former in considerable numbers, many more than I have seen before. I took the first (a ♀) on 17th July, and from then to 29th August it was present on each occasion—five in all—that Dr Blood or I visited the locality. It seemed especially partial to the flowers of Scabious (*Scabiosa succisa*), but this may be due to the fact that this plant is the predominant one in flower in these woods at this time of year. I kept a special look-out also for *Rhingia rostrata*, L., which I took here for the first time last year in September 1942 (*Ent. Record*, Vol. liv, p. 140), and was again fortunate enough to take a small series of 4 ♂♂ and 5 ♀♀ in five visits between 8th August and 11th September. It was far from common; one, or two, per half an hour's patrolling the paths and keeping a keen eye on the Scabious heads was the average rate of capture. Though there were many more flowering plants, Scabious, Ragwort, Thistles, etc., in the open spaces these did not seem to be so attractive to the fly as the occasional patches of Scabious bordering the narrower paths in the woods.—H. W. ANDREWS.

MICE EATING BUTTERFLIES.—In this district many of the houses, my own amongst the number, have suffered an invasion of mice. A few nights ago, having a number of females of *Pararge megera*, L., for ovipositing purposes, I put them in my study for the night as the temperature outside was very low. In the morning I found that a mouse which had been frequenting the room had eaten away the netting en-

closing the cage and consumed all the butterflies, leaving only the wings in a heap on the floor of the cage. Being denied food, no doubt the mouse was very hungry, but it seems probable that mice, and especially field mice, might consume insects at rest on grass and low plants and be responsible for some of the depredations we ascribe to birds and spiders. If so, this means an addition to the number of enemies of Lepidoptera. I shall be interested to learn if any entomologist has noticed attacks by mice.—S. G. Castle Russell, Springetts, Seaview Road, Highcliffe, Hants.

CURRENT NOTES.

We regret to record the death of that great scientific entomologist, Sir Edward B. Poulton, F.R.S. An obituary will appear later.

Books published without an Index are not only a nuisance, but are a real hindrance to the earnest worker and if of some size and comprehensiveness almost impossible to assist in one's work. Such a book was Kirby's *Catalogue of the Heterocera*, which had only an Index of Genera, and was a "disappointment to *Lepidopterists*." A few years after this Catalogue was published an American, Herman Strecker, compiled and issued a complete Index of the Species, of which a copy has recently come into my possession. It is interesting to note Strecker's remarks in his preface which express the strong opinion on Nomenclature which many of us feel to-day. He said, "The want of this (i.e., an Index of the Species) made it to all save a comparative few a sealed book, as the index to the genera afforded little aid, owing to many changes in the generic position of species and the adoption of new or long forgotten genera as well as the placing thereof according to the compiler's own ideas. For in this almost every one has his own various, original, adopted, or modified views: *generic division* being merely a matter of convenience for grouping, not abiding, continually liable to change and continually being changed; consequently not only of minor importance, but when carried to extremes a great evil, a hindrance to the student, an actual bar to the beginner. It is only by the specific name that we know the insect; with the knowledge of that the rest is obtainable." The uncompleted volumes of Seitz are also until completed a big source of hindrance to some of us.

The most recently received part (Vol. xix, Heft 1, issued 31.vii.43) of the *Mitteilungen der schweiz. ent. Ges.* is a Special Number devoted to the Entomological Society of Berne. It contains meteorological data and lists of captures (a few Coleoptera and Diptera and more complete lists of Lepidoptera) made mostly in 1941 and 1942. A List of the Cerutti Beetle-Collection (pp. 22-25) contains species new to Switzerland and to Valais. In a paper (pp. 26-32) Herr Rütimeyer describes two new Swiss subspecies of Lepidoptera, *Parnassius apollo sequanus* and *Melitaea pseudathalia lepontica*. A nominal list of the Berne Society shows a membership of forty-four.—T. Bainbrigge Fletcher, Rodborough.

Correction.—On p. 111, line 20, delete the name and address and read: A. J. Wightman, F.R.E.S., "Aurago," Pulborough, Sussex.

CONTENTS OF VOLUME LV.

By HY. J. TURNER, F.R.E.S., F.R.H.S.

LIST OF CONTRIBUTORS.

LIST OF ILLUSTRATIONS.

SUPPLEMENTS.

In fact the whole five figures are poor representatives of any imagines of which I have seen figures or specimens.

Guen., *Hist. Nat.*, VI, 46 (1852), said it was the *melaleuca*, Esp., plt. 64; the *electrica*, Fab., 125?; the *fusca*, Haw., 65; and the *orthostigma*, *Steph.*, II, 110. He said, *consimilis*, Steph. = *sedi*, (Bdv.) Dup., *Supp.*, III.

Barrett, *l.c.*, plt. 166, gave five figures: 1, a ♂; 1a, a ♀; 1b, a banded form, the basal and marginal areas being somewhat lighter; 1c and 1d, two Irish forms, the first a black form ♂ with a band of spots across the disc of the hindwings, the latter a ♂ with a considerable amount of dark grey (bluish) banding and marking, dark hindwings similarly banded with spots.

Stdgr., *Cat.*, IIIed., 178 (1901), treated *tripuncta*, Frr., as a syn. and recognized as forms *luneburgensis*, Frr., and *sedi*, Tr., with its two syns., *lutulenta*, Dup., and *pallida*, Calb. He described it: Al. ant. distincta albo-lineatis.

Spuler, *Schm. Eur.*, I, plt. 29 (1905). His figures are so utterly at variance with my specimens and with the other figures I have consulted that I failed to recognize them as either *lutulenta* or *nigra*. The insect figured on plt. 29, 22, as *luneburgensis*, is a fig. of *sedi*. Probably an error originating with Staudinger as referred to by Tutt, *B.N.*, III, 54, 57.

Brown, *Cat. Dobrée Coll.*, 89 (1909), said that " the Continental *sedi* approach the type in general appearance while the British ones approach the var. *luneburgensis*." The latter (British *sedi*) are a darker bluish-grey, but much brighter in appearance.

Warr.-Stz., *Pal. Noct.*, III, 123 (1910), gave seven fairly good figures, plt. 30a, b, ♂ and ♀ *lutulenta*, Bork., ♂ and ♀ *consimilis*, Steph., ab. *tripuncta*, Frr., ♂ and ♀ *luneburgensis*, Frr. (*albidilinea*, Tutt). They dealt also with *sedi*, Dup., *pallida*, Calb. The synonyms were *electrica*, Fb., *fusca*, Haw., and *orthostigma*, Steph.

Culot, *N. et G.*, I (1), 176, plt. 32, f. 14-17 (1913), gave four very good figures. He noted that the variation was so unstable that it was most difficult to identify the numerous named forms which have been listed. Figs. 14-15, typical ♂ and ♀; 16, ab. *sedi*, Gn., generally small, with dark median area; 17, ab. *luneburgensis*, Frr., violaceous or reddish-grey.

Drdt.-Stz., *Pal. Noct. Supp.*, III, 136, plt. 17, f. (1934), treated *luneburgensis*, Frr., as a distinct species " even though examination of the genitalia showed that they are practically identical." They base their distinction upon " The general impression differs too much." They add the name *aterrima*, Warn., for " very deeply black specimens."

These authors consider: (1) *consimilis*, Steph. (plt. 17, f., a revised fig.); (2) *sedi*, Dup. (plt. 17, f., a Spanish form); (3) *brunnea*, Schaw.; and (4) *decolor*, nov., " an ochreous-yellow coloration " (plt. 17, f.) from Rome.

Of the Variation Barrett said:

The species as found in the South and West of England varies but little, except that in some specimens, more particularly from Sussex, the central band is darker, and its markings are more visible; on the other hand, some specimens from Wales are more tinged with ashy-grey; and in a few instances the hindwings of the females are much paler, be-

ing tinged to the middle, or even over the whole surface with the white of the male. One specimen from Sussex, in my own collection, is of a clear pale grey.

In some parts of Scotland and Ireland the insect assumes very different characters. In one constantly recurrent form in those localities the antennae are black; the head and thorax glossy black-brown, or almost jet-black; forewings slate-black or glossy black, with the first and second lines still deeper jet-black, the space between them equally black or blotched with deep black, and the stigmata edged with jet-black; the subterminal line is only obscurely indicated by a cloudy indented bar tinged faintly with red or yellow, and inwardly bordered with deep black; hindwings white in the male, with rather darker nervures and a dark central dot, the scalloped hind marginal line black; in the female very dark smoky-grey. This very beautiful local race is usually known in these islands as var. *luneburgensis*, but considerable doubt exists as to whether this varietal name is correctly applied.

Along with it in some localities, and, like it, occurring in both sexes, is an even more beautiful recurrent race. Forewings of a rich dark or pale slate-grey, with the first and second lines and the central band enclosed by them, slate-black or deep black, very bright and conspicuous; the subterminal line dusted with purple, and its inuer edging deep black; the head and thorax slate-grey, but the antennae light brown; the hindwings as in the last described; thorax agreeing with the forewings. This race is known—apparently correctly—as var. *sedi*; and it must be admitted that, as varietal names these have the advantage as not being vitiated or even rendered vague and useless by all shades of intermediate forms. In rare instances, however, the last described variety has the central bar very narrow and deeply black. In the collection of the late Mr H. Doubleday at Bethnal Green Museum is a lovely specimen of a paler slate-grey—the precise tinge of that in *Agrotis ashworthii*—with the central band darker slate-grey but the lines bordering it grey-black.

The appended description by Treit. seemed to me to be the best of the earlier ones.

Ochs., *Schmet.* (1816), IV, 67. *Agrotis lutulenta*, W. V. Hb.

Treit., *l.c.* (1825), V (1), 187, Hb., W. V., *Illig.*, Bork.

" Ground colour a dark grey-black, in fresh examples with a yellowish-red tinge. The transverse lines are very indistinct. The half dark line next to the base disappears even in strongly marked examples by the middle of the wing. The first complete transverse line is more in evidence. Of the orbicular there is found a black trace only. The reniform is surrounded by greyish-yellow but very indistinctly. Then follows the second complete transverse line, and finally, near the fringes, a dentate line, between which and the waved line lies a paler band. (Of the W noted by Bork. in the dentate line I can find no trace. It is doubtful whether he had *lutulenta*)."

I have looked over about 150 specimens and have never met with an example with a definite W as in the usual *Hadena* species. The dentate line has no definite portion separated into a W, it is made up of irregular " teeth."

Burrows, *Ent. Record.*, XI, 155, etc. (1899), contributed an article revising the account of this species in Tutt's *Brit. Noctuae*, III, adding

three more aberrational names and clarifying the previous uncertainties in dealing with the species.

Analysis of *lutulenta* forms by the late Rev. C. R. N. Burrows.

a. Fw. unicolorous ashy-grey = ab. *consimilis*, Steph.
b. Fw. unicolorous brown-black = ab. *lutulenta*, Bork.
c. Fw. ashy-grey, with black central band = ab. *sedi*, Gn.
d. Fw. glossy black, with blacker lines = *luneburgensis*, Frr.
e. Fw. glossy black, with white lines = *albidilinea*, Tutt.
f. Fw. as (d), but having white spots to reniform = *tripuncta*, Frr.
g. Fw. as typical form, but all markings most obscure = *unicolor*, Brrws.
h. Fw. as (a), ashy-grey, with dark central band = *cinerea*, Brrws.
i. Fw. almost ab. *sedi*, but contrasts not so marked and brownish instead of black = *approximata*, Brrws.

The series of types and typical forms in g, h, i, and all the specimens concerned in the above summary are before me. About 120 in all.—Hy. J. T.

Notes.—"*unicolorous*" means only the ground-colour and does not include marking (cf. *unicolor*). Out of the whole series not one has the W of Borkhausen. In (d) there is a submarginal area of ground lighter in shade, maybe only visible in a particular light. In (e) the "white" lines are dull cream. This is certainly not typical nor ab. *luneburgensis*. (f) has one decidedly white dot in the reniform and the other two are dull irregular marks.

Wightman on Warr.-Seitz figures of *lutulenta*.

"Warr.-Seitz figures of *lutulenta* are to my mind very bad. His ♂ *consimilis* is obviously a ♂ but not like the ♂ *consimilis* figured. His ♂ *luneburgensis*, so-called, has ♀ antennae. This form which was described from a German specimen by Staudinger and called *luneburgensis*, Frr., in error, was finally called *albidilinea* by Tutt using Staudinger's description, which he said applied well to our Scotch and Irish forms. So this type was Irish. But there is one queer point about this form, all Scotch, Irish and Manx specimens, as well as Continental specimens, are agreed to be smaller and neater. But why? If they are but forms of *lutulenta* they should be *lutulenta* forms' size. My local grey forms of *lutulenta* (*sedi*, Gn.) are as large as the type."

As Culot noticed, *lutulenta* is one of the species of which the identification of the various named forms is almost impossible owing to the unstable nature of the variation, and I may add the careless way in which some of these descriptions have been drawn up. Even the description of the type by Borkhausen was so loose that Treit. suggested that he (Bork.) did not have a specimen of true *lutulenta* before him.

The Names and Forms to be considered:

[*melaleuca*, Esp. (1786?), *Abbild. Noct.*, III, 324, plt. 64, 5] as a *Bombyx*.
lutulenta, Bork. (1792), *Naturg.*, IV, 576.
electrica, Fb. (1794), *Ent. Sys. em.*, III (2), 46. Syn.
fuscus, Haw. (1803) (*Bomb.*) *Lep. Brit.*, 119 = (1809), *l.c.*, 204. Syn.
f. *consimilis*, Steph. (1829), *Illus.*, II, 110.
ab. *orthostigma*, Steph. (1829), *Illus.*, II, 110.
f. *luneburgensis*, Frr. (1848), *Neu. Beitr.*, VI, 72, plt. 526, 2.

ab. *tripuncta*, Frr. (1848), *l.c.*, p. 32, plt. 501, 2.
f. *sedi*, Gn. (1852), *Hist. Nat.*, VI, 46.
ab. *pallida*, Calb. (1888), *Iris*, I, 237.
ab. *albidilinea*, Tutt (1892), *Brit. Noct.*, III, 58.
ab. *unicolor*, Brws. (1899), *Ent. Record*, XI, 157.
ab. *cinerea*, Brws. (1899), *l.c.*
ab. *approximata*, Brws. (1899), *l.c.*
ab. *aterrima*, Wrnk. (1926), *Int. Ent. Zt.*, XX, 293.
ab. *brunnea*, Schawd. (1929), *Zeits. Oestr. Ent. Ver.*, XIV, 106.
ab. *decolor*, Drdt. (1934), *Pal. Noct. Supp.*, III, 136, plt. 17f.

Tutt's trans. of Bork. is only partial; he gives the main characters but omits most of the detail, e.g. as to stigmata, spots, transverse lines, etc.

Tutt dealt with: (1) The typical form unicolorous brown-black ["unicolorous" is here used for the ground colour alone exclusive of the marking]. (2) Unicolorous ashy-grey, the *consimilis*, Stephens. (3) ab. *sedi*, Gn., ashy-grey, with black central band. (4) ab. *luneburgensis*, Frr., glossy black, with blacker lines. (5) ab. *albidilinea*, Tutt, with light silvery edging to central band = the *luneburgensis*, Stdgr., which was an error in *Cat.*, Hed. (1871). (6) ab. *tripunctata*, Frr., similar to *luneburgensis*, but with white spots in the reniform.

I have looked up the matter of *luneburgensis* and gone over again what Tutt did, *Brit. Noct.*, III, 56, etc. (1892), with Her.-Schäf., Freyer, and Warr.-Seitz, etc., before me. Stdgr. could not have investigated the matter. He said: *Cat.*, Hed., 97 (1871), " nigricans, fasciis distinct. albis." Freyer said (1848) (orig. descrip.): " Anterior wings glossy black, with a very slight purplish tinge, the basal, elbowed and subterminal lines darker, an angulated, narrow, central shade very dark and quite black. Hindwings white, with dark nervures and a row of dots on the nervures." Warr.-Seitz said: " *luneburgensis* is purplish-grey with all the lines and stigmata very neatly marked and edged with paler; the median area darker; a decidedly smaller and neater insect than the type." (This description is made from a specimen from the Freyer collection marked by himself.) Warr. also said that it was the same as the *albidilinea*, Tutt, plt. 30b in Stz.

It is obvious that these three descriptions do not agree. That of Stdgr. appears, as Tutt said, to be the form named by him as *albidilinea*, and does not agree with the original description and figure of Frr. Warr.-Stz. description of *luneburgensis* certainly does not agree with that of the type description. " Purplish-grey " cannot possibly be glossy black; characters " neatly marked with paler on edges " cannot be " darker, very dark, and quite black " at the same time. The latter are also smaller.

[*Melaleuca*, Esp., *Abb.*, III (*Bomb.*), 324 (1786?).]

Fig.—plt. 64, (6) 5.

Orig. Descrip.—" Alis superioribus fuscis stigmatibus binis alboinductis, fasciisque tribus ex punctiss[eu] maculis lunulatis albidis."

" The ground colour is usually rather blackish, but in some specimens dark grey. Also both the reniform spots and the bands are partly white and partly dull pale green and often very obsolescent. The abdo-

All MS. and EDITORIAL MATTER should be sent and all PROOFS returned to Hy. J. TURNER, " Latemar," 25 West Drive, Cheam.

We must earnestly request our correspondents NOT TO SEND US COMMUNICATIONS IDENTICAL with those they are sending to other magazines.

REPRINTS of articles may be obtained by authors at very reasonable cost if ordered at THE TIME OF SENDING IN MS.

Articles that require ILLUSTRATIONS are inserted on condition that the AUTHOR DEFRAYS THE COST of the illustrations.

CHANGES OF ADDRESS, and Queries re Non-receipt of Current Issues, should be addressed to the Hon. Treasurer, H. W. Andrews, F.R.E.S.

TO OUR READERS.—Short Collecting Notes & Current Notes. Please, Early.—EDS.

EXCHANGES.

Subscribers may have Lists of Duplicates and Desiderata inserted free of charge. They should be sent to Mr Hy. J. TURNER, " Latemar," West Drive, Cheam.

Wanted urgently for experimental purposes, ova or larvae (forced) of *A. caia* which are not going into hibernation.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—British *dominula* varieties with full data other than ab. *lutea* and ab. *bimacula*. *Duplicates*—British *L. l-album, exigua, cribrum, ocellaris* ab. *intermedia*, etc.—*Dr H. B. D. Kettlewell, Cranleigh, Surrey.*

Desiderata—Trypetidae (Diptera) from Scotch, Welsh, and Irish localities. *H. W. Andrews, 6 Footscray Road, Eltham, S.E.9.*

Wanted—American Hesperiidae, especially from Costa Rica, West Indies, the Guyanas, Guatemala, Honduras, Nicaragua, Venezuela, Colombia and Bolivia. Write *K. J. Hayward, Estación Experimental, Casilla Correo, 71, Tucuman, Republica Argentina.*

Duplicates—Rhopalocera from China and Peru, in papers, perfect condition, with data. *Desiderata*—Similar material except from North America.—*John W. Moore, 151 Middleton Hall Road, King's Norton, Birmingham, 30.*

Wanted—Living larvae of *Pieris rapae*, and cocoons of *Apanteles rubecula* or *Apanteles glomeratus* gratefully received. Large numbers required for Research purposes. Postages, etc., will be paid.—*Dr Ewen Cameron, Imperial Institute of Entomology at Clunebeg House, Drumnadrochit, Inverness.*

Desiderata—Dipterous parasites bred from Lepidopterous larvae or pupae, or from any other animal.—*H. Audcent, Selwood House, Hill Road, Clevedon, Somerset.*

Wanted.—Lycaena (Heodes) phlaeas from all regions including British Isles. Also wanted other species of Chrysophanids from all areas. Exchange or purchase considered. *Duplicates.*—Foreign Lepidoptera, e.g., Satyrids, Charaxes, Papilios, and others; full lists sent.—*P. Siviter Smith, Little Aston Park, Streetly, near Birmingham.*

Book Wanted.—Barret, *British Lepidoptera*, Vol. 3.—*L. E. Savage, 65 Cranmer Avenue, Hove 4, Sussex.*

Books Wanted.—" Draug-Seitz Suppt., Vol. III (Noctuae)," English preferred.—*A. J. Wightman, " Aurago," Pulborough, Sussex.*

Book wanted—Frohawk, F. W., " Varieties of British Butterflies " (1938).—*A. F. L. Bacon, The Malt House, Burghclere, Newbury.*

Desiderata.—Wanted a pair of *Argyrophorus argenteus*, the silver butterfly of Chili. Suitable exchange or cash.—*S. G. Castle Russell, " Springetts," Seaview, Highcliffe-on-Sea, Hants.*

Communications Promised :—E. P. Wiltshire, Thos. Greer, S. G. Castle Russell, A. J. Wightman, P. Siviter Smith (plate), S. G. Brown (plate), Rev. G. Wheeler, P. B. M. Allan, Dr E. A. Cockayne, T. Bainbrigge Fletcher, H. Donisthorpe, Prof. J. W. Harrison, L. Ford, F. H. Day, Capt. C. Q. Parsons, J. A. Simes, F. H. Lees, H. A. Leeds, Sir A. Maclaurin, etc.

All Communications should be addressed to the Acting Editor, Hy. J. TURNER, " Latemar," 25 West Drive, Cheam.

MEETINGS OF SOCIETIES.

WAR-TIME ARRANGEMENTS.

THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON: 41 Queen's Gate, S.W.7. (Nearest stations: S. Kensington and Gloucester Road.) General Meetings at 3 p.m. on the first Wednesdays of the month, February-June; October-December

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. Chapter House Hall, St Thomas Street, S.E.1. *Hon. Sec., F. Stanley-Smith, F.R.E.S.*, "Hatch House," Pilgrims Hatch, Brentwood, Essex. Session, 1943-44, January 8; January 22—Annual Meeting; 2 p.m. for 2.30 p.m.

THE LONDON NATURAL HISTORY SOCIETY. Indoor Meetings Resumed—Third Saturday in each month, 2 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. Further particulars from *A. B. Hornblower*, 91 Queen's Road, Buckhurst Hill, Essex.

ENTOMOLOGICAL SECTION, BIRMINGHAM NATURAL HISTORY AND PHILOSOPHICAL SOCIETY. *Hon. Sec., G. B. Manley*, 72 Tenbury Road, King's Heath, Birmingham. Meetings suspended till further notice.

SOCIETY FOR BRITISH ENTOMOLOGY.—All meetings suspended till further notice. *Acting Vice-President, Lt.-Col. Fraser, I.M.S.*, "Mercara," Glenferness Avenue, Bournemouth. *Hon. Treasurer, W. Fassnidge, M.A., F.R.E.S.*, 13 Commercial Road, Parkstone, Dorset. *Acting Secretary, W. Parkinson Curtis*, 17 Christchurch Road, Bournemouth.

Printed by T. Buncle & Co., Ltd., Arbroath.